United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with North Carolina Department of Environment, Health, and Natural Resources; North Carolina Agricultural Research Service; North Carolina Cooperative Extension Service; Rowan Soil and Water Conservation District; and Rowan County Board of Commissioners

Soil Survey of Rowan County, North Carolina

How To Use This Soil Survey

General Soil Map

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

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

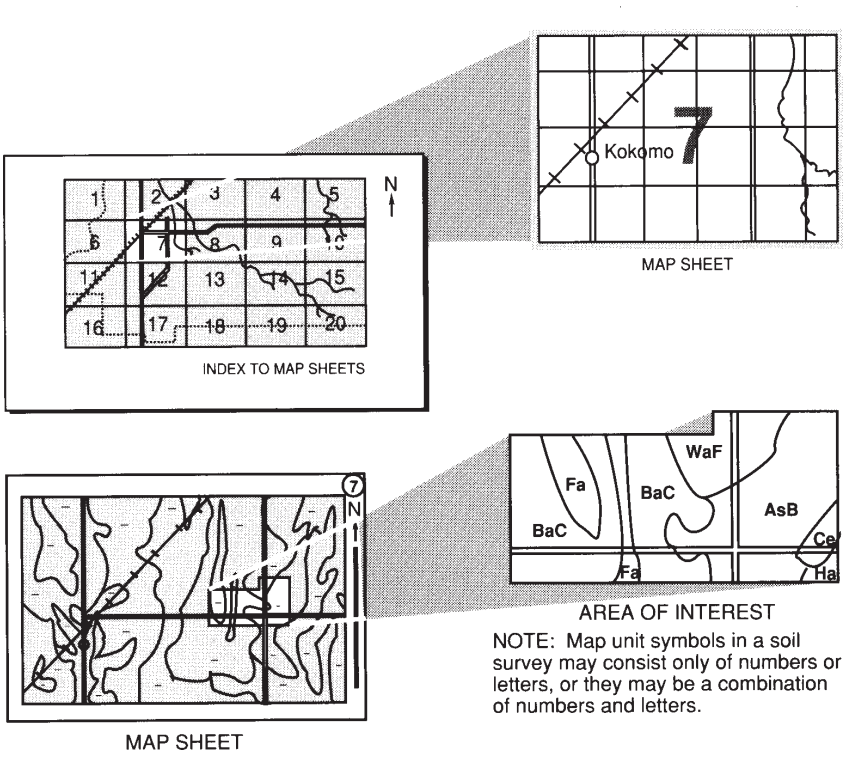
Detailed Soil Maps

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

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

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

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



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

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

Major fieldwork for this soil survey was completed in 1993. Soil names and descriptions were approved in 1995. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1995. This soil survey was made cooperatively by the Natural Resources Conservation Service; the North Carolina Department of Environment, Health, and Natural Resources; the North Carolina Agricultural Research Service; the North Carolina Cooperative Extension Service; the Rowan Soil and Water Conservation District; and the Rowan County Board of Commissioners. It is part of the technical assistance furnished to the Rowan Soil and Water Conservation District. The Rowan County Board of Commissioners provided financial assistance for the survey.

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

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Cover: The historic Kerr Mill, a restored grist mill, located at Sloan Park.

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

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Foreword

This soil survey contains information that can be used in land-planning programs in Rowan 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.

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

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

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

Mary K. Combs
State Conservationist
Natural Resources Conservation Service

Soil Survey of
Rowan County, North Carolina

By Clifford M. McCachren and William E. Woody, Natural Resources Conservation Service

Soils surveyed by Clifford M. McCachren, William E. Woody, and Ronald B. Stephens, Natural Resources Conservation Service, and David T. Knight, Richard L. Livingston, and Douglas A. Adamo, North Carolina Department of Environment, Health, and Natural Resources

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

ROWAN COUNTY is in the west-central part of North Carolina (fig. 1), about 111 miles west of Raleigh, the State Capital, and 42 miles northeast of Charlotte, the State's largest city. The county is in the Piedmont physiographic province. It is bounded on the north by the South Yadkin River, which separates it from Davie County, and on the northeast by the Yadkin River and the impounded waters of High Rock Lake, which separate it from Davidson County. It is bordered on the southeast by Stanly County, on the south by Cabarrus County, and on the west by Iredell County. Rowan County has a total area of about 523 square miles, or 334,924 acres.

In 1990, the county had a population of 110,605 *(15)*. Salisbury, the county seat and the county's largest town, had a population of 23,087. Spencer had a population of 3,219; China Grove, a population of 2,732; and Granite Quarry, a population of 1,646.

This soil survey updates the survey of Rowan County published in 1915 *(7)*. It provides more detailed maps on aerial photographs and contains more interpretive information.

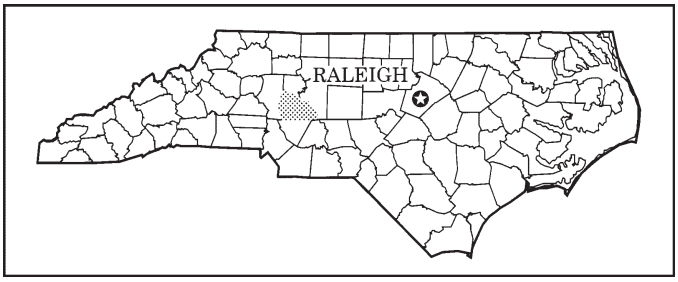

Figure 1.—Location of Rowan County in North Carolina.

General Nature of the County

This section gives general information about Rowan County. It describes the history and development; transportation; physiography, relief, and drainage; water supply; and climate.

History and Development

Rowan County was established on April 12, 1753. It originally included all of the territory north to Virginia, east to present-day Guilford County, and west to the mountains. This area now makes up all or a part of 26 counties. The county was named for Matthew Rowan, who was acting governor of the colony. The current boundaries of the county were established in 1836.

The first European settlers in the survey area were Scotch-Irish immigrants. They travelled the Great Wagon Road from Pennsylvania in the 1740's. They sought less crowded land that would be rich for farming and settled the area that is presently the western part of Rowan County. German settlers arrived a little later and settled the area that is presently the eastern part of the county. The soils of the survey area were highly productive, and an agricultural economy began to develop. The first crops included corn, oats, barley, vegetables, tobacco, and flax. All of the crops were grown for home use. By 1775, corn was the most important crop and wheat was the second most important *(7)*.

As the cotton gin became widely used, cotton became an important cash crop in the county and remained important until the mid-20th century. In the late 19th century, tobacco became an important cash crop. A number of tobacco factories and warehouses were built in Salisbury around 1880, and production increased until 1890. In 1890, tobacco was grown on 390 acres and produced a total yield of 187,724 pounds. Tobacco production has since decreased. By 1910, tobacco was grown on only 7 acres and produced a total yield of only 2,350 pounds *(7)*. Today, tobacco is not grown in the county for market.

Agriculture is a vital industry in Rowan County. According to the North Carolina Cooperative Extension Service, the agricultural income for the county in 1992 was about 47 million dollars. Dairy production and sales made up about 28 percent of the income. Beef cattle made up 15 percent. Field crops, including corn, soybeans, and small grains, made up 13 percent. Horticultural crops, including field grown vegetables and nursery and greenhouse plants, made up 22 percent. Poultry, swine, horses, and forest products contributed to the remaining 22 percent of the agricultural income.

In 1993, according to the 1994 North Carolina Agricultural Statistics, the county had about 38,600 acres of harvested cropland. Included in this acreage were 10,100 acres used for corn for grain, 6,800 acres used for corn silage, 6,600 acres used for soybeans, 6,200 acres used for wheat, and 2,900 acres used for barley. About 15,000 acres were used for hay, and about 25,000 acres were used for pasture *(6)*. The remaining acreage was mainly woodland.

The Piedmont Research Station of the North Carolina Agricultural Research Service, located in Rowan County, provides data on soils and crops that are typical of the survey area.

The first industry to impact Rowan County was gold mining. The Gold Hill Mining District flourished following a major gold strike in 1842. Gold mining was profitable until the Civil War.

In the late 1800's, the granite industry began in the granite belt of eastern Rowan County. Large scale quarrying operations began in 1906. The industry thrived until the mid-1900's when concrete replaced granite in most construction and curbing operations.

The railroad industry had a major impact on the economy of Rowan County when a steam locomotive repair shop was built northeast of Salisbury in 1896. The town of Spencer, the second largest town in the county, grew around this shop, which prospered until diesel power replaced steam power for the trains. Today, the facility is a transportation museum operated by the State of North Carolina.

The first successful textile mill was built in Salisbury in 1888. Since that time textiles have been the dominant industry in Rowan County. Today, the major industries in the county include the manufacture of cotton yarns, sheeting, and other fabrics; the manufacture of polyester filament yarns; truck assembly; and grocery distribution. Other industries include metals, paving machinery, chemicals, bricks, various food products, trucking, and numerous other manufacturing and service industries.

Transportation

Interstate 85 runs through Salisbury. Interstate 77 and Interstate 40 intersect a few miles west of Rowan County. U.S. Highways 29, 52, 70, and 601 also traverse the county and allow highway access to all of the major cities in the southeastern part of the United States. Forty-two freight carriers and one interstate bus company serve the county.

A main north-south railway line and east-west routes converge at Salisbury, where freight service and passenger service are available.

The Rowan County Airport at Salisbury is available for all-weather instrument landings and has a 5,550-foot-long, lighted runway. Douglas International Airport at Charlotte is 45 miles south of Salisbury. Greensboro/Highpoint/Winston-Salem Regional Airport is 45 miles north of Salisbury.

Physiography, Relief, and Drainage

Rowan County is in the central part of the Piedmont physiographic region of North Carolina. The county is characterized by broad, gently rolling to hilly landscapes that have moderately steep or steep slopes along rivers and major tributaries.

Most of the county is at elevations between 560 and 850 feet. There are a few prominent peaks above the general landscape. The highest peak is Youngs Mountain at Barber. It has an elevation of 1,100 feet. Other peaks include Dunn Mountain (an elevation of 1,000 feet), Balfour Mountain (an elevation of 1,000 feet), and Flat Swamp Mountain at High Rock Dam (an elevation of 910 feet). The lowest elevation in the county, 560 feet, is the water level of Tuckertown Reservoir.

Most areas of the county are drained directly into the South Yadkin and Yadkin Rivers by creeks that flow generally northeastward. The major watersheds are Fourth Creek, Third Creek, and North Second Creek, which flow to the South Yadkin River, and Grants Creek, Crane Creek, Second Creek, and Panther Creek, which flow to High Rock Lake on the Yadkin River. The southwestern part of the county, generally south of North Carolina Highway 152, is drained by Irish Buffalo, Coldwater, Dutch Buffalo, and Little Buffalo Creeks, which flow southward into Cabarrus County.

Water Supply

Rowan County has adequate supplies of water from rivers, creeks, lakes, and ground water for agricultural, municipal, and industrial uses. Most of the municipal and industrial water is supplied by the Yadkin River. It is provided through the water system of Salisbury, which supplies Salisbury, Spencer, East Spencer, and Granite Quarry. This system has a daily capacity of 18,000,000 gallons. Landis receives water from two surface lakes. All other municipalities receive water from wells. Most of the water for rural residents is supplied by private wells.

Two large lakes, used for hydroelectric generation, impound waters of the Yadkin River along the southeastern border of the county. High Rock Lake has a surface area of more than 15,000 acres. It is a major recreational site in the region. Tuckertown Reservoir, which has more than 1,000 acres of backwater adjoining Rowan County, provides access to this larger body of water.

Numerous smaller lakes and ponds and perennial and intermittent streams occurring throughout the county provide water for livestock, irrigation, and recreational uses.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Salisbury, North Carolina, in the period 1900 to 1993. 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 31 degrees. The lowest temperature on record, which occurred on January 28, 1940, is -11 degrees. In summer, the average temperature is 77 degrees and the average daily maximum temperature is 89 degrees. The highest recorded temperature, which occurred on August 27, 1943, is 105 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 (40 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 46 inches. Of this, 24 inches, or about 53 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 13 inches. The heaviest 1-day rainfall during the period of record was 5.3 inches on August 29, 1943. Thunderstorms occur on about 41 days each year, and most occur in July.

The average seasonal snowfall is about 7 inches. The greatest snow depth at any one time during the period of record was 21 inches. On the average, 2 days of the year have at least 1 inch of snow on the ground.

The average relative humidity in midafternoon is about 54 percent. Humidity is higher at night, and the average at dawn is about 83 percent. The sun shines 67 percent of the time possible in summer and 56 percent in winter. The prevailing wind is from the southwest. Average windspeed is highest, 8.8 miles per hour, in March and April.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in Rowan County. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the material in which the soil formed.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, climate, relief, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous

areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

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 or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one map unit can occur in another but in a different pattern.

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

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or 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.

1. Cecil-Pacolet

Gently sloping to steep, well drained upland soils that have a loamy surface layer and a predominantly clayey subsoil; moderately deep to very deep to saprolite; very deep to bedrock

Setting

Location in the county: Western and north-central parts
Landform: Piedmont uplands
Landscape position: Broad to narrow ridges and side slopes (fig. 2)
Slope range: 2 to 45 percent

Extent and Composition

Percent of the county: 18
Cecil soils—53 percent
Pacolet soils—27 percent
Minor soils—20 percent (including Appling, Chewacla, Hiwassee, and Mecklenburg soils)

Soil Characteristics

Cecil
Surface layer: Yellowish red sandy clay loam
Subsoil: In sequence downward, red sandy clay loam, red clay loam, red clay, red clay that has brownish yellow mottles, and red clay loam that has brownish yellow mottles
Underlying material: Red loam saprolite that has brownish yellow mottles
Depth class: Very deep

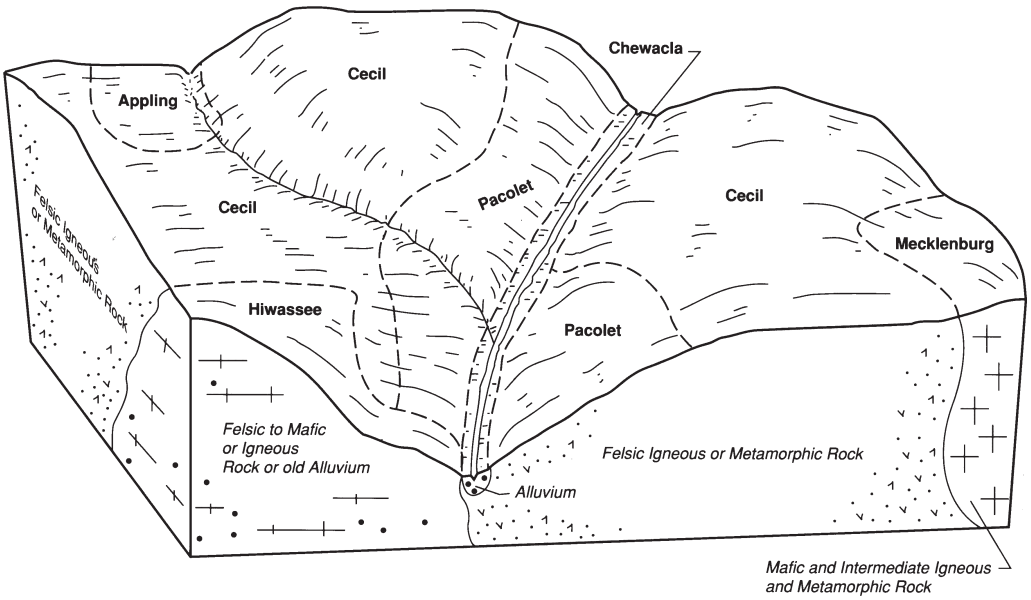

Figure 2.—The relationship between soils and landscape in the Cecil-Pacolet general soil map unit.

Drainage class: Well drained
Depth to high water table: More than 6.0 feet
Slope range: 2 to 15 percent
Parent material: Residuum weathered from felsic metamorphic or igneous rock

Pacolet
Surface layer: Reddish brown sandy clay loam
Subsoil: Upper part—red clay; middle part—red sandy clay that has reddish yellow mottles; lower part—red sandy clay loam
Underlying material: Upper part—red loam saprolite that has reddish yellow, yellowish red, and yellowish brown mottles; middle part—yellowish red loam saprolite; lower part—multicolored loam saprolite
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: More than 6.0 feet
Slope range: 2 to 45 percent
Parent material: Residuum weathered from felsic metamorphic or igneous rock

Use and Management

Major Uses: Woodland, cropland, and pasture

Agriculture
Management concerns: Erodibility, soil fertility, and equipment use in the steeper areas

Urban development
Management concerns: Restricted permeability, low strength, and slope in the steeper areas

Recreational development
Management concerns: Slope in the steeper areas

2. Pacolet

Gently sloping to steep, well drained upland soils that have a loamy surface layer and a predominantly clayey subsoil; moderately deep to saprolite; very deep to bedrock

Setting

Location in the county: Southwestern and north-central parts
Landform: Piedmont uplands
Landscape position: Broad to narrow ridges and side slopes
Slope range: 2 to 45 percent

Extent and Composition

Percent of the county: 14
Pacolet soils—52 percent
Minor soils—48 percent (including Cecil, Enon, Appling, Chewacla, Helena, Rion, Saw, Vance, and Wedowee soils)

Soil Characteristics

Pacolet
Surface layer: Reddish brown sandy clay loam
Subsoil: Upper part—red clay; middle part—red sandy clay that has reddish yellow mottles; lower part—red sandy clay loam
Underlying material: Upper part—red loam saprolite that has reddish yellow, yellowish red, and yellowish brown mottles; middle part—yellowish red loam saprolite; lower part—multicolored loam saprolite
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: More than 6.0 feet
Slope range: 2 to 45 percent
Parent material: Residuum weathered from felsic metamorphic or igneous rock

Use and Management

Major Uses: Woodland, cropland, and pasture

Agriculture
Management concerns: Erodibility, soil fertility, and equipment use in the steeper areas

Urban development
Management concerns: Restricted permeability, low strength, and slope in the steeper areas

Recreational development
Management concerns: Slope in the steeper areas

3. Hiwassee-Cecil

Gently sloping to moderately steep, well drained upland soils that have a loamy surface layer and a predominantly clayey subsoil; deep or very deep to saprolite; very deep to bedrock

Setting

Location in the county: West-central and northeastern parts
Landform: Piedmont uplands and high stream terraces

Landscape position: Broad ridges that have broad to narrow side slopes
Slope range: 2 to 25 percent

Extent and Composition (fig. 3)

Percent of the county: 8
Hiwassee soils—30 percent
Cecil soils—28 percent
Minor soils—42 percent (including Chewacla, Enon, Mecklenburg, and Pacolet soils)

Soil Characteristics

Hiwassee
Surface layer: Dark reddish brown clay loam
Subsoil: Upper part—dark red clay; middle part—red clay that has strong brown mottles; lower part—red clay loam that has strong brown mottles
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: More than 6.0 feet
Slope range: 2 to 25 percent
Parent material: Residuum weathered from felsic to mafic metamorphic or igneous rock or old alluvium

Cecil
Surface layer: Yellowish red sandy clay loam
Subsoil: In sequence downward, red sandy clay loam, red clay loam, red clay, red clay that has brownish yellow mottles, and red clay loam that has brownish yellow mottles
Underlying material: Red loam saprolite that has brownish yellow mottles
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: More than 6.0 feet
Slope range: 2 to 15 percent
Parent material: Residuum weathered from felsic metamorphic or igneous rock

Use and Management

Major Uses: Woodland, cropland, and pasture

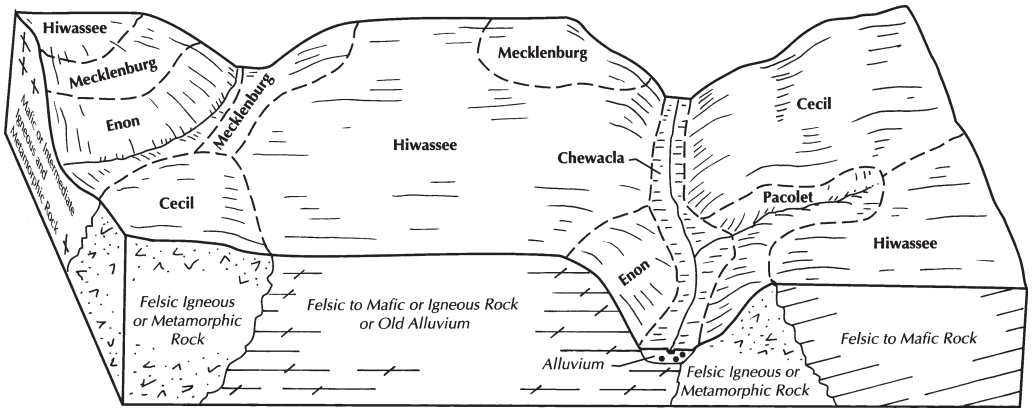

Figure 3.—The pattern of soils and parent material in the Hiwassee-Cecil general soil map unit.

Agriculture
Management concerns: Erodibility, soil fertility, tilth, and equipment use in the steeper areas

Urban development
Management concerns: Restricted permeability, low strength, and slope in the steeper areas

Recreational development
Management concerns: Slope in the steeper areas

4. Cecil-Vance-Enon

Gently sloping or strongly sloping, well drained upland soils that have a loamy surface layer and a predominantly clayey subsoil; moderately deep and very deep to saprolite; very deep to bedrock

Setting

Location in the county: Areas east of Interstate Highway 85 and a smaller area in the northwestern part of the county
Landform: Piedmont uplands
Landscape position: Broad ridges and side slopes
Slope range: 2 to 15 percent

Extent and Composition (fig. 4)

Percent of the county: 22
Cecil soils—29 percent
Vance soils—18 percent
Enon soils—18 percent
Minor soils—35 percent (including Appling, Chewacla, Helena, Mecklenburg, Pacolet, Rion, Wedowee, and Zion soils)

Soil Characteristics

Cecil
Surface layer: Yellowish red sandy clay loam
Subsoil: In sequence downward, red sandy clay loam, red clay loam, red clay, red clay that has brownish yellow mottles, and red clay loam that has brownish yellow mottles
Underlying material: Red loam saprolite that has brownish yellow mottles
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: More than 6.0 feet
Slope range: 2 to 15 percent
Parent material: Residuum weathered from felsic metamorphic or igneous rock

Vance
Surface layer: Brown sandy loam
Subsurface layer: Brownish yellow sandy loam
Subsoil: In sequence downward, brownish yellow clay; brownish yellow clay that has red and very pale brown mottles; yellowish brown clay that has brownish yellow, very pale brown, and red mottles; and brownish yellow clay that has red, very pale brown, and light brownish gray mottles
Underlying material: Multicolored sandy clay loam and loam saprolite
Depth class: Very deep
Drainage class: Well drained

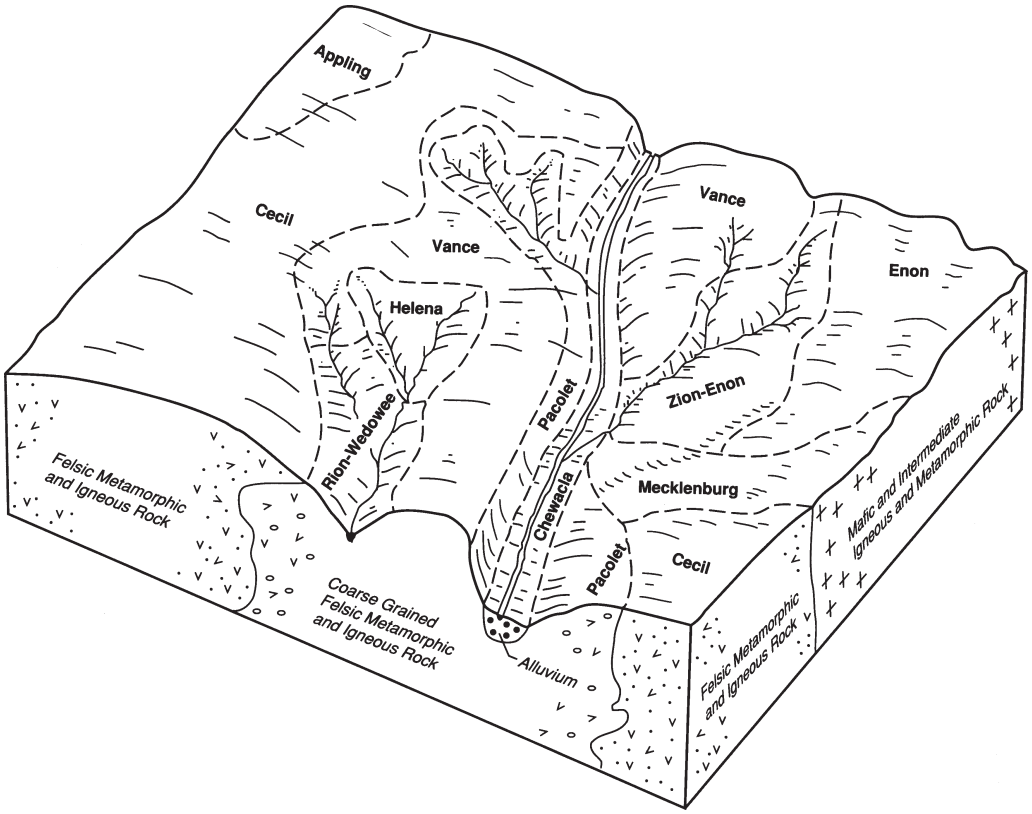

Figure 4.—The pattern of soils and parent material in the Cecil-Vance-Enon general soil map unit.

Depth to high water table: More than 6.0 feet
Slope range: 2 to 15 percent
Parent material: Residuum weathered from felsic metamorphic or igneous rock

Enon
Surface layer: Brown fine sandy loam
Subsoil: In sequence downward, brownish yellow sandy clay loam, strong brown clay, yellowish brown clay, and yellowish brown, light olive brown, and white clay loam
Underlying material: Multicolored loam saprolite
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: More than 6.0 feet
Slope range: 2 to 15 percent
Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock

Use and Management

Major Uses: Cropland, pasture, and woodland

Agriculture
Management concerns: Erodibility and soil fertility

Urban development
Management concerns: Cecil—restricted permeability, low strength, and slope in the steeper areas; Vance and Enon—restricted permeability, low strength, shrink-swell potential, and slope in the steeper areas

Recreational development
Management concerns: Slope in the steeper areas

5. Hiwassee-Mecklenburg

Gently sloping to moderately steep, well drained upland soils that have a loamy surface layer and a predominantly clayey subsoil; moderately deep to very deep to saprolite; very deep to bedrock

Setting

Location in the county: West-central part
Landform: Piedmont uplands and high stream terraces
Landscape position: Broad ridges that have broad to narrow side slopes
Slope range: 2 to 25 percent

Extent and Composition

Percent of the county: 8
Hiwassee soils—30 percent
Mecklenburg soils—29 percent
Minor soils—41 percent (including Cecil, Chewacla, Enon, and Pacolet soils)

Soil Characteristics

Hiwassee
Surface layer: Dark reddish brown clay loam
Subsoil: Upper part—dark red clay; middle part—red clay that has strong brown mottles; lower part—red clay loam that has strong brown mottles
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: More than 6.0 feet
Slope range: 2 to 25 percent
Parent material: Residuum weathered from felsic to mafic metamorphic or igneous rock or old alluvium

Mecklenburg
Surface layer: Reddish brown clay loam
Subsoil: In sequence downward, reddish brown clay, red clay, red clay that has reddish yellow mottles, and yellowish red clay loam
Underlying material: Multicolored silty clay loam and loam saprolite
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: More than 6.0 feet
Slope range: 2 to 15 percent
Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock

Use and Management

Major Uses: Woodland, cropland, and pasture

Agriculture
Management concerns: Erodibility, soil fertility, tilth, and equipment use in the steeper areas

Urban development
Management concerns: Hiwassee—restricted permeability, low strength, and slope in the steeper areas; Mecklenburg—restricted permeability, low strength, shrink-swell potential, and slope in the steeper areas

Recreational development
Management concerns: Slope in the steeper areas

6. Enon-Mecklenburg-Poindexter

Gently sloping to steep, well drained upland soils that have a loamy surface layer and a clayey or loamy subsoil; moderately deep or deep to saprolite; moderately deep to very deep to bedrock

Setting

Location in the county: Central and northwestern parts
Landform: Piedmont uplands
Landscape position: Broad to narrow ridges and narrow side slopes
Slope range: 2 to 45 percent

Extent and Composition (fig. 5)

Percent of the county: 14
Enon soils—23 percent
Mecklenburg soils—17 percent
Poindexter soils—10 percent
Minor soils—50 percent (including Armenia, Cecil, Chewacla, Helena, Hiwassee, Iredell, Mocksville, Pacolet, Sedgefield, and Zion soils)

Soil Characteristics

Enon
Surface layer: Brown fine sandy loam
Subsoil: In sequence downward, brownish yellow sandy clay loam, strong brown clay, yellowish brown clay, and yellowish brown, light olive brown, and white clay loam
Underlying material: Multicolored loam saprolite
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: More than 6.0 feet
Slope range: 2 to 25 percent
Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock

Mecklenburg
Surface layer: Reddish brown clay loam
Subsoil: In sequence downward, reddish brown clay, red clay, red clay that has reddish yellow mottles, and yellowish red clay loam
Underlying material: Multicolored silty clay loam and loam saprolite
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: More than 6.0 feet
Slope range: 2 to 15 percent
Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock

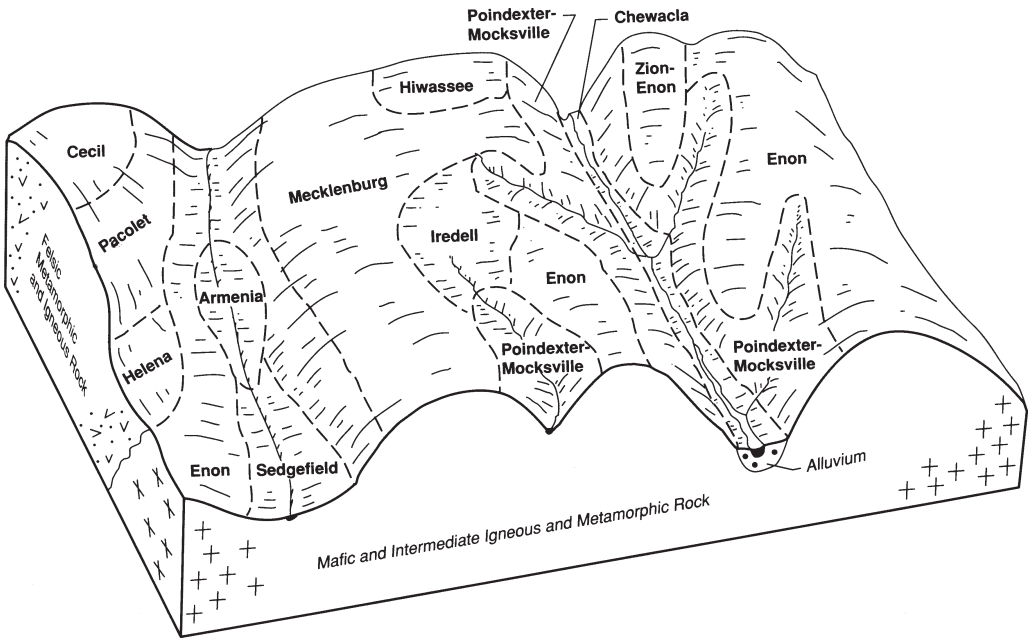

Figure 5.—The pattern of soils and parent material in the Enon-Mecklenburg-Poindexter general soil map unit.

Poindexter

Surface layer: Very dark grayish brown loam

Subsurface layer: Dark yellowish brown and strong brown loam

Subsoil: Upper part—brown sandy clay loam; lower part—strong brown sandy clay loam

Underlying material: Loam saprolite that is multicolored in shades of yellow, black, and green

Bedrock: Upper part—weathered, partially consolidated mafic igneous rock; lower part—unweathered mafic igneous rock

Depth class: Moderately deep

Drainage class: Well drained

Depth to high water table: More than 6.0 feet

Slope range: 2 to 45 percent

Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock

Use and Management

Major Uses: Woodland, cropland, and pasture

Agriculture

Management concerns: Erodibility, soil fertility, and equipment use in the steeper areas

Urban development

Management concerns: Enon and Mecklenburg—restricted permeability, low strength, shrink-swell potential, and slope in the steeper areas; Poindexter—depth to bedrock, low strength, and slope in the steeper areas

Recreational development

Management concerns: Slope in the steeper areas

7. Ashlar-Vance-Rion-Wedowee

Gently sloping to moderately steep, well drained upland soils that have a loamy surface layer and a clayey or loamy subsoil; moderately deep to very deep to saprolite; moderately deep to very deep to bedrock; rock outcrops in some areas

Setting

Location in the county: Eastern part, in a northeast- to southwest-trending strip that includes the Granite Quarry and Faith areas
Landform: Piedmont uplands
Landscape position: Broad to narrow ridges and side slopes (fig. 6)
Slope range: 2 to 25 percent

Extent and Composition

Percent of the county: 4
Ashlar soils—25 percent
Vance soils—12 percent
Rion soils—10 percent
Wedowee soils—10 percent
Minor soils and other inclusions—43 percent (including Chewacla, Enon, Pacolet, and Saw soils and rock outcrops)

Soil Characteristics

Ashlar
Surface layer: Brown sandy loam
Subsoil: Upper part—brownish yellow sandy loam; lower part—light yellowish brown sandy loam that has reddish yellow mottles

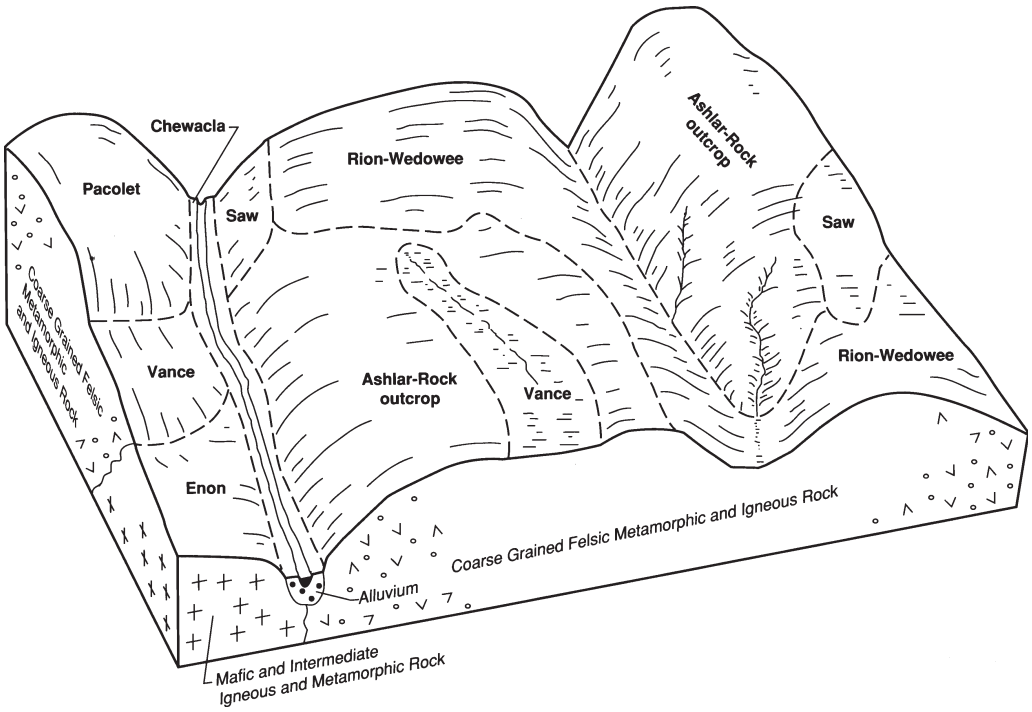

Figure 6.—The relationship between soils and landscape in the Ashlar-Vance-Rion-Wedowee general soil map unit.

Underlying material: Mottled reddish yellow and light yellowish brown gravelly sandy loam saprolite
Bedrock: Unweathered granite
Depth class: Moderately deep
Drainage class: Well drained
Depth to high water table: More than 6.0 feet
Slope range: 2 to 25 percent
Parent material: Residuum weathered from granite or other coarse grained felsic igneous rock

Vance
Surface layer: Brown sandy loam
Subsurface layer: Brownish yellow sandy loam
Subsoil: In sequence downward, brownish yellow clay; brownish yellow clay that has red and very pale brown mottles; yellowish brown clay that has brownish yellow, very pale brown, and red mottles; and brownish yellow clay that has red, very pale brown, and light brownish gray mottles
Underlying material: Multicolored sandy clay loam and loam saprolite
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: More than 6.0 feet
Slope range: 2 to 15 percent
Parent material: Residuum weathered from felsic metamorphic or igneous rock

Rion
Surface layer: Brown sandy loam
Subsoil: In sequence downward, light yellowish brown sandy clay loam, brown sandy clay loam, strong brown sandy clay loam, and mottled brown and strong brown sandy clay loam
Underlying material: Multicolored sandy loam and fine sandy loam saprolite
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: More than 6.0 feet
Slope range: 2 to 15 percent
Parent material: Residuum weathered from felsic metamorphic or igneous rock

Wedowee
Surface layer: Brown sandy loam
Subsurface layer: Brownish yellow sandy loam
Subsoil: In sequence downward, strong brown sandy clay loam that has brownish yellow mottles, strong brown clay that has yellowish red mottles, yellowish red clay that has red and brownish yellow mottles, and yellowish red sandy clay loam that has red, brownish yellow, and strong brown mottles
Underlying material: Multicolored sandy loam saprolite
Depth class: Very deep
Drainage class: Well drained
Depth to high water table: More than 6.0 feet
Slope range: 2 to 15 percent
Parent material: Residuum weathered from felsic metamorphic or igneous rock

Use and Management

Major Uses: Woodland, cropland, and pasture

Agriculture
Management concerns: Ashlar—erodibility, rooting depth, soil fertility, and slope in the

steeper areas; Vance, Rion, and Wedowee—erodibility, soil fertility, and slope in the steeper areas

Urban development
Management concerns: Ashlar—depth to bedrock and slope in the steeper areas; Vance—restricted permeability, low strength, shrink-swell potential, and slope in the steeper areas; Rion—slope in the steeper areas; Wedowee—low strength and slope in the steeper areas

Recreational development
Management concerns: Ashlar—depth to bedrock and slope in the steeper areas; Vance, Rion, and Wedowee—slope in the steeper areas

8. Badin-Uwharrie-Tatum

Gently sloping to steep, well drained upland soils that have a loamy surface layer and a predominantly clayey subsoil; very stony surface in some areas; moderately deep to very deep to saprolite; moderately deep to very deep to bedrock

Setting

Location in the county: Southeastern corner
Landform: Piedmont uplands
Landscape position: Broad to narrow ridges and side slopes (fig. 7)
Slope range: 2 to 45 percent

Extent and Composition

Percent of the county: 5
Badin soils—41 percent
Uwharrie soils—19 percent
Tatum soils—10 percent
Minor soils—30 percent (including Cid, Enon, Lignum, and Oakboro soils)

Soil Characteristics

Badin
Surface layer: Yellowish brown channery silt loam
Subsoil: In sequence downward, reddish yellow silty clay loam, yellowish red silty clay, red silty clay, and mottled red, reddish yellow, and brownish yellow channery silty clay loam
Bedrock: Upper part—weathered, partially consolidated argillite; lower part—unweathered argillite
Depth class: Moderately deep
Drainage class: Well drained
Depth to high water table: More than 6.0 feet
Slope range: 2 to 30 percent
Parent material: Residuum weathered from argillite and other fine grained rock of the Carolina Slate Belt

Uwharrie
Surface layer: Yellowish brown silty clay loam
Subsoil: In sequence downward, red silty clay, red clay, red clay that has brownish yellow mottles, red silty clay that has brownish yellow mottles, and red silty clay loam
Underlying material: Multicolored silt loam saprolite
Depth class: Very deep
Drainage class: Well drained

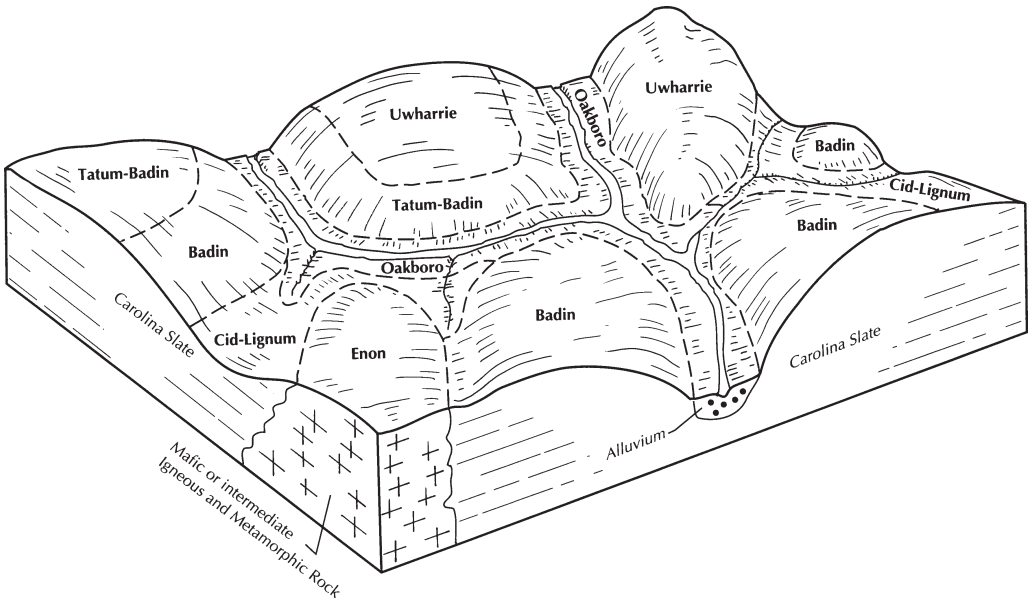

Figure 7.—The relationship between soils and landscape in a typical area of the Badin-Uwharrie-Tatum general soil map unit.

Depth to high water table: More than 6.0 feet
Slope range: 2 to 45 percent
Parent material: Residuum weathered from argillite and other fine grained rock of the Carolina Slate Belt

Tatum
Surface layer: Yellowish red silty clay loam
Subsoil: In sequence downward, red silty clay, red clay, red silty clay that has brownish yellow mottles, and silty clay loam that is multicolored in shades of red and yellow
Underlying material: Multicolored silt loam saprolite
Bedrock: Weathered, partially consolidated argillite
Depth class: Deep
Drainage class: Well drained
Depth to high water table: More than 6.0 feet
Slope range: 2 to 15 percent
Parent material: Residuum weathered from argillite and other fine grained rock of the Carolina Slate Belt

Use and Management

Major Uses: Woodland, cropland, and pasture

Agriculture
Management concerns: Badin—erodibility, soil fertility, rooting depth, and equipment use in the steeper areas; Uwharrie—erodibility, soil fertility, and equipment use in the steeper areas and the very stony areas; Tatum—erodibility, soil fertility, and equipment use in the steeper areas

Urban development
Management concerns: Badin and Tatum—restricted permeability, low strength, shrink-swell potential, and depth to bedrock; Uwharrie—restricted permeability, low strength, shrink-swell potential, and slope in the steeper areas

Recreational development

Management concerns: Badin—content of rock fragments and slope in the steeper areas; Uwharrie—slope in the steeper areas and surface stones in the stony areas; Tatum—slope in the steeper areas

9. Cid-Badin-Misenheimer

Nearly level to strongly sloping, well drained to somewhat poorly drained upland soils that have a loamy surface layer and a clayey or loamy subsoil; shallow to moderately deep to saprolite; shallow to moderately deep to bedrock

Setting

Location in the county: Southeastern corner
Landform: Piedmont uplands
Landscape position: Cid and Misenheimer—broad flats and low ridges; Badin—broad to narrow ridges and side slopes (fig. 8)
Slope range: 2 to 30 percent

Extent and Composition

Percent of the county: 5
Cid soils—34 percent
Badin soils—19 percent
Misenheimer soils—14 percent
Minor soils—33 percent (including Goldston, Kirksey, Lignum, and Oakboro soils)

Soil Characteristics

Cid

Surface layer: Light brownish gray silt loam
Subsurface layer: Light yellowish brown silt loam
Subsoil: In sequence downward, brownish yellow silty clay loam that has pale brown mottles, brownish yellow silty clay, brownish yellow silty clay that has grayish brown mottles, and yellowish brown channery silty clay that has light gray mottles
Bedrock: Upper part—weathered, partially consolidated argillite; lower part—unweathered argillite

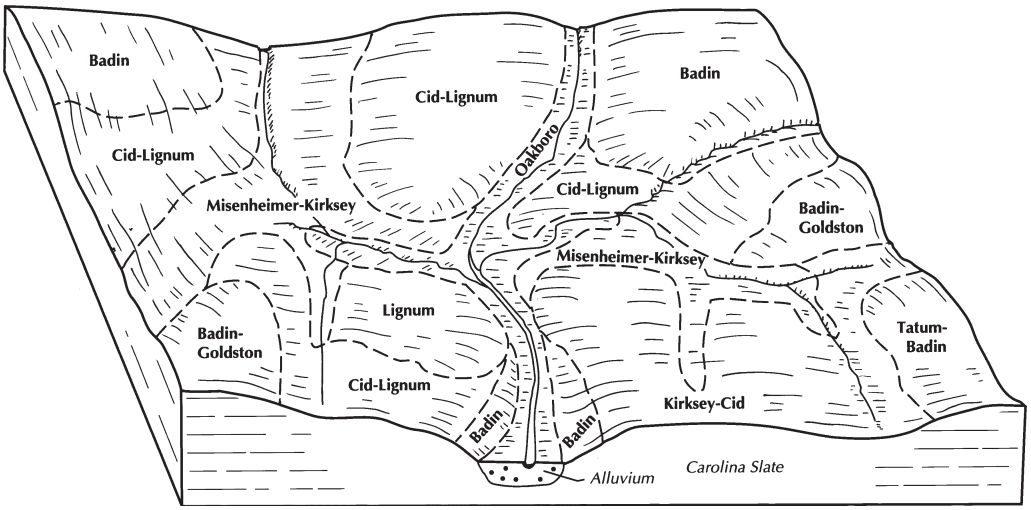

Figure 8.—The pattern of soils in the Cid-Badin-Misenheimer general soil map unit.

Depth class: Moderately deep
Drainage class: Moderately well drained or somewhat poorly drained
High water table: At a depth of 1.5 to 2.5 feet from December through May; perched
Slope range: 1 to 6 percent
Parent material: Residuum weathered from argillite and other fine grained rock of the Carolina Slate Belt

Badin
Surface layer: Yellowish brown channery silt loam
Subsoil: In sequence downward, reddish yellow silty clay loam, yellowish red silty clay, red silty clay, and mottled red, reddish yellow, and brownish yellow channery silty clay loam
Bedrock: Upper part—weathered, partially consolidated argillite; lower part—unweathered argillite
Depth class: Moderately deep
Drainage class: Well drained
Depth to high water table: More than 6.0 feet
Slope range: 2 to 30 percent
Parent material: Residuum weathered from argillite and other fine grained rock of the Carolina Slate Belt

Misenheimer
Surface layer: Dark grayish brown channery silt loam
Subsoil: Upper part—light yellowish brown channery silt loam that has light gray mottles; lower part—light yellowish brown channery silt loam that has gray mottles
Bedrock: Upper part—weathered, partially consolidated argillite; lower part—unweathered argillite
Depth class: Shallow
Drainage class: Moderately well drained or somewhat poorly drained
High water table: 1.0 to 1.5 feet from December through April; perched
Slope range: 0 to 5 percent
Parent material: Residuum weathered from argillite and other fine grained rock of the Carolina Slate Belt

Use and Management

Major Uses: Woodland, pasture, and cropland

Agriculture
Management concerns: Cid—wetness, depth to bedrock, and soil fertility; Badin—erodibility, soil fertility, rooting depth, and slope in the steeper areas; Misenheimer—wetness, soil fertility, and rooting depth

Urban development
Management concerns: Cid—wetness, restricted permeability, low strength, and shrink-swell potential; Badin—depth to bedrock, shrink-swell potential, low strength, and slope in the steeper areas; Misenheimer—wetness and depth to bedrock

Recreational development
Management concerns: Cid—wetness, depth to bedrock, and restricted permeability; Badin—depth to bedrock, content of rock fragments, and slope in the steeper areas; Misenheimer—wetness, content of rock fragments, and depth to bedrock

10. Badin-Goldston

Gently sloping to moderately steep, well drained to excessively drained upland soils that have a loamy surface layer and a clayey or loamy subsoil; shallow to moderately deep to saprolite; shallow to moderately deep to bedrock

Setting

Location in the county: Southeastern corner
Landform: Piedmont uplands
Landscape position: Broad to narrow ridges and side slopes (fig. 9)
Slope range: 2 to 30 percent

Extent and Composition

Percent of the county: 2
Badin soils—43 percent
Goldston soils—14 percent
Minor soils—43 percent (including Cid, Kirksey, Lignum, Misenheimer, Oakboro, and Tatum soils)

Soil Characteristics

Badin
Surface layer: Yellowish brown channery silt loam
Subsoil: In sequence downward, reddish yellow silty clay loam, yellowish red silty clay, red silty clay, and mottled red, reddish yellow, and brownish yellow channery silty clay loam that has mottles
Bedrock: Upper part—weathered, partially consolidated argillite; lower part—unweathered argillite
Depth class: Moderately deep
Drainage class: Well drained
Depth to high water table: More than 6.0 feet
Slope range: 2 to 30 percent

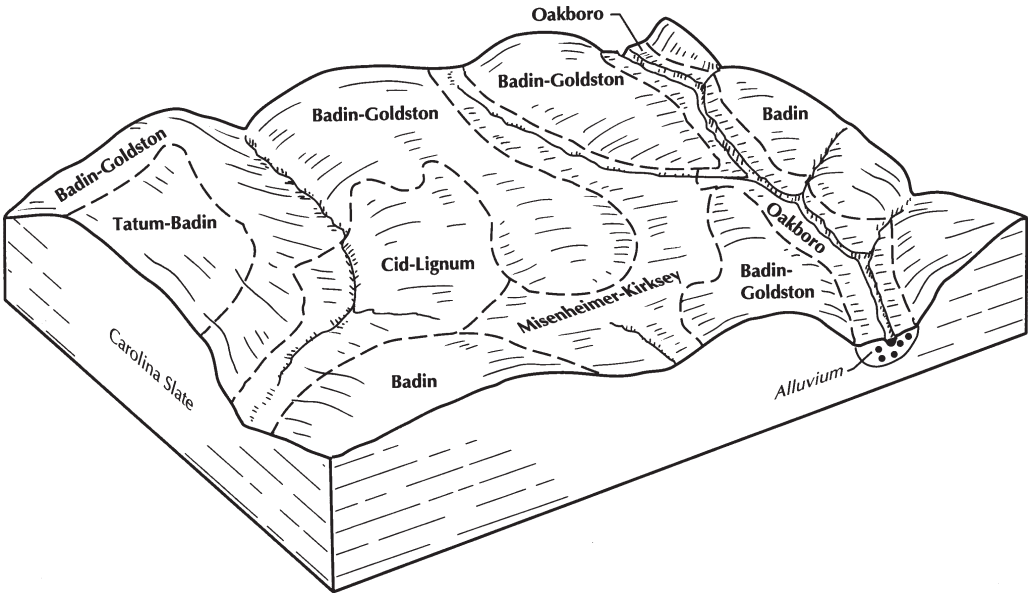

Figure 9.—The relationship between soils and landscape in the Badin-Goldston general soil map unit.

Parent material: Residuum weathered from argillite and other fine grained rock of the Carolina Slate Belt

Goldston
Surface layer: Yellowish brown channery silt loam
Subsoil: Light yellowish brown very channery silt loam
Bedrock: Upper part—weathered, partially consolidated argillite; lower part—unweathered argillite
Depth class: Shallow
Drainage class: Well drained to excessively drained
Depth to high water table: More than 6.0 feet
Slope range: 2 to 30 percent
Parent material: Residuum weathered from argillite and other fine grained rock of the Carolina Slate Belt

Use and Management

Major Uses: Woodland, cropland, and pasture

Agriculture
Management concerns: Badin—erodibility, soil fertility, rooting depth, and slope in the steeper areas; Goldston—rooting depth, droughtiness, soil fertility, and slope in the steeper areas

Urban development
Management concerns: Badin—depth to bedrock, shrink-swell potential, and low strength; Goldston—depth to bedrock

Recreational development
Management concerns: Content of rock fragments, depth to bedrock, and slope in the steeper areas

Detailed Soil Map Units

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

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

Most included soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, inclusions. They may or may not be mentioned in the map unit description. For example, the map unit Cecil sandy clay loam, 8 to 15 percent slopes, eroded, includes small areas having slopes of less than 8 percent or more than 15 percent. The unit also includes small areas that are slightly eroded. Generally, only those inclusions that are significant to use and management or that add to the user's understanding of the map unit concept are discussed.

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

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

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

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

Soils of one series can differ in texture of the surface layer, slope, stoniness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Cecil sandy 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 or miscellaneous areas. These map units are complexes. A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Badin-Goldston complex, 2 to 8 percent slopes, is an example.

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

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see “Contents”) give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

ApB—Appling sandy loam, 1 to 6 percent slopes

Setting

Landform: Piedmont uplands, mainly in the central and southwestern parts of the county
Landscape position: Broad ridges
Shape of areas: Irregular
Size of areas: 4 to 40 acres

Composition

Appling soil and similar inclusions: 90 percent
Dissimilar inclusions: 10 percent

Typical Profile

Surface layer:
0 to 8 inches—yellowish brown sandy loam

Subsurface layer:
8 to 12 inches—brownish yellow sandy loam

Subsoil:
12 to 16 inches—strong brown sandy clay loam
16 to 27 inches—yellowish red sandy clay that has brownish yellow and red mottles
27 to 38 inches—strong brown clay that has red and brownish yellow mottles
38 to 47 inches—red, strong brown, and yellow sandy clay loam

Underlying material:
47 to 60 inches—multicolored sandy loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained

Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Gently sloping
Surface runoff: Medium
Hazard of water erosion: Moderate
Soil reaction: Very strongly acid or strongly acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- The slowly permeable Vance soils in saddles and on foot slopes
- Wedowee soils that have saprolite at a depth of less than 40 inches and are on narrow ridges and side slopes
- The moderately well drained, slowly permeable Helena soils along drainageways
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Cecil soils that have a red subsoil and are on small knolls and ridge crests
- Random areas of Appling soils that have a surface layer of loamy sand

Use and Management

Major Uses: Cropland
Other Uses: Pasture and woodland

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine

Management concerns:
- This map unit has slight limitations affecting woodland management.

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.

Urban Development

Dwellings
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting dwellings.

Management measures and considerations:
- Vegetating disturbed areas and using erosion-control structures, such as sediment fences and catch basins, help to keep sediments onsite.

Septic tank absorption fields
Suitability: Suited
Management concerns: Restricted permeability
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting camp areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting picnic areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope and content of rock fragments
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.

- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

ArA—Armenia loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Piedmont uplands and river or stream valleys in most parts of the county
Landscape position: Upland flats, head of drainageways, areas along upland drainageways, depressional areas, and flood plains
Shape of areas: Oblong or long and narrow
Size of areas: 4 to 30 acres

Composition

Armenia soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 5 inches—very dark grayish brown loam

Subsoil:
5 to 14 inches—gray clay
14 to 23 inches—gray clay that has yellowish brown and greenish gray mottles
23 to 31 inches—light brownish gray clay that has yellowish brown and greenish gray mottles
31 to 40 inches—light olive gray clay that has light olive brown mottles
40 to 50 inches—light olive gray clay that has dark greenish gray, reddish brown, and greenish gray mottles
50 to 61 inches—olive gray clay loam that has olive, dark greenish gray, and light olive brown mottles

Underlying material:
61 to 65 inches—multicolored clay loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Slow
High water table: At a depth of 0.5 foot to 1.5 feet from December through April; apparent
Hazard of flooding: Frequent for brief periods from December through April
Shrink-swell potential: High
Slope class: Nearly level
Surface runoff: Slow

Hazard of water erosion: None or slight
Soil reaction: Moderately acid in the surface layer except where it has been limed; slightly acid to slightly alkaline in the subsoil and underlying material
Parent material: Residuum weathered from mafic metamorphic or igneous rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- The somewhat poorly drained, loamy Chewacla soils along drainageways of the flood plains
- The moderately well drained Iredell soils in the slightly higher landscape positions
- The moderately well drained or somewhat poorly drained Sedgefield soils in the slightly higher landscape positions
- The somewhat poorly drained Wahee soils in the slightly higher landscape positions on the flood plains

Similar inclusions:
- Random areas of Armenia soils that have a surface layer of silt loam
- Random areas of Armenia soils in which reaction in the lower part of the subsoil ranges to strongly acid

Use and Management

Major Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Flooding and wetness
Management measures and considerations:
- This map unit has severe limitations affecting crop production.
- A site on better suited soils should be selected.

Pasture and hayland
Suitability for pasture: Poorly suited
Suitability for hayland: Unsuited
Management concerns: Flooding and wetness
Management measures and considerations:
- This map unit has severe limitations affecting the production of pasture and hay crops.
- A site on better suited soils should be selected.
- Maintaining drainageways and ditches helps to remove excess water.
- Preventing overgrazing or preventing grazing when the soil is too wet helps to prevent compaction, decreased productivity, and a rough soil surface.

Woodland
Suitability: Suited
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use and seedling survival
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting the use of standard wheeled and tracked equipment to dry periods helps to prevent rutting and compaction, which occur when the soil is saturated.

- Maintaining drainageways and planting trees that are tolerant of wetness help to increase seedling survival rates.

Urban Development

Dwellings
Suitability: Unsuited
Management concerns: Flooding, wetness, and shrink-swell potential
Management measures and considerations:
- This map unit has severe limitations affecting dwellings.
- A site on better suited soils should be selected.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Flooding and wetness
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Wetness, low strength, and shrink-swell potential
Management measures and considerations:
- Constructing bridges or using culverts is necessary to cross streams and flood plains.
- Constructing roads on raised, well compacted fill material helps to overcome the wetness limitation.
- As much of the shrink-swell clay as possible should be removed and the thickness of the base aggravate increased.
- Providing sand and gravel and compacting roadbeds help to improve soil strength.

Recreational Development

Camp areas
Suitability: Unsuited
Management concerns: Flooding and wetness
Management measures and considerations:
- This map unit has severe limitations affecting camp areas.
- A site on better suited soils should be selected.

Picnic areas
Suitability: Unsuited
Management concerns: Wetness
Management measures and considerations:
- This map unit has severe limitations affecting picnic areas.
- A site on better suited soils should be selected.

Playgrounds
Suitability: Unsuited
Management concerns: Wetness and flooding
Management measures and considerations:
- This map unit has severe limitations affecting playgrounds.
- A site on better suited soils should be selected.

Interpretive Groups

Land capability classification: VIw
Woodland ordination symbol: 6W, based on loblolly pine as the indicator species

AsB—Ashlar-Rock outcrop complex, 2 to 8 percent slopes

Setting

Landform: Piedmont uplands, mainly in the east-central part of the county
Landscape position: Broad and narrow ridges and side slopes
Shape of areas: Irregular
Size of areas: 5 to 100 acres

Composition

Ashlar soil and similar inclusions: 65 percent
Rock outcrop: 20 percent
Dissimilar inclusions: 15 percent

Typical Profile

Ashlar
Surface layer:
0 to 9 inches—brown sandy loam

Subsoil:
9 to 17 inches—brownish yellow sandy loam
17 to 30 inches—light yellowish brown sandy loam that has reddish yellow mottles

Underlying material:
30 to 37 inches—mottled reddish yellow and light yellowish brown gravelly sandy loam saprolite

Bedrock:
37 inches—unweathered granite

Rock outcrop
Rock outcrop consists of unweathered granite that is exposed at the surface. In this map unit, about 20 percent of the soil surface has rock outcrops that average about 30 feet in length and 20 feet in width and are about 100 feet apart.

Soil Properties and Qualities

Depth class: Ashlar—moderately deep; Rock outcrop—not applicable
Drainage class: Ashlar—well drained; Rock outcrop—not applicable
Permeability: Ashlar—moderately rapid; Rock outcrop—not applicable
Depth to high water table: Ashlar—more than 6.0 feet; Rock outcrop—not applicable
Hazard of flooding: None
Shrink-swell potential: Ashlar—low; Rock outcrop—not applicable
Slope class: Gently sloping
Surface runoff: Ashlar—medium; Rock outcrop—very rapid
Hazard of water erosion: Ashlar—moderate; Rock outcrop—not applicable
Soil reaction: Ashlar—moderately acid to very strongly acid in the surface layer except where it has been limed and strongly acid or very strongly acid in the subsoil and underlying material; Rock outcrop—not applicable
Parent material: Ashlar—residuum weathered from granite or other coarse-grained felsic igneous rock; Rock outcrop—not applicable
Depth to bedrock: Ashlar—20 to 40 inches to hard bedrock; Rock outcrop—not applicable

Inclusions

Dissimilar inclusions:
- Random areas of the clayey Saw soils
- Random areas of the clayey Wedowee soils that have hard bedrock at a depth of more than 60 inches
- Random areas of Rion soils that have hard bedrock at a depth of more than 60 inches
- Random areas of soils that have hard bedrock at a depth of 40 to 60 inches
- Random areas of Ashlar soils that have a surface layer of gravelly sandy loam
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Ashlar soils that have a surface layer of loamy sand

Use and Management

Major Uses: Pasture and woodland
Other Uses: Cropland and urban development

Agricultural Development

Cropland
Suitability: Ashlar—suited; Rock outcrop—unsuited
Management concerns: Ashlar—erodibility, rooting depth, and soil fertility; Rock outcrop—equipment use
Management measures and considerations:
- Because of the areas of Rock outcrop, managing this map unit for cropland is difficult.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximizes crop productivity.
- Incorporating plant residue into the soil helps to improve the water-holding capacity, and using shallow-rooted crops helps to overcome the moderately deep rooting depth.

Pasture and hayland
Suitability for pasture: Ashlar—suited; Rock outcrop—unsuited
Suitability for hayland: Ashlar—poorly suited; Rock outcrop—unsuited
Management concerns: Equipment use, rooting depth, and soil fertility
Management measures and considerations:
- Because of the areas of Rock outcrop, managing this map unit for pasture and hayland is difficult.
- Using shallow-rooted or drought-tolerant plants helps to improve productivity in areas of the Ashlar soil.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Ashlar—well suited; Rock outcrop—unsuited
Productivity class: Ashlar—moderately high for loblolly pine; Rock outcrop—not applicable
Management concerns: Equipment use and windthrow hazard
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Planting trees by machine and mechanical site preparation may not be feasible in areas of Rock outcrop.
- Logging roads may not be feasible, and special designs and layouts are needed.

- Productivity may be increased in areas of the Ashlar soil by harvesting windthrown trees, which result from high winds and the limited rooting depth.

Urban Development

Dwellings
Suitability for dwellings without basements: Ashlar—suited; Rock outcrop—unsuited
Suitability for dwellings with basements: Ashlar—poorly suited; Rock outcrop—unsuited
Management concerns: Depth to bedrock and rock outcrops
Management measures and considerations:
- Drilling and blasting of rock or special earthmoving equipment may be needed to grade areas of the Ashlar soil.
- Only dwellings without basements should be built.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Depth to bedrock and rock outcrops
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Ashlar—suited; Rock outcrop—poorly suited
Management concerns: Depth to bedrock and rock outcrops
Management measures and considerations:
- Blasting or special grading equipment may be needed to construct roads on the Ashlar soil.

Recreational Development

Camp areas
Suitability: Ashlar—well suited; Rock outcrop—poorly suited
Management concerns: Large stones and rock outcrops
Management measures and considerations:
- Camp sites should be located in areas of the Ashlar soil.

Picnic areas
Suitability: Ashlar—well suited; Rock outcrop—poorly suited
Management concerns: Depth to bedrock and rock outcrops
Management measures and considerations:
- Picnic facilities should be located in areas of the Ashlar soil.

Playgrounds
Suitability: Poorly suited
Management concerns: Rock outcrop, depth to bedrock, and content of rock fragments
Management measures and considerations:
- This map unit is difficult to manage for playgrounds because of the rock outcrops.
- Playgrounds should be located in areas of the Ashlar soil, where large enough.
- The depth to bedrock should be determined before grading for playgrounds.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

- Rock fragments should be removed by raking, and the surface should be covered with fill material.

Interpretive Groups

Land capability classification: Ashlar—IIIe; Rock outcrop—VIIIs
Woodland ordination symbol: Ashlar—8S, based on loblolly pine as the indicator species; Rock outcrop—none assigned

AsC—Ashlar-Rock outcrop complex, 8 to 15 percent slopes

Setting

Landform: Piedmont uplands, mainly in the east-central part of the county
Landscape position: Narrow ridges and side slopes
Shape of areas: Oblong or irregular
Size of areas: 5 to 50 acres

Composition

Ashlar soil and similar inclusions: 65 percent
Rock outcrop: 20 percent
Dissimilar inclusions: 15 percent

Typical Profile

Ashlar
Surface layer:
0 to 9 inches—brown sandy loam

Subsoil:
9 to 17 inches—brownish yellow sandy loam
17 to 30 inches—light yellowish brown sandy loam that has reddish yellow mottles

Underlying material:
30 to 37 inches—mottled reddish yellow and light yellowish brown gravelly sandy loam saprolite

Bedrock:
37 inches—unweathered granite

Rock outcrop
Rock outcrop consists of unweathered granite that is exposed at the surface. In this map unit, about 20 percent of the soil surface has rock outcrops that average about 30 feet in length and 20 feet in width and are about 100 feet apart.

Soil Properties and Qualities

Depth class: Ashlar—moderately deep; Rock outcrop—not applicable
Drainage class: Ashlar—well drained; Rock outcrop—not applicable
Permeability: Ashlar—moderately rapid; Rock outcrop—not applicable
Depth to high water table: Ashlar—more than 6.0 feet; Rock outcrop—not applicable
Hazard of flooding: None
Shrink-swell potential: Ashlar—low; Rock outcrop—not applicable
Slope class: Strongly sloping
Surface runoff: Ashlar—medium; Rock outcrop—very rapid
Hazard of water erosion: Ashlar—severe; Rock outcrop—not applicable

Soil reaction: Ashlar—moderately acid to very strongly acid in the surface layer except where it has been limed and strongly acid or very strongly acid in the subsoil and underlying material; Rock outcrop—not applicable
Parent material: Ashlar—residuum weathered from granite or other coarse grained felsic igneous rock; Rock outcrop—not applicable
Depth to bedrock: Ashlar—20 to 40 inches to hard bedrock; Rock outcrop—not applicable

Inclusions

Dissimilar inclusions:
- Random areas of the clayey Saw soils
- Random areas of the clayey Wedowee soils that have hard bedrock at a depth of more than 60 inches
- Random areas of Rion soils that have hard bedrock at a depth of more than 60 inches
- Random areas of soils that have hard bedrock at a depth of 40 to 60 inches
- Random areas of Ashlar soils that have a surface layer of gravelly sandy loam
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Ashlar soils that have a surface layer of loamy sand

Use and Management

Major Uses: Woodland
Other Uses: Pasture and urban development

Agricultural Development

Cropland
Suitability: Ashlar—suited; Rock outcrop—unsuited
Management concerns: Ashlar—erodibility, rooting depth, and soil fertility; Rock outcrop—equipment use
Management measures and considerations:
- Because of the areas of Rock outcrop, managing this map unit for cropland is difficult.

Pasture and hayland
Suitability for pasture: Ashlar—suited; Rock outcrop—unsuited
Suitability for hayland: Ashlar—poorly suited; Rock outcrop—unsuited
Management concerns: Equipment use, rooting depth, and erodibility
Management measures and considerations:
- Because of the areas of Rock outcrop, managing this map unit for pasture and hayland is difficult.
- Using shallow-rooted or drought-tolerant plants helps to improve productivity in areas of the Ashlar soil.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination in areas of the Ashlar soil.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Ashlar—well suited; Rock outcrop—unsuited
Productivity class: Ashlar—moderately high for loblolly pine; Rock outcrop—not applicable
Management concerns: Equipment use and windthrow hazard

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Planting trees by machine and mechanical site preparation may not be feasible in areas of Rock outcrop.
- Productivity may be increased in areas of the Ashlar soil by harvesting windthrown trees, which result from high winds and the limited rooting depth.
- Logging roads and skid trails may not be feasible, and special designs and layouts are needed.

Urban Development

Dwellings
Suitability for dwellings without basements: Ashlar—suited; Rock outcrop—unsuited
Suitability for dwellings with basements: Ashlar—poorly suited; Rock outcrop—unsuited
Management concerns: Depth to bedrock, slope, and rock outcrops
Management measures and considerations:
- Drilling and blasting of rock or special earthmoving equipment may be needed to grade areas of the Ashlar soil.
- Only dwellings without basements should be built.
- Designing structures so that they conform to the natural slope helps to overcome the slope limitation.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Depth to bedrock and rock outcrops
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Ashlar—suited; Rock outcrop—poorly suited
Management concerns: Depth to bedrock, slope, and rock outcrops
Management measures and considerations:
- Blasting or special grading equipment may be needed to construct roads on the Ashlar soil.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.

Recreational Development

Camp areas
Suitability: Ashlar—suited; Rock outcrop—poorly suited
Management concerns: Slope and rock outcrops
Management measures and considerations:
- Camp sites should be located in areas of the Ashlar soil.
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and keep sediments onsite.

Picnic areas
Suitability: Ashlar—suited; Rock outcrop—poorly suited
Management concerns: Slope and rock outcrops

Management measures and considerations:
- Picnic facilities should be located in areas of the Ashlar soil.
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and keep sediments onsite.

Playgrounds
Suitability: Unsuited
Management concerns: Slope and rock outcrops
Management measures and considerations:
- This map unit has severe limitations affecting playgrounds.
- A site on better suited soils should be selected.

Interpretive Groups

Land capability classification: Ashlar—IVe; Rock outcrop—VIIIs
Woodland ordination symbol: Ashlar—8S, based on loblolly pine as the indicator species; Rock outcrop—none assigned

AsD—Ashlar-Rock outcrop complex, 15 to 25 percent slopes

Setting

Landform: Piedmont uplands, mainly in the east-central part of the county
Landscape position: Narrow ridges and side slopes
Shape of areas: Long and narrow
Size of areas: 5 to 15 acres

Composition

Ashlar soil and similar inclusions: 65 percent
Rock outcrop: 20 percent
Dissimilar inclusions: 15 percent

Typical Profile

Ashlar
Surface layer:
0 to 9 inches—brown sandy loam

Subsoil:
9 to 17 inches—brownish yellow sandy loam
17 to 30 inches—light yellowish brown sandy loam that has reddish yellow mottles

Underlying material:
30 to 37 inches—mottled reddish yellow and light yellowish brown gravelly sandy loam saprolite

Bedrock:
37 inches—unweathered granite

Rock outcrop
Rock outcrop consists of unweathered granite that is exposed at the surface. In this map unit, about 20 percent of the soil surface has rock outcrops that average about 30 feet in length and 20 feet in width and are about 100 feet apart.

Soil Properties and Qualities

Depth class: Ashlar—moderately deep; Rock outcrop—not applicable
Drainage class: Ashlar—well drained; Rock outcrop—not applicable
Permeability: Ashlar—moderately rapid; Rock outcrop—not applicable
Depth to high water table: Ashlar—more than 6.0 feet; Rock outcrop—not applicable
Hazard of flooding: None
Shrink-swell potential: Ashlar—low; Rock outcrop—not applicable
Slope class: Moderately steep
Surface runoff: Ashlar—rapid; Rock outcrop—very rapid
Hazard of water erosion: Ashlar—very severe; Rock outcrop—not applicable
Soil reaction: Ashlar—moderately acid to very strongly acid in the surface layer except where it has been limed and strongly acid or very strongly acid in the subsoil and underlying material; Rock outcrop—not applicable
Parent material: Ashlar—residuum weathered from granite or other coarse grained felsic igneous rock; Rock outcrop—not applicable
Depth to bedrock: Ashlar—20 to 40 inches to hard bedrock; Rock outcrop—not applicable

Inclusions

Dissimilar inclusions:
- Random areas of Pacolet soils that have a clayey subsoil, are redder than the Ashlar soil, and have hard bedrock at a depth of more than 60 inches
- Random areas of soils that have hard bedrock at a depth of 40 to 60 inches
- Random areas of Ashlar soils that have a surface layer of gravelly sandy loam
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Ashlar soils that have a surface layer of loamy sand

Use and Management

Major Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Ashlar—poorly suited; Rock outcrop—unsuited
Management concerns: Ashlar—erodibility and equipment use; Rock outcrop—equipment use
Management measures and considerations:
- This map unit has severe limitations affecting crop production because of the slope and rock outcrops.
- A site on better suited soils should be selected.

Pasture and hayland
Suitability for pasture: Ashlar—suited; Rock outcrop—unsuited
Suitability for hayland: Ashlar—poorly suited; Rock outcrop—unsuited
Management concerns: Equipment use, rooting depth, and erodibility
Management measures and considerations:
- Because of the areas of Rock outcrop, managing this map unit for pasture and hayland is difficult.
- Using shallow-rooted or drought-tolerant plants helps to improve productivity in areas of the Ashlar soil.
- Constructing trails facilitates the grazing of livestock in areas where access is limited.

- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination in areas of the Ashlar soil.

Woodland
Suitability: Ashlar—suited; Rock outcrop—unsuited
Productivity class: Ashlar—moderately high for loblolly pine; Rock outcrop—not applicable
Management concerns: Erodibility, equipment use, and windthrow hazard
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Planting trees by machine and mechanical site preparation may not be feasible.
- Reforestation immediately after harvest using minimal site preparation and recommended tree species helps to control erosion and siltation of streams.
- Using cable logging methods helps to overcome the limitation to road and trail construction caused by the large amount of rock outcrops on the soil surface.
- Logging roads and skid trails may not be feasible, and special designs and layouts are needed.
- Productivity may be increased in areas of the Ashlar soil by harvesting windthrown trees, which result from high winds and the limited rooting depth.

Urban Development

Dwellings
Suitability: Poorly suited
Management concerns: Depth to bedrock, slope, and rock outcrops
Management measures and considerations:
- Designing structures so that they conform to the natural slope and building in the less sloping areas help to overcome the slope limitation.
- Drilling and blasting of rock or special earthmoving equipment may be needed to grade areas of the Ashlar soil.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Depth to bedrock, slope, and rock outcrops
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Ashlar—suited; Rock outcrop—poorly suited
Management concerns: Depth to bedrock, slope, and rock outcrops
Management measures and considerations:
- Blasting or special grading equipment may be needed to construct roads on the Ashlar soil.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive soil erosion.

Recreational Development

Camp areas
Suitability: Poorly suited
Management concerns: Slope, large stones, and rock outcrops
Management measures and considerations:
- Camp sites should be located in areas of the Ashlar soil.

- Designing roads and trails on the contour and locating camping facilities in the less sloping areas help to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Large stones should be removed as necessary.

Picnic areas
Suitability: Poorly suited
Management concerns: Slope and rock outcrops
Management measures and considerations:
- Picnic facilities should be located in areas of the Ashlar soil.
- Designing roads and trails on the contour and locating picnic facilities in the less sloping areas help to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Large stones should be removed as necessary.

Playgrounds
Suitability: Unsuited
Management concerns: Slope and rock outcrops
Management measures and considerations:
- This map unit has severe limitations affecting playgrounds.
- A site on better suited soils should be selected.

Interpretive Groups

Land capability classification: Ashlar—VIe; Rock outcrop—VIIIs
Woodland ordination symbol: Ashlar—8R, based on loblolly pine as the indicator species; Rock outcrop—none assigned

BaB—Badin channery silt loam, 2 to 8 percent slopes

Setting

Landform: Piedmont uplands in the southeastern corner of the county
Landscape position: Broad ridges
Shape of areas: Irregular
Size of areas: 4 to 150 acres

Composition

Badin soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 6 inches—yellowish brown channery silt loam

Subsoil:
6 to 9 inches—reddish yellow silty clay loam
9 to 16 inches—yellowish red silty clay
16 to 25 inches—red silty clay
25 to 35 inches—mottled red, reddish yellow, and brownish yellow channery silty clay loam

Bedrock:
35 to 43 inches—weathered, partially consolidated argillite
43 inches—unweathered argillite

Soil Properties and Qualities

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Moderate
Slope class: Gently sloping
Surface runoff: Medium
Hazard of water erosion: Moderate
Soil reaction: Strongly acid to extremely acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Depth to bedrock: 20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock

Inclusions

Dissimilar inclusions:
- Random areas of Tatum soils that have soft bedrock at a depth of 40 to 60 inches
- Random areas of Goldston soils that have soft bedrock at a depth of less than 20 inches
- Random areas of Badin soils that have a surface layer of channery silty clay loam or silty clay loam and commonly occur in cultivated areas
- The moderately well drained or somewhat poorly drained Cid, Lignum, and Misenheimer soils along drainageways
- The moderately well drained Kirksey soils along drainageways
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Badin soils that have a surface layer of loam or fine sandy loam

Use and Management

Major Uses: Cropland and woodland
Other Uses: Pasture and cropland

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Erodibility, rooting depth, and soil fertility
Management measures and considerations:
- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.
- Incorporating plant residue into the soil helps to improve the water-holding capacity, and using shallow-rooted crops helps to overcome the moderately deep rooting depth.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility and soil fertility

Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Windthrow hazard
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Productivity may be increased by harvesting windthrown trees, which result from high winds and the limited rooting depth.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Shrink-swell potential and depth to bedrock
Management measures and considerations:
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Special earthmoving equipment may be needed to grade this soil prior to building.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Depth to bedrock
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Locating sites on the deeper soils included in the map unit may improve the performance of filter fields.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Content of rock fragments
Management measures and considerations:
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Content of rock fragments
Management measures and considerations:
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Poorly suited
Management concerns: Content of rock fragments
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 8D, based on loblolly pine as the indicator species

BaC—Badin channery silt loam, 8 to 15 percent slopes

Setting

Landform: Piedmont uplands in the southeastern corner of the county
Landscape position: Narrow ridges and side slopes
Shape of areas: Oblong or long and narrow
Size of areas: 4 to 100 acres

Composition

Badin soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 6 inches—yellowish brown channery silt loam

Subsoil:
6 to 9 inches—reddish yellow silty clay loam
9 to 16 inches—yellowish red silty clay
16 to 25 inches—red silty clay
25 to 35 inches—mottled red, reddish yellow, and brownish yellow channery silty clay loam

Bedrock:
35 to 43 inches—weathered, partially consolidated argillite
43 inches—unweathered argillite

Soil Properties and Qualities

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Moderate
Slope class: Strongly sloping
Surface runoff: Medium or rapid
Hazard of water erosion: Severe
Soil reaction: Strongly acid to extremely acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Depth to bedrock: 20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock

Inclusions

Dissimilar inclusions:
- Random areas of Tatum soils that have soft bedrock at a depth of 40 to 60 inches
- Random areas of Goldston soils that have soft bedrock at a depth of less than 20 inches
- Random areas of Badin soils that have a surface layer of channery silty clay loam or silty clay loam and commonly occur in cultivated areas
- The moderately well drained or somewhat poorly drained Cid, Lignum, and Misenheimer soils along drainageways
- The moderately well drained Kirksey soils along drainageways
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Badin soils that have a surface layer of silt loam or fine sandy loam

Use and Management

Major Uses: Woodland and pasture
Other Uses: Cropland and hayland

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Erodibility, rooting depth, and soil fertility
Management measures and considerations:
- Resource management systems that include conservation tillage, crop residue management, stripcropping, and sod-based rotations help to minimize erosion, control surface runoff, and maximize the infiltration of water.
- Incorporating plant residue into the soil helps to improve the water-holding capacity, and using shallow-rooted crops helps to overcome the moderately deep rooting depth.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Well suited
Suitability for hayland: Suited
Management concerns: Erodibility, equipment use, and soil fertility

Management measures and considerations:
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Windthrow hazard
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Productivity may be increased by harvesting windthrown trees, which result from high winds and the limited rooting depth.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Depth to bedrock, slope, and shrink-swell potential
Management measures and considerations:
- Designing structures so that they conform to the natural slope helps to overcome the slope limitation.
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Special earthmoving equipment may be needed to grade this soil prior to building.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Depth to bedrock
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Locating sites on the deeper soils included in the map unit may improve the performance of filter fields.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive soil erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Slope and content of rock fragments
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Slope and content of rock fragments
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Poorly suited
Management concerns: Slope and content of rock fragments
Management measures and considerations:
- Extensive grading, including cutting and filling, is needed.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 8D, based on loblolly pine as the indicator species

BaD—Badin channery silt loam, 15 to 30 percent slopes

Setting

Landform: Piedmont uplands in the southeastern corner of the county
Landscape position: Narrow side slopes
Shape of areas: Long and narrow
Size of areas: 4 to 100 acres

Composition

Badin soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 6 inches—yellowish brown channery silt loam

Subsoil:
6 to 9 inches—reddish yellow silty clay loam
9 to 16 inches—yellowish red silty clay
16 to 25 inches—red silty clay

25 to 35 inches—mottled red, reddish yellow, and brownish yellow channery silty clay loam

Bedrock:
35 to 43 inches—weathered, partially consolidated argillite
43 inches—unweathered argillite

Soil Properties and Qualities

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Moderate
Slope class: Moderately steep
Surface runoff: Rapid
Hazard of water erosion: Very severe
Soil reaction: Strongly acid to extremely acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Depth to bedrock: 20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock

Inclusions

Dissimilar inclusions:
- Random areas of Goldston soils that have soft bedrock at a depth of less than 20 inches
- Random areas of the eroded Badin soils that have a surface layer of channery silty clay loam
- Tatum soils that have soft bedrock at a depth of 40 to 60 inches and are on the less sloping parts of the landscape
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Badin soils that have a surface layer of silt loam or fine sandy loam

Use and Management

Major Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Poorly suited
Management concerns: Erodibility and equipment use
Management measures and considerations:
- This map unit is difficult to manage for cultivated crops because the slope limits equipment use.
- Cultivation should be restricted to the less sloping areas of this map unit, or areas on better suited soils should be selected for cropland.
- Resource management systems that include conservation tillage, crop residue management, stripcropping, and sod-based rotations help to minimize erosion, control surface runoff, and maximize the infiltration of water.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Suited
Suitability for hayland: Poorly suited
Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- The slope limits equipment use in the steeper areas.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Constructing trails facilitates the grazing of livestock in areas where access is limited.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximizes productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Suited
Productivity class: Moderately high for loblolly pine
Management concerns: Erodibility, equipment use, and windthrow hazard
Management measures and considerations:
- Establishing permanent plant cover on roads and landings after logging operations helps to control erosion and siltation of streams.
- Reforestation immediately after harvest using minimal site preparation and recommended tree species helps to control erosion and siltation of streams.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the slope limitation.
- Productivity may be increased by harvesting windthrown trees, which result from high winds and limited rooting depth.

Urban Development

Dwellings
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope and building in the less sloping areas help to overcome the slope limitation.
- Special earthmoving equipment may be needed to grade this soil prior to building.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Depth to bedrock and slope
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength and slope

Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive soil erosion.

Recreational Development

Camp areas
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing roads and trails on the contour and locating camping facilities in the less sloping areas help to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing roads and trails on the contour and locating picnic facilities in the less sloping areas help to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Unsuited
Management concerns: Slope and content of rock fragments
Management measures and considerations:
- This map unit has severe limitations affecting playgrounds.
- A site on better suited soils should be selected.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 8R, based on loblolly pine as the indicator species

BgB—Badin-Goldston complex, 2 to 8 percent slopes

Setting

Landform: Piedmont uplands in the southeastern corner of the county
Landscape position: Ridgetops
Shape of areas: Irregular
Size of areas: 5 to 200 acres

Composition

Badin soil and similar inclusions: 60 percent
Goldston soil and similar inclusions: 25 percent
Dissimilar inclusions: 15 percent

Typical Profile

Badin

Surface layer:
0 to 6 inches—yellowish brown channery silt loam

Subsoil:
6 to 9 inches—reddish yellow silty clay loam
9 to 16 inches—yellowish red silty clay
16 to 25 inches—red silty clay
25 to 35 inches—mottled red, reddish yellow, and brownish yellow channery silty clay loam

Bedrock:
35 to 43 inches—weathered, partially consolidated argillite
43 inches—unweathered argillite

Goldston

Surface layer:
0 to 4 inches—yellowish brown channery silt loam

Subsoil:
4 to 17 inches—light yellowish brown very channery silt loam

Bedrock:
17 to 27 inches—weathered, partially consolidated argillite
27 inches—unweathered argillite

Soil Properties and Qualities

Depth class: Badin—moderately deep; Goldston—shallow
Drainage class: Badin—well drained; Goldston—well drained to excessively drained
Permeability: Badin—moderate; Goldston—moderately rapid
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Badin—moderate; Goldston—low
Slope class: Gently sloping
Surface runoff: Badin—medium; Goldston—rapid
Hazard of water erosion: Moderate
Soil reaction: Moderately acid to extremely acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Depth to bedrock: Badin—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock; Goldston—10 to 20 inches to soft bedrock and 20 to 40 inches or more to hard bedrock

Inclusions

Dissimilar inclusions:
- Random areas of Tatum soils that have soft bedrock at a depth of 40 to 60 inches
- The moderately well drained or somewhat poorly drained Misenheimer soils on low ridges, in flat areas, and along drainageways
- Random areas of Badin soils that have a surface layer of channery silty clay loam and commonly occur in cultivated areas
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Badin and Goldston soils that have a surface layer of channery loam or channery fine sandy loam

Use and Management

Major Uses: Woodland
Other Uses: Cropland and pasture

Agricultural Development

Cropland
Suitability: Badin—suited; Goldston—poorly suited
Management concerns: Badin—erodibility and soil fertility; Goldston—erodibility, droughtiness, rooting depth, and soil fertility
Management measures and considerations:
- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.
- Because of the shallow rooting depth, managing areas of the Goldston soil for economical crop production is difficult.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Badin—well suited; Goldston—suited
Suitability for hayland: Badin—well suited; Goldston—poorly suited
Management concerns: Badin—soil fertility; Goldston—droughtiness, rooting depth, and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Using shallow-rooted or drought-tolerant plants helps to improve productivity in areas of the Goldston soil.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Badin—well suited; Goldston—suited
Productivity class: Moderately high for loblolly pine
Management concerns: Badin—windthrow hazard; Goldston—seedling survival and windthrow hazard
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Maintaining surface litter helps to increase water infiltration and reduce seedling mortality rates.
- Productivity may be increased by harvesting windthrown trees, which result from high winds and the limited rooting depth.

Urban Development

Dwellings
Suitability for dwellings without basements: Suited
Suitability for dwellings with basements: Badin—suited; Goldston—poorly suited
Management concerns: Depth to bedrock and shrink-swell potential

Management measures and considerations:
- Special earthmoving equipment may be needed to grade these soils prior to building.
- Only dwellings without basements should be built on the Goldston soil.
- Reinforcing foundations or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling of the Badin soil.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Depth to bedrock
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Locating sites on the deeper soils included in the map unit may improve the performance of filter fields.

Local roads and streets
Suitability: Badin—poorly suited; Goldston—suited
Management concerns: Badin—low strength; Goldston—depth to bedrock
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength in areas of the Badin soil.
- Blasting or special grading equipment may be needed to construct roads on the Goldston soil.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive soil erosion.

Recreational Development

Camp areas
Suitability: Badin—suited; Goldston—poorly suited
Management concerns: Badin—content of rock fragments; Goldston—depth to bedrock
Management measures and considerations:
- Camp sites should be located in areas of the Badin soil.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Badin—suited; Goldston—poorly suited
Management concerns: Badin—content of rock fragments; Goldston—depth to bedrock
Management measures and considerations:
- Picnic facilities should be located in areas of the Badin soil.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Poorly suited
Management concerns: Content of rock fragments and depth to bedrock

Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- The depth to bedrock should be determined before grading for playgrounds.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Interpretive Groups

Land capability classification: Badin—IIIe; Goldston—IVs
Woodland ordination symbol: Based on loblolly pine as the indicator species, 8D in areas of the Badin soil and 7D in areas of the Goldston soil

BgC—Badin-Goldston complex, 8 to 15 percent slopes

Setting

Landform: Piedmont uplands in the southeastern corner of the county
Landscape position: Narrow ridges and side slopes
Shape of areas: Oblong or long and narrow
Size of areas: 5 to 50 acres

Composition

Badin soil and similar inclusions: 60 percent
Goldston soil and similar inclusions: 25 percent
Dissimilar inclusions: 15 percent

Typical Profile

Badin
Surface layer:
0 to 6 inches—yellowish brown channery silt loam

Subsoil:
6 to 9 inches—reddish yellow silty clay loam
9 to 16 inches—yellowish red silty clay
16 to 25 inches—red silty clay
25 to 35 inches—mottled red, reddish yellow, and brownish yellow channery silty clay loam

Bedrock:
35 to 43 inches—weathered, partially consolidated argillite
43 inches—unweathered argillite

Goldston
Surface layer:
0 to 4 inches—yellowish brown channery silt loam

Subsoil:
4 to 17 inches—light yellowish brown very channery silt loam

Underlying material:
17 to 27 inches—weathered, partially consolidated argillite

Bedrock:
27 inches—unweathered argillite

Soil Properties and Qualities

Depth class: Badin—moderately deep; Goldston—shallow
Drainage class: Badin—well drained; Goldston—well drained to excessively drained
Permeability: Badin—moderate; Goldston—moderately rapid
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Badin—moderate; Goldston—low
Slope class: Strongly sloping
Surface runoff: Badin—medium or rapid; Goldston—rapid
Hazard of water erosion: Severe
Soil reaction: Strongly acid to extremely acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Depth to bedrock: Badin—20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock; Goldston—10 to 20 inches to soft bedrock and 20 to 40 inches to hard bedrock

Inclusions

Dissimilar inclusions:
- Tatum soils that have soft bedrock at a depth of 40 to 60 inches and are on the upper side slopes and on ridge crests
- Random areas of Badin soils that have a surface layer of channery silty clay loam and commonly occur in cultivated areas
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Badin and Goldston soils that have a surface layer of channery loam or channery fine sandy loam

Use and Management

Major Uses: Woodland
Other Uses: Pasture and cropland

Agricultural Development

Cropland
Suitability: Badin—suited; Goldston—poorly suited
Management concerns: Badin—erodibility and soil fertility; Goldston—erodibility, droughtiness, rooting depth, and soil fertility
Management measures and considerations:
- Resource management systems that include conservation tillage, crop residue management, stripcropping, and sod-based rotations help to minimize erosion, control surface runoff, and maximize the infiltration of water.
- Because of the shallow rooting depth, managing areas of the Goldston soil for economical crop production is difficult.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Badin—well suited; Goldston—suited
Suitability for hayland: Badin—suited; Goldston—poorly suited
Management concerns: Badin—erodibility and soil fertility; Goldston—erodibility, droughtiness, rooting depth, and soil fertility

Management measures and considerations:
- Preparing seedbeds on the contour or across the slope helps to minimize erosion and increase germination.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Using shallow-rooted or drought-tolerant plants helps to improve productivity in areas of the Goldston soil.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Badin—well suited; Goldston—suited
Productivity class: Moderately high for loblolly pine
Management concerns: Badin—windthrow hazard; Goldston—seedling survival and windthrow hazard
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Maintaining surface litter helps to increase the infiltration of water and reduce seedling mortality rates.
- Productivity may be increased by harvesting windthrown trees, which result from high winds and the limited rooting depth.

Urban Development

Dwellings
Suitability for dwellings without basements: Suited
Suitability for dwellings with basements: Badin—suited; Goldston—poorly suited
Management concerns: Slope, depth to bedrock, and shrink-swell potential
Management measures and considerations:
- Special earthmoving equipment may be needed to grade these soils prior to building.
- Only dwellings without basements should be built on the Goldston soil.
- Reinforcing foundations or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling of the Badin soil.
- Designing structures so that they conform to the natural slope helps to overcome the slope limitation.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Depth to bedrock and slope
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Locating sites on the deeper soils included in the map unit may improve the performance of filter fields.

Local roads and streets
Suitability: Badin—poorly suited; Goldston—suited
Management concerns: Badin—low strength; Goldston—depth to bedrock and slope

Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength in areas of the Badin soil.
- Blasting or special grading equipment may be needed to construct roads on the Goldston soil.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive soil erosion.

Recreational Development

Camp areas
Suitability: Badin—suited; Goldston—poorly suited
Management concerns: Badin—content of rock fragments and slope; Goldston—depth to bedrock
Management measures and considerations:
- Camp sites should be located in areas of the Badin soil.
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Badin—suited; Goldston—poorly suited
Management concerns: Badin—content of rock fragments and slope; Goldston—depth to bedrock
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Picnic facilities should be located in areas of the Badin soil.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Poorly suited
Management concerns: Slope, content of rock fragments, and depth to bedrock
Management measures and considerations:
- Extensive grading, including cutting and filling, is needed.
- The depth to bedrock should be determined before grading for playgrounds.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: Badin—IVe; Goldston—IVs
Woodland ordination symbol: Based on loblolly pine as the indicator species, 8D in areas of the Badin soil and 7D in areas of the Goldston soil

CcB—Cecil sandy loam, 2 to 8 percent slopes

Setting

Landform: Piedmont uplands, mainly in the central and western parts of the county
Landscape position: Broad ridges
Shape of areas: Irregular
Size of areas: 5 to 150 acres

Composition

Cecil soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 3 inches—brown sandy loam

Subsurface layer:
3 to 9 inches—yellowish brown sandy loam

Subsoil:
9 to 12 inches—red sandy clay loam
12 to 21 inches—red clay
21 to 32 inches—red clay that has brownish yellow mottles
32 to 51 inches—red clay loam that has brownish yellow mottles

Underlying material:
51 to 60 inches—red loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Gently sloping
Surface runoff: Medium or rapid
Hazard of water erosion: Moderate
Soil reaction: Very strongly acid or strongly acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Pacolet soils that have saprolite at a depth of less than 40 inches
- Random areas of Cecil soils that have a surface layer of sandy clay loam and commonly occur in cultivated areas
- Random areas of Hiwassee soils that have a surface layer of dark red clay loam, are dark red in the upper part of the subsoil, and commonly occur in cultivated areas

Similar inclusions:
- Random areas of Cecil soils that have a surface layer of loam or fine sandy loam
- Appling soils that have a subsoil that is yellower than that of the Cecil soil and are on the more level parts of the landscape

Use and Management

Major Uses: Woodland
Other Uses: Cropland and urban development

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns:
- This map unit has slight limitations affecting woodland management.

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.

Urban Development

Dwellings
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting dwellings.

Management measures and considerations:
- Vegetating disturbed areas and using erosion-control structures, such as sediment fences and catch basins, help to keep sediments onsite.

Septic tank absorption fields
Suitability: Suited
Management concerns: Restricted permeability
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.

Recreational Development

Camp areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting camp areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting picnic areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope and content of rock fragments
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

CcC—Cecil sandy loam, 8 to 15 percent slopes

Setting

Landform: Piedmont uplands, mainly in the central and western parts of the county
Landscape position: Narrow ridges and side slopes
Shape of areas: Oblong or irregular
Size of areas: 5 to 100 acres

Composition

Cecil soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 3 inches—brown sandy loam

Subsurface layer:
3 to 9 inches—yellowish brown sandy loam

Subsoil:
9 to 12 inches—red sandy clay loam
12 to 21 inches—red clay
21 to 32 inches—red clay that has brownish yellow mottles
32 to 51 inches—red clay loam that has brownish yellow mottles

Underlying material:
51 to 60 inches—red loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Surface runoff: Medium or rapid
Hazard of water erosion: Severe
Soil reaction: Very strongly acid or strongly acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Pacolet soils that have saprolite at a depth of less than 40 inches
- Random areas of Cecil soils that have a surface layer of sandy clay loam and commonly occur in cultivated areas
- Random areas of Hiwassee soils that have a surface layer of dark red clay loam, are dark red in the upper part of the subsoil, and commonly occur in cultivated areas

Similar inclusions:
- Random areas of Cecil soils that have a surface layer of loam or fine sandy loam

Use and Management

Major Uses: Woodland
Other Uses: Pasture and urban development

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Resource management systems that include conservation tillage, crop residue management, stripcropping, and sod-based rotations help to minimize erosion, control surface runoff, and maximize the infiltration of water.

- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Well suited
Suitability for hayland: Suited
Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns:
- This map unit has slight limitations affecting woodland management.

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope helps to overcome the slope limitation.
- Vegetating disturbed areas and using erosion-control structures, such as sediment fences and catch basins, help to keep sediments onsite.

Septic tank absorption fields
Suitability: Suited
Management concerns: Restricted permeability and slope
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive soil erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Extensive grading, including cutting and filling, is needed.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

CeB2—Cecil sandy clay loam, 2 to 8 percent slopes, eroded

Setting

Landform: Piedmont uplands, mainly in the central and western parts of the county
Landscape position: Broad ridges
Shape of areas: Irregular
Size of areas: 5 to 300 acres

Composition

Cecil soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 7 inches—yellowish red sandy clay loam

Subsoil:
7 to 10 inches—red sandy clay loam

10 to 16 inches—red clay loam
16 to 33 inches—red clay
33 to 41 inches—red clay that has brownish yellow mottles
41 to 51 inches—red clay loam that has brownish yellow mottles

Underlying material:
51 to 71 inches—red loam saprolite that has brownish yellow mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Gently sloping
Surface runoff: Medium or rapid
Hazard of water erosion: Severe
Soil reaction: Very strongly acid or strongly acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Pacolet soils that have saprolite at a depth of less than 40 inches
- Random areas of Cecil soils that have a surface layer of sandy loam
- Random areas of the slowly permeable Mecklenburg soils that are less acid than the Cecil soil

Similar inclusions:
- Random areas of Hiwassee soils that have a surface layer of dark red clay loam and are dark red in the upper part of the subsoil

Use and Management

Major Uses: Cropland and pasture
Other Uses: Hayland and urban development

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility, tilth, and soil fertility
Management measures and considerations:
- Special care is needed to prevent further erosion; using resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops helps to stabilize the soil, control surface runoff, and maximize the infiltration of rainfall.
- Restricting tillage to dry periods and incorporating crop residue into the soil or leaving residue on the soil surface help to minimize clodding and crusting and maximize the infiltration of water.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited

Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Special care is needed to prevent further erosion when renovating pastures or establishing seedbeds.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use and seedling survival
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting logging operations to dry periods helps to prevent rutting and possible root damage from compaction.
- Preparing the site by harrowing helps to establish seedlings, reduce seedling mortality rates, and increase early seedling growth.

Urban Development

Dwellings
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting dwellings.

Management measures and considerations:
- Vegetating disturbed areas and using erosion-control structures, such as sediment fences and catch basins, help to keep sediments onsite.

Septic tank absorption fields
Suitability: Suited
Management concerns: Restricted permeability
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive soil erosion.

Recreational Development

Camp areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting camp areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting picnic areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope and content of rock fragments
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 7C, based on loblolly pine as the indicator species

CeC2—Cecil sandy clay loam, 8 to 15 percent slopes, eroded

Setting

Landform: Piedmont uplands, mainly in the central and western parts of the county
Landscape position: Narrow ridges and side slopes
Shape of areas: Oblong or irregular
Size of areas: 5 to 60 acres

Composition

Cecil soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 7 inches—yellowish red sandy clay loam

Subsoil:
7 to 10 inches—red sandy clay loam
10 to 16 inches—red clay loam
16 to 33 inches—red clay
33 to 41 inches—red clay that has brownish yellow mottles
41 to 51 inches—red clay loam that has brownish yellow mottles

Underlying material:
51 to 71 inches—red loam saprolite that has brownish yellow mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Surface runoff: Rapid
Hazard of water erosion: Very severe
Soil reaction: Very strongly acid or strongly acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Pacolet soils that have saprolite at a depth of less than 40 inches
- Random areas of Cecil soils that have a surface layer of sandy loam
- Random areas of the slowly permeable Mecklenburg soils that are less acid than the Cecil soil

Similar inclusions:
- Random areas of Hiwassee soils that have a surface layer of dark red clay loam and are dark red in the upper part of the subsoil

Use and Management

Major Uses: Cropland and pasture
Other Uses: Woodland and urban development

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Erodibility, tilth, and soil fertility
Management measures and considerations:
- Special care is needed to prevent further erosion; using resource management systems that include conservation tillage, crop residue management, stripcropping, and sod-based rotations helps to stabilize the soil, control surface runoff, and maximize the infiltration of rainfall.
- Restricting tillage to dry periods and incorporating crop residue into the soil or leaving residue on the soil surface help to minimize clodding and crusting and maximize the infiltration of water.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Well suited
Suitability for hayland: Suited
Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

- Special care is needed to prevent further erosion when renovating pastures or establishing seedbeds.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use and seedling survival
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting logging operations to dry periods helps to prevent rutting and possible root damage from compaction.
- Preparing the site by harrowing helps to establish seedlings, reduce seedling mortality rates, and increase early seedling growth.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope helps to overcome the slope limitation.
- Vegetating disturbed areas and using erosion-control structures, such as sediment fences and catch basins, help to keep sediments onsite.

Septic tank absorption fields
Suitability: Suited
Management concerns: Restricted permeability and slope
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive soil erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Slope

Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Designing structures on the contour and in conformance with the natural slope or locating picnic facilities in the less sloping areas helps to improve soil performance.
- A level area with a surface of gravel fill material should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Extensive grading, including cutting and filling, is needed.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 7C, based on loblolly pine as the indicator species

CfB—Cecil-Urban land complex, 2 to 8 percent slopes

Setting

Landform: Piedmont uplands, mainly in and near Salisbury, Spencer, Landis, and other urban areas throughout the county
Landscape position: Broad ridges
Shape of areas: Rectangular or irregular
Size of areas: 5 to 250 acres

Composition

Cecil soil and similar inclusions: 55 percent
Urban land: 30 percent
Dissimilar inclusions: 15 percent

Typical Profile

Cecil
Surface layer:
0 to 7 inches—yellowish red sandy clay loam

Subsoil:
7 to 10 inches—red sandy clay loam
10 to 16 inches—red clay loam

16 to 33 inches—red clay
33 to 41 inches—red clay that has brownish yellow mottles
41 to 51 inches—red clay loam that has brownish yellow mottles

Underlying material:
51 to 71 inches—red loam saprolite that has brownish yellow mottles

Urban land

Urban land consists of areas mostly covered by commercial, industrial, or other urban buildings, paved streets and sidewalks, paved parking lots, closely spaced houses, or other impervious materials so that identification of the natural soil is not feasible.

Soil Properties and Qualities

Depth class: Cecil—very deep; Urban land—not applicable
Permeability: Cecil—moderate; Urban land—not applicable
Depth to high water table: Cecil—more than 6.0 feet; Urban land—not applicable
Hazard of flooding: Cecil—none; Urban land—not applicable
Shrink-swell potential: Cecil—low; Urban land—not applicable
Slope class: Gently sloping
Surface runoff: Cecil—medium; Urban land—very rapid
Hazard of water erosion: Cecil—severe; Urban land—not applicable
Soil reaction: Cecil—very strongly acid or strongly acid throughout the profile except where the surface layer has been limed; Urban land—not applicable
Parent material: Cecil—residuum weathered from felsic metamorphic or igneous rock; Urban land—not applicable
Depth to bedrock: Cecil—more than 60 inches; Urban land—not applicable

Inclusions

Dissimilar inclusions:
- Random areas of Pacolet soils that have saprolite at a depth of less than 40 inches
- Random areas of Cecil soils that have a surface layer of sandy loam
- Random areas of the slowly permeable Mecklenburg soils that are less acid than the Cecil soil
- The slowly permeable Vance soils that have a yellow subsoil and are in saddles and on foot slopes

Similar inclusions:
- Random areas of Hiwassee soils that have a surface layer of dark red clay loam and are dark red in the upper part of the subsoil

Use and Management

Major Uses: Urban development
Other Uses: None

Agricultural Development

Cropland
Suitability: Poorly suited
Management concerns: Limited size of natural soil areas
Management measures and considerations:
- Crop production is generally not feasible because of the size of areas of the Cecil soil and the intermittent areas of Urban land.

Pasture and hayland
Suitability: Poorly suited
Management concerns: Limited size of natural soil areas

Management measures and considerations:
- The production of pasture and hay crops is generally not feasible because of the limited size of areas of the Cecil soil and the intermittent areas of Urban land.

Woodland
Suitability: Poorly suited
Productivity class: Not applicable
Management concerns: Limited size of natural soil areas
Management measures and considerations:
- Timber production is rarely feasible because of the limited size of areas of the Cecil soil and the intermittent areas of Urban land, but trees could be planted primarily for their aesthetic value.

Urban Development

Dwellings
Suitability: Cecil—well suited; Urban land—not applicable
Management concerns: Limited size of natural soil areas
Management measures and considerations:
- The Cecil soil has few limitations affecting dwellings.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Cecil—suited; Urban land—not applicable
Management concerns: Cecil—restricted permeability; Urban land—not applicable
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Cecil—suited; Urban land—not applicable
Management concerns: Cecil—low strength; Urban land—not applicable
Management measures and considerations:
- Carefully planning the location of roads helps to minimize the disturbance of existing structures.
- Providing sand and gravel and compacting roadbeds help to improve soil strength.

Recreational Development

Camp areas
Suitability: Cecil—well suited; Urban land—not applicable
Management concerns: Cecil—limited size and urbanization; Urban land—not applicable
Management measures and considerations:
- Trees or environmental plantings can be used to screen camp areas from urban areas.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Cecil—well suited; Urban land—not applicable
Management concerns: Cecil—limited size and urbanization; Urban land—not applicable

Management measures and considerations:
- Trees or environmental plantings can be used to screen picnic areas from urban areas.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Cecil—suited; Urban land—not applicable
Management concerns: Cecil—slope and content of rock fragments; Urban land—not applicable
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.
- Trees or environmental plantings can be used to screen playground areas from urban areas.

Interpretive Groups

Land capability classification: Cecil—IIIe; Urban land—VIIIs
Woodland ordination symbol: None assigned

ChA—Chewacla loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: River or stream valleys and drainageways of the Piedmont, in areas throughout the county
Landscape position: Flood plains
Shape of areas: Long and narrow or oblong
Size of areas: 5 to 2,000 acres

Composition

Chewacla soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 6 inches—reddish brown loam

Subsoil:
6 to 11 inches—reddish brown sandy clay loam
11 to 17 inches—yellowish red sandy clay loam
17 to 25 inches—yellowish red sandy clay loam that has light brownish gray and strong brown mottles
25 to 32 inches—light brownish gray clay loam that has brown and strong brown mottles

Underlying material:
32 to 38 inches—grayish brown clay loam

38 to 47 inches—gray clay loam that has yellowish red and strong brown mottles
47 to 60 inches—light gray sandy clay loam that has pockets of clay and sand

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
High water table: At a depth of 0.5 foot to 1.5 feet from November through April; apparent
Hazard of flooding: Frequent for brief to long periods from November through April (fig. 10)
Shrink-swell potential: Low
Slope class: Nearly level
Surface runoff: Slow
Hazard of water erosion: None or slight
Soil reaction: Very strongly acid to slightly acid in the surface layer and the upper part of the subsoil except where the surface layer has been limed; very strongly acid to slightly alkaline in the lower part of the subsoil and in the underlying material
Parent material: Recent alluvium
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- The well drained Riverview soils in the slightly higher landscape positions, commonly closest to the stream channel

Figure 10.—Flooding in an area of Chewacla loam, 0 to 2 percent slopes, frequently flooded. It is a major limitation affecting most land uses for this soil.

- The clayey Wahee soils in the slightly higher landscape positions at the base of upland slopes on adjacent stream terraces
- Soils that have a clayey subsoil and are in landscape positions similar to those of the Chewacla soil
- Poorly drained soils in low, depressional areas at the foot of upland slopes

Similar inclusions:

- Random areas of Chewacla soils that have a surface layer of silt loam, fine sandy loam, or sandy loam

Use and Management

Major Uses: Woodland and pasture
Other Uses: Cropland

Agricultural Development

Cropland
Suitability: Poorly suited
Management concerns: Flooding and wetness
Management measures and considerations:

- Because of the potential for flooding and wetness during the growing season, managing this map unit for cropland is difficult.
- Harvesting crops as soon as possible helps to reduce the risk of damage caused by flooding.
- Installing a drainage system that includes open ditches, perforated tile, or land shaping helps to increase productivity.
- Performing tillage and harvesting operations when the soil is not wet helps to prevent rutting caused by equipment.

Pasture and hayland
Suitability: Suited
Management concerns: Flooding and wetness
Management measures and considerations:

- Preventing overgrazing or preventing grazing when the soil is too wet helps to prevent compaction, decreased productivity, and a rough soil surface.
- Harvesting hay crops as soon as possible helps to reduce the risk of damage caused by flooding.
- Installing a subsurface drainage system helps to improve the productivity of moisture-sensitive crops.

Woodland
Suitability: Well suited
Productivity class: Moderately high for yellow-poplar
Management concerns: Equipment use
Management measures and considerations:

- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting the use of standard wheeled and tracked equipment to dry periods helps to prevent rutting and compaction, which occur when the soil is saturated.

Urban Development

Dwellings
Suitability: Unsuited
Management concerns: Flooding and wetness
Management measures and considerations:

- This map unit has severe limitations affecting dwellings.
- A site on better suited soils should be selected.

Septic tank absorption fields
Suitability: Unsuited
Management concerns: Flooding and wetness
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength, flooding, and wetness
Management measures and considerations:
- Constructing bridges or using culverts is necessary to cross streams and flood plains.
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Constructing roads on raised, well compacted fill material helps to overcome the wetness and flooding limitations.

Recreational Development

Camp areas
Suitability: Unsuited
Management concerns: Flooding and wetness
Management measures and considerations:
- This map unit has severe limitations affecting camp areas.
- A site on better suited soils should be selected.

Picnic areas
Suitability: Poorly suited
Management concerns: Flooding and wetness
Management measures and considerations:
- Providing raised surfaces of gravel fill material for tables and other facilities helps to overcome the wetness limitation.
- This map unit should not be used for picnic areas after heavy rains when flooding is a hazard.

Playgrounds
Suitability: Poorly suited
Management concerns: Wetness and flooding
Management measures and considerations:
- Providing raised surfaces of gravel fill material for facilities helps to minimize the wetness limitation.
- Using an artificial drainage system or diversions helps to remove excess surface water.
- This map unit should not be used for playgrounds after heavy rains when flooding is a hazard.

Interpretive Groups

Land capability classification: IVw
Woodland ordination symbol: 7W, based on yellow-poplar as the indicator species

CmB—Cid-Lignum complex, 1 to 6 percent slopes

Setting

Landform: Piedmont uplands in the southeastern corner of the county
Landscape position: Broad ridges and broad upland flats

Shape of areas: Oblong or irregular
Size of areas: 5 to 400 acres

Composition

Cid soil and similar inclusions: 65 percent
Lignum soil and similar inclusions: 20 percent
Dissimilar inclusions: 15 percent

Typical Profile

Cid
Surface layer:
0 to 2 inches—light brownish gray silt loam

Subsurface layer:
2 to 6 inches—light yellowish brown silt loam

Subsoil:
6 to 10 inches—brownish yellow silty clay loam that has pale brown mottles
10 to 19 inches—brownish yellow silty clay
19 to 27 inches—brownish yellow silty clay that has grayish brown mottles
27 to 35 inches—yellowish brown channery silty clay that has light gray mottles

Bedrock:
35 to 39 inches—weathered, partially consolidated argillite
39 inches—unweathered argillite

Lignum
Surface layer:
0 to 4 inches—light olive brown silt loam

Subsurface layer:
4 to 9 inches—light yellowish brown silt loam

Subsoil:
9 to 18 inches—brownish yellow silty clay loam that has reddish yellow mottles
18 to 23 inches—brownish yellow silty clay loam that has reddish yellow, olive yellow, and light brownish gray mottles
23 to 29 inches—brownish yellow silty clay that has light gray mottles
29 to 36 inches—mottled brownish yellow and light gray silty clay loam

Underlying material:
36 to 54 inches—multicolored channery silt loam saprolite

Bedrock:
54 to 60 inches—weathered, partially consolidated argillite

Soil Properties and Qualities

Depth class: Cid—moderately deep; Lignum—deep
Drainage class: Moderately well drained or somewhat poorly drained
Permeability: Cid—slow; Lignum—very slow
High water table: At a depth of 1.5 to 2.5 feet from December through May; perched
Hazard of flooding: None
Shrink-swell potential: Moderate
Slope class: Nearly level or gently sloping
Surface runoff: Medium or slow
Hazard of water erosion: Moderate or severe

Soil reaction: Strongly acid or very strongly acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Depth to bedrock: Cid—20 to 40 inches to hard bedrock; Lignum—40 to 60 inches to soft bedrock

Inclusions

Dissimilar inclusions:
- The well drained Badin soils that have a subsoil that is redder than that of the Cid or Lignum soil and are on small ridges and small knolls
- Random areas of the deep, loamy Kirksey soils on the lower parts of the landscape
- The shallow, loamy Misenheimer soils in the slightly lower, flat areas
- Poorly drained soils in depressional areas and along drainageways

Similar inclusions:
- Random areas of Cid and Lignum soils that have a surface layer of loam
- Random areas of Cid and Lignum soils in which reaction in the lower part of the subsoil and in the underlying material ranges to slightly acid

Use and Management

Major Uses: Woodland and pasture
Other Uses: Cropland

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Wetness, soil fertility, and erodibility
Management measures and considerations:
- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.
- Performing tillage and harvesting operations when the soils are not wet helps to prevent clodding and rutting caused by equipment.
- Using open ditches and diversions to divert water helps to improve productivity.
- Planting wetness-tolerant species in undrained areas helps to improve productivity.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Wetness, erodibility, and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and minimize erosion.
- Preventing overgrazing or preventing grazing when the soil is too wet helps to prevent compaction, decreased productivity, and a rough soil surface.
- Using open ditches and diversions to divert water helps to improve productivity.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Cid—equipment use and windthrow hazard; Lignum—seedling survival
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting the use of standard wheeled and tracked equipment to dry periods helps to prevent rutting and compaction, which occur when the soils are saturated.
- Productivity may be increased in areas of the Cid soil by harvesting windthrown trees, which result from high winds and the limited rooting depth.

Urban Development

Dwellings
Suitability for dwellings without basements: Suited
Suitability for dwellings with basements: Poorly suited
Management concerns: Cid—wetness, shrink-swell potential, and depth to bedrock; Lignum—wetness and shrink-swell potential
Management measures and considerations:
- Building structures on the highest part of the landscape and using an artificial drainage system help to reduce the risk of damage caused by wetness.
- Reinforcing foundations or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Only dwellings without basements should be built.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads to safely remove surface runoff helps to improve soil performance.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
- Locating camp sites on the higher parts of the landscape allows surface water to run off and helps to keep the sites drier during wet periods.
- Using diversions helps to remove excess surface water and minimize the permeability limitation.
- Providing raised surfaces of gravel fill material for camp sites helps to minimize the wetness limitation.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
- Locating picnic sites on the higher parts of the landscape allows surface water to run off and helps to keep the sites drier during wet periods.
- Providing raised surfaces of gravel fill material for tables and other facilities helps to minimize the wetness limitation.
- Using diversions helps to remove excess surface water and minimize the permeability limitation.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope, wetness, content of rock fragments, and restricted permeability
Management measures and considerations:
- Using an artificial drainage system or diversions helps to remove excess surface water and helps to minimize the wetness and permeability limitations.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: Based on loblolly pine as the indicator species, 6W in areas of the Cid soil and 7W in areas of the Lignum soil

DoA—Dogue fine sandy loam, 0 to 2 percent slopes, rarely flooded

Setting

Landform: River or stream valleys of the Piedmont, mainly along Grants, Second, Third, and Fourth Creeks
Landscape position: Low stream terraces
Shape of areas: Irregular
Size of areas: 5 to 25 acres

Composition

Dogue soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 6 inches—brown fine sandy loam

Subsurface layer:
6 to 10 inches—pale brown fine sandy loam

Subsoil:
10 to 18 inches—olive yellow clay loam that has very pale brown mottles
18 to 23 inches—olive yellow clay loam that has pale yellow and reddish yellow mottles
23 to 31 inches—yellowish brown clay that has light gray and olive yellow mottles
31 to 38 inches—mottled olive yellow, light gray, and strong brown clay
38 to 50 inches—mottled gray, strong brown, and yellowish brown clay

Underlying material:
50 to 60 inches—pale yellow sandy clay loam that has light gray mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow
High water table: At a depth of 1.5 to 3.0 feet from January through March; apparent
Hazard of flooding: Rare
Shrink-swell potential: Moderate
Slope class: Nearly level
Surface runoff: Slow
Hazard of water erosion: None or slight
Rock fragments on the surface: None
Soil reaction: Extremely acid to strongly acid throughout the profile except where the surface layer has been limed
Parent material: Old alluvium
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- The somewhat poorly drained, frequently flooded Chewacla soils that have a loamy subsoil and are on flood plains along drainageways
- Moderately well drained soils that have a loamy subsoil and are in landscape positions similar to those of the Dogue soil
- The somewhat poorly drained Wahee soils in low, depressional areas

Similar inclusions:
- Random areas of Dogue soils that have a surface layer of sandy loam or loam

Use and Management

Major Uses: Cropland and woodland
Other Uses: Pasture and hayland

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Flooding, wetness, and soil fertility
Management measures and considerations:
- Harvesting crops as soon as possible helps to reduce the risk of damage caused by flooding.
- Installing an artificial drainage system helps to reduce the wetness limitation and improve productivity.
- Performing tillage and harvesting operations when the soil is not wet helps to prevent rutting caused by equipment.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Rare flooding, wetness, and soil fertility
Management measures and considerations:
- Preventing overgrazing or preventing grazing when the soil is too wet helps to prevent compaction, decreased productivity, and a rough soil surface.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: High for loblolly pine
Management concerns: Equipment use
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting logging operations to periods when the soil is not saturated helps to prevent rutting and damage to tree roots due to compaction.

Urban Development

Dwellings
Suitability: Poorly suited
Management concerns: Flooding and wetness
Management measures and considerations:
- Constructing dwellings on raised, well compacted fill material helps to reduce the risk of damage caused by wetness.
- Using an artificial drainage system or diversions helps to remove excess surface water.
- A site on better suited soils should be selected.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads to safely remove surface runoff helps to improve soil performance.
- Constructing bridges or using culverts is necessary to cross drainageways or wet areas.

Recreational Development

Camp areas
Suitability: Poorly suited
Management concerns: Flooding
Management measures and considerations:
- Building structures on the highest part of the landscape helps to reduce the risk of damage caused by flooding.

- This map unit should not be used for camp areas after heavy rains when flooding is a hazard.

Picnic areas
Suitability: Suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
- Building structures on the highest part of the landscape helps to reduce the risk of damage caused by flooding.
- Providing raised surfaces of gravel fill material for tables and other facilities helps to minimize the wetness limitation.
- Locating picnic sites on the higher parts of the landscape allows surface water to run off and helps to keep the sites drier during wet periods.
- This map unit should not be used for picnic areas after heavy rains when flooding is a hazard.

Playgrounds
Suitability: Suited
Management concerns: Wetness and content of rock fragments
Management measures and considerations:
- Using an artificial drainage system or diversions helps to remove excess surface water and minimize the wetness limitation.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- This map unit should not be used for playgrounds after heavy rains when flooding is a hazard.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IIw
Woodland ordination symbol: 9A, based on loblolly pine as the indicator species

DoB—Dogue fine sandy loam, 2 to 6 percent slopes, rarely flooded

Setting

Landform: River or stream valleys of the Piedmont, mainly along Grants, Second, Third, and Fourth Creeks and the South Yadkin River
Landscape position: Low stream terraces
Shape of areas: Oblong or irregular
Size of areas: 5 to 50 acres

Composition

Dogue soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 6 inches—brown fine sandy loam

Subsurface layer:
6 to 10 inches—pale brown fine sandy loam

Subsoil:
10 to 18 inches—olive yellow clay loam that has very pale brown mottles
18 to 23 inches—olive yellow clay loam that has pale yellow and reddish yellow mottles
23 to 31 inches—yellowish brown clay that has light gray and olive yellow mottles
31 to 38 inches—mottled olive yellow, light gray, and strong brown clay
38 to 50 inches—mottled gray, strong brown, and yellowish brown clay

Underlying material:
50 to 60 inches—pale yellow sandy clay loam that has light gray mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow
High water table: 1.5 to 3.0 feet from January through March; apparent
Hazard of flooding: Rare
Shrink-swell potential: Moderate
Slope class: Gently sloping
Surface runoff: Medium
Hazard of water erosion: Moderate
Soil reaction: Extremely acid to strongly acid throughout the profile except where the surface layer has been limed
Parent material: Old alluvium
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Dogue soils that are not subject to flooding and are on the upper side slopes and in the slightly higher landscape positions
- Moderately well drained soils that have a loamy subsoil and are in landscape positions similar to those of the Dogue soil
- Random areas of the well drained Wickham soils that have a red loamy subsoil
- Random areas of the eroded Dogue soils that have a surface layer of sandy clay loam or clay loam and commonly occur in cultivated areas

Similar inclusions:
- Random areas of Dogue soils that have a surface layer of sandy loam or loam

Use and Management

Major Uses: Cropland
Other Uses: Pasture and woodland

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility, wetness, and soil fertility
Management measures and considerations:
- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.
- Performing tillage and harvesting operations when the soil is not wet helps to prevent rutting caused by equipment.

- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility, wetness, and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and minimize erosion.
- Preventing overgrazing or preventing grazing when the soil is too wet helps to prevent compaction, decreased productivity, and a rough soil surface.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: High for loblolly pine
Management concerns: Equipment use
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting logging operations to periods when the soil is not saturated helps to prevent rutting and damage to tree roots due to compaction.

Urban Development

Dwellings
Suitability: Poorly suited
Management concerns: Flooding and wetness
Management measures and considerations:
- Building structures on the highest part of the landscape or in areas of the nonflooding included soils helps to reduce the risk of damage caused by flooding.
- Using an artificial drainage system or diversions helps to remove excess surface water.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads to safely remove surface runoff helps to improve soil performance.

Recreational Development

Camp areas
Suitability: Poorly suited
Management concerns: Flooding

Management measures and considerations:
- Building structures on the highest part of the landscape helps to reduce the risk of damage caused by flooding.
- Locating camp sites on raised surfaces of gravel fill material helps to minimize the wetness limitation.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Moderately suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
- Providing raised surfaces of gravel fill material for tables and other facilities helps to minimize the wetness limitation.
- Locating picnic sites on the higher parts of the landscape allows surface water to run off and helps to keep the sites drier during wet periods.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope, content of rock fragments, and wetness
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Using an artificial drainage system or diversions helps to remove excess surface water and minimize the wetness limitation.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 9A, based on loblolly pine as the indicator species

EnB—Enon fine sandy loam, 2 to 8 percent slopes

Setting

Landform: Piedmont uplands, mainly in the central and northwestern parts of the county
Landscape position: Broad ridges
Shape of areas: Irregular
Size of areas: 5 to 200 acres

Composition

Enon soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 7 inches—brown fine sandy loam

Subsoil:
7 to 10 inches—brownish yellow sandy clay loam
10 to 17 inches—strong brown clay
17 to 27 inches—yellowish brown clay
27 to 33 inches—mottled yellowish brown, light olive brown, and pale yellow clay loam

Underlying material:
33 to 72 inches—multicolored loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: High
Slope class: Gently sloping
Surface runoff: Medium
Hazard of water erosion: Moderate
Soil reaction: Strongly acid to slightly acid in the surface layer except where it has been limed; strongly acid to slightly alkaline in the subsoil and underlying material
Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- The moderately well drained Sedgefield soils along drainageways and in depressional areas
- Mecklenburg soils that have a subsoil that is redder than that of the Enon soil, have a moderate shrink-swell potential, and are on small knolls
- Random areas of Zion soils that have hard bedrock at a depth of 20 to 40 inches
- Random areas of Enon soils that have a surface layer of clay loam and commonly occur in cultivated areas
- Random areas of Mocksville soils that have a loamy subsoil
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Enon soils that have a surface layer of loam or sandy loam
- Random areas of Vance soils that are more acid than the Enon soil

Use and Management

Major Uses: Woodland and cropland
Other Uses: Pasture and urban development

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns:
- This map unit has slight limitations affecting woodland management.

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.

Urban Development

Dwellings
Suitability: Poorly suited
Management concerns: Shrink-swell potential
Management measures and considerations:
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Restricted permeability
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Shrink-swell potential and low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- As much of the shrink-swell clay as possible should be removed and the thickness of the base aggravate increased.
- Installing geotextile fabric between the base aggravate and final surface of the road helps to overcome the limitations.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive soil erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Restricted permeability
Management measures and considerations:

- Locating camp sites on the higher parts of the landscape allows good surface drainage.
- Providing a graveled area for tents and other facilities helps to overcome the restricted permeability.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Restricted permeability
Management measures and considerations:
- Locating picnic sites on the higher parts of the landscape allows good surface drainage.
- Providing a graveled area for tables and other facilities helps to overcome the restricted permeability.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope, restricted permeability, and small stones
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Using diversions helps to remove excess surface water and minimize the permeability limitations.
- Small stones should be removed.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 7A, based on loblolly pine as the indicator species

EnC—Enon fine sandy loam, 8 to 15 percent slopes

Setting

Landform: Piedmont uplands, mainly in the central and northwestern parts of the county
Landscape position: Narrow ridges and side slopes
Shape of areas: Oblong or irregular
Size of areas: 5 to 50 acres

Composition

Enon soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 7 inches—brown fine sandy loam

Subsoil:
7 to 10 inches—brownish yellow sandy clay loam
10 to 17 inches—strong brown clay
17 to 27 inches—yellowish brown clay
27 to 33 inches—mottled yellowish brown, light olive brown, and pale yellow clay loam

Underlying material:
33 to 72 inches—multicolored loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: High
Slope class: Strongly sloping
Surface runoff: Medium or rapid
Hazard of water erosion: Severe
Soil reaction: Strongly acid to slightly acid in the surface layer except where it has been limed; strongly acid to slightly alkaline in the subsoil and underlying material
Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- The moderately well drained Sedgefield soils on foot slopes and along drainageways
- Mecklenburg soils that have a subsoil that is redder than that of the Enon soil, have a moderate shrink-swell potential, and are on the upper side slopes and on ridge crests
- Random areas of Zion soils that have hard bedrock at a depth of 20 to 40 inches
- Random areas of Enon soils that have a surface layer of clay loam and commonly occur in cultivated areas
- Random areas of Poindexter soils that have a loamy subsoil and have soft bedrock at a depth of 20 to 40 inches
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Enon soils that have a surface layer of loam or sandy loam
- Random areas of Vance soils that are more acid than the Enon soil

Use and Management

Major Uses: Woodland and pasture
Other Uses: Cropland and urban development

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Resource management systems that include conservation tillage, crop residue management, stripcropping, and sod-based rotations help to minimize erosion, control surface runoff, and maximize the infiltration of water.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Well suited
Suitability for hayland: Suited
Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns:
- This map unit has slight limitations affecting woodland management.

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.

Urban Development

Dwellings
Suitability: Poorly suited
Management concerns: Shrink-swell potential and slope
Management measures and considerations:
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Designing structures so that they conform to the natural slope helps to overcome the slope limitation.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Restricted permeability
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Shrink-swell potential and low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- As much of the shrink-swell clay as possible should be removed and the thickness of the base aggravate increased.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Installing geotextile fabric between the base aggravate and final surface of the road helps to overcome the limitations.

- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Slope and restricted permeability
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Slope and restricted permeability
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Extensive grading, including cutting and filling, is needed.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 7A, based on loblolly pine as the indicator species

EsC—Enon very cobbly loam, 4 to 15 percent slopes, very stony

Setting

Landform: Piedmont uplands, mainly in the northwestern part of the county
Landscape position: Narrow ridges and side slopes
Shape of areas: Oblong or irregular
Size of areas: 5 to 100 acres

Composition

Enon soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 8 inches—dark grayish brown very cobbly loam

8 to 13 inches—yellowish brown sandy clay loam
13 to 33 inches—yellowish brown clay
33 to 39 inches—light olive brown clay

Underlying material:
39 to 60 inches—multicolored fine sandy loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: High
Slope class: Strongly sloping
Surface runoff: Medium or rapid
Hazard of water erosion: Moderate
Rock fragments on the surface: Stones 10 to 24 inches in diameter and about 42 inches apart; boulders averaging about 40 inches in diameter and 40 to 50 feet apart
Soil reaction: Strongly acid to slightly acid in the surface layer except where it has been limed; strongly acid to slightly alkaline in the subsoil and underlying material
Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Enon soils that do not have a very cobbly or very stony surface
- The moderately well drained Sedgefield soils along drainageways and in depressional areas
- Random areas of Zion soils that have hard bedrock at a depth of 20 to 40 inches
- Random areas where rock outcrops are widely scattered on the surface

Similar inclusions:
- Random areas of Enon soils that have a cobbly or stony surface

Use and Management

Major Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Equipment use
Management measures and considerations:
- This map unit has severe limitations affecting crop production because of stones and cobbles.
- A site on better suited soils should be selected.

Pasture and hayland
Suitability: Unsuited
Management concerns: Equipment use
Management measures and considerations:
- This map unit has severe limitations affecting the production of pasture and hay crops because of stones and cobbles.

- A site on better suited soils should be selected.

Woodland
Suitability: Suited
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use and seedling survival
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Planting trees by machine and mechanical site preparation may not be feasible.
- Logging roads and skid trails may not be feasible, and special designs and layouts are needed.
- In this map unit, the required distances for skidding and cabling are longer than usual.
- Tracked equipment should be not be used, and sharp stones may cause damage to rubber-tired equipment.

Urban Development

Dwellings
Suitability: Poorly suited
Management concerns: Shrink-swell potential and stones
Management measures and considerations:
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Designing structures so that they conform to the natural slope helps to overcome the slope limitation.
- Clearing stones from the building site may be necessary.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Restricted permeability
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Shrink-swell potential and low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- As much of the shrink-swell clay as possible should be removed and the thickness of the base aggravate increased.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Installing geotextile fabric between the base aggravate and final surface of the road helps to overcome the limitations.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Poorly suited
Management concerns: Stones, slope, and content of rock fragments

Management measures and considerations:
- Camp sites should be located in the less stony areas.
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Cobbles and stones should be removed as necessary.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Poorly suited
Management concerns: Stones, slope, and content of rock fragments
Management measures and considerations:
- Picnic facilities should be located in the less stony areas.
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Cobbles and stones should be removed as necessary.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Unsuited
Management concerns: Stones, slope, and content of rock fragments
Management measures and considerations:
- This map unit has severe limitations affecting playgrounds.
- A site on better suited soils should be selected.

Interpretive Groups

Land capability classification: VIs
Woodland ordination symbol: 7X, based on loblolly pine as the indicator species

EsD—Enon very cobbly loam, 15 to 25 percent slopes, very stony

Setting

Landform: Piedmont uplands, mainly in the northwestern part of the county
Landscape position: Very narrow ridges and side slopes
Shape of areas: Oblong or long and narrow
Size of areas: 5 to 50 acres

Composition

Enon soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 8 inches—dark grayish brown very cobbly loam
8 to 13 inches—yellowish brown sandy clay loam
13 to 33 inches—yellowish brown clay
33 to 39 inches—light olive brown clay

Underlying material:
39 to 60 inches—multicolored fine sandy loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: High
Slope class: Moderately steep
Surface runoff: Rapid
Hazard of water erosion: Severe
Rock fragments on the surface: Stones 10 to 24 inches in diameter and about 42 inches apart; boulders averaging about 40 inches in diameter and about 40 to 50 feet apart
Soil reaction: Strongly acid to slightly acid in the surface layer except where it has been limed; strongly acid to slightly alkaline in the subsoil and underlying material
Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Enon soils that do not have a very cobbly or very stony surface
- Random areas of Zion soils that have hard bedrock at a depth of 20 to 40 inches
- Random areas of Mocksville soils that have a loamy subsoil
- Random areas of Poindexter soils that have a loamy subsoil and have hard bedrock at a depth of 40 to 60 inches
- Random areas where rock outcrops are widely scattered on the surface

Similar inclusions:
- Random areas of Enon soils that have a cobbly or stony surface

Use and Management

Major Uses: Woodland
Other Uses: None

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Equipment use and slope
Management measures and considerations:
- This map unit has severe limitations affecting crop production because of cobbles, stones, and the slope.
- A site on better suited soils should be selected.

Pasture and hayland
Suitability: Unsuited
Management concerns: Equipment use and slope
Management measures and considerations:
- This map unit has severe limitations affecting the production of pasture and hay crops because of the slope, stones, cobbles, and boulders.
- A site on better suited soils should be selected.

Woodland
Suitability: Suited
Productivity class: Moderately high for loblolly pine

Management concerns: Erodibility, equipment use, and seedling survival
Management measures and considerations:
- Increasing the typical number of seedlings per unit area can help to produce an adequate stand.
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Planting trees by machine and mechanical site preparation may not be feasible.
- Logging roads and skid trails may not be feasible, and special designs and layouts are needed.
- In this map unit, the required distances for skidding and cabling are longer than usual.
- Tracked equipment should be not be used, and sharp stones may cause damage to rubber-tired equipment.

Urban Development

Dwellings
Suitability: Poorly suited
Management concerns: Slope and shrink-swell potential
Management measures and considerations:
- Designing structures so that they conform to the natural slope and building in the less sloping areas help to overcome the slope limitation.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Slope and restricted permeability
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Shrink-swell potential, low strength, and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- As much of the shrink-swell clay as possible should be removed and the thickness of the base aggravate increased.
- Installing geotextile fabric between the base aggravate and final surface of the road helps to overcome the limitations.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Poorly suited
Management concerns: Slope and stones
Management measures and considerations:
- Camp sites should be located in the less stony areas.
- Designing roads and trails on the contour and locating camping facilities in the less sloping areas help to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.

- Large stones should be removed as necessary.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Poorly suited
Management concerns: Slope and stones
Management measures and considerations:
- Designing roads and trails on the contour and locating picnic facilities in the less sloping areas help to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Picnic facilities should be located in the less stony areas.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Unsuited
Management concerns: Stones and slope
Management measures and considerations:
- This map unit has severe limitations affecting playgrounds.
- A site on better suited soils should be selected.

Interpretive Groups

Land capability classification: VIIs
Woodland ordination symbol: 7X, based on loblolly pine as the indicator species

EuB—Enon-Urban land complex, 2 to 10 percent slopes

Setting

Landform: Piedmont uplands, mainly in and near Salisbury and Spencer
Landscape position: Broad to narrow ridges
Shape of areas: Rectangular
Size of areas: 5 to 250 acres

Composition

Enon soil and similar inclusions: 50 percent
Urban land: 35 percent
Dissimilar inclusions: 15 percent

Typical Profile

Enon
Surface layer:
0 to 7 inches—brown fine sandy loam

Subsoil:
7 to 10 inches—brownish yellow sandy clay loam
10 to 17 inches—brown clay
17 to 27 inches—yellowish brown clay
27 to 33 inches—mottled yellowish brown, light olive brown, and pale yellow clay loam

Underlying material:
33 to 72 inches—multicolored loam saprolite

Urban land

Urban land consists of areas mostly covered by commercial, industrial, or other urban buildings, paved streets and sidewalks, paved parking lots, closely spaced houses, or other impervious material so that identification of the natural soil is not feasible.

Soil Properties and Qualities

Depth class: Enon—very deep; Urban land—not applicable
Drainage class: Enon—well drained; Urban land—not applicable
Permeability: Enon—slow; Urban land—not applicable
Depth to high water table: Enon—more than 6.0 feet; Urban land—not applicable
Hazard of flooding: None
Shrink-swell potential: Enon—high; Urban land—not applicable
Slope class: Gently sloping or strongly sloping
Surface runoff: Enon—medium; Urban land—rapid
Hazard of water erosion: Enon—moderate; Urban land—not applicable
Soil reaction: Enon—strongly acid to slightly acid in the surface layer except where it has been limed; strongly acid to slightly alkaline in the subsoil and underlying material; Urban land—not applicable
Parent material: Enon—residuum weathered from mafic or intermediate igneous or metamorphic rock; Urban land—not applicable
Depth to bedrock: Enon—more than 60 inches; Urban land—not applicable

Inclusions

Dissimilar inclusions:
- The moderately well drained Sedgefield soils along drainageways and in depressional areas
- Mecklenburg soils that have a subsoil that is redder than that of the Enon soil, have a moderate shrink-swell potential, and are on small knolls
- Random areas of Zion soils that have hard bedrock at a depth of 20 to 40 inches
- Random areas of the eroded Enon soils that have a surface layer of clay loam
- Random areas of Mocksville soils that have a loamy subsoil

Similar inclusions:
- Random areas of Enon soils that have a surface layer of loam or sandy loam

Agricultural Development

Cropland

Suitability: Poorly suited
Management concerns: Limited size of natural soil areas
Management measures and considerations:
- Crop production is generally not feasible because of the limited size of areas of the Enon soil and the intermittent areas of Urban land.

Pasture and hayland

Suitability: Poorly suited
Management concerns: Limited size of natural soil areas
Management measures and considerations:
- The production of pasture and hay crops is generally not feasible because of the limited size of areas of the Enon soil and the intermittent areas of Urban land.

Woodland

Suitability: Poorly suited
Productivity class: Not applicable
Management concerns: Limited size of natural soil areas

Management measures and considerations:
- Timber production is rarely feasible because of the limited size of areas of the Enon soil and the intermittent areas of Urban land, but trees could be planted primarily for their aesthetic value.

Urban Development

Dwellings
Suitability: Enon—poorly suited; Urban land—not applicable
Management concerns: Enon—shrink-swell potential; Urban land—not applicable
Management measures and considerations:
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Enon—poorly suited; Urban land—not applicable
Management concerns: Enon—restricted permeability; Urban land—not applicable
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Outlets of public sewage systems should be accessed, where possible, so that areas of this map unit will not be needed for septic tank systems.

Local roads and streets
Suitability: Enon—poorly suited; Urban land—not applicable
Management concerns: Enon—shrink-swell potential and low strength; Urban land—not applicable
Management measures and considerations:
- Carefully planning the location of roads helps to minimize the disturbance of existing structures.
- As much of the shrink-swell clay as possible should be removed and the thickness of the base aggravate increased.

Recreational Development

Camp areas
Suitability: Enon—suited; Urban land—not applicable
Management concerns: Enon—limited size of areas, urbanization, and restricted permeability; Urban land—not applicable
Management measures and considerations:
- Trees or environmental plantings can be used to screen camp areas from urban areas.
- Locating camp sites on the higher parts of the landscape allows good surface drainage.
- Providing a graveled area for tents and other facilities helps to overcome the restricted permeability.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Enon—suited; Urban land—not applicable
Management concerns: Enon—limited size of areas, urbanization, and restricted permeability; Urban land—not applicable

Management measures and considerations:
- Trees or environmental plantings can be used to screen picnic areas from urban areas.
- Locating picnic areas on the higher parts of the landscape allows good surface drainage.
- Providing a graveled area for tables and other facilities helps to overcome the restricted permeability.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Enon—suited; Urban land—not applicable
Management concerns: Enon—limited size of areas, slope, and shrink-swell potential; Urban land—not applicable
Management measures and considerations:
- Trees or environmental plantings can be used to screen playground areas from urban areas.
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: Enon—IIIe; Urban land—VIIIs
Woodland ordination symbol: None assigned

HeB—Helena sandy loam, 1 to 6 percent slopes

Setting

Landform: Piedmont uplands, mainly in the south-central part of the county but also in smaller areas scattered throughout the county
Landscape position: Broad ridges, toe slopes, head of drainageways, areas along drainageways, and depressional areas
Shape of areas: Oblong or irregular
Size of areas: 5 to 50 acres

Composition

Helena soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 8 inches—olive brown sandy loam

Subsurface layer:
8 to 11 inches—brownish yellow sandy clay loam

Subsoil:
11 to 19 inches—brownish yellow sandy clay that has reddish yellow mottles
19 to 25 inches—brownish yellow sandy clay that has yellowish brown, red, and light gray mottles

25 to 30 inches—brownish yellow clay that has light gray, dark yellowish brown, and brownish yellow mottles
30 to 35 inches—yellow clay that has light gray, brownish yellow, and dark yellowish brown mottles
35 to 42 inches—light gray clay loam that has brownish yellow mottles

Underlying material:
42 to 60 inches—light gray loam saprolite that has strong brown mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
High water table: At a depth of 1.5 to 2.5 feet from January through April; perched
Hazard of flooding: None
Shrink-swell potential: High
Slope class: Nearly level or gently sloping
Surface runoff: Medium
Hazard of water erosion: Moderate
Soil reaction: Strongly acid or very strongly acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- The well drained Vance soils on small knolls and side slopes
- Random areas of the moderately well drained or somewhat poorly drained Sedgefield soils that are more basic in reaction than the Helena soil
- Poorly drained soils along drainageways and in depressions
- Random areas of Helena soils that have a gravelly surface layer
- Random areas of Helena soils that have a surface layer of sandy clay loam and commonly occur in cultivated areas

Similar inclusions:
- Random areas of Helena soils that have a surface layer of loamy sand

Use and Management

Major Uses: Cropland and woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility, wetness, and soil fertility
Management measures and considerations:
- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.
- Installing an artificial drainage system helps to reduce the wetness limitation and improve productivity.
- Performing tillage and harvesting operations when the soil is not wet helps to prevent rutting caused by equipment.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility, wetness, and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Preventing overgrazing or preventing grazing when the soil is too wet helps to prevent compaction, decreased productivity, and a rough soil surface.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns:
- This map unit has slight limitations affecting woodland management.

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting logging operations to periods when the soil is not saturated helps to prevent rutting and damage to tree roots due to compaction.

Urban Development

Dwellings
Suitability: Poorly suited
Management concerns: Wetness and shrink-swell potential
Management measures and considerations:
- Constructing dwellings on raised, well compacted fill material helps to reduce the risk of damage caused by wetness.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.
- Using an artificial drainage system or diversions helps to remove excess surface water.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength and shrink-swell potential
Management measures and considerations:
- As much of the shrink-swell clay as possible should be removed and the thickness of the base aggravate increased.
- Installing geotextile fabric between the base aggravate and final surface of the road helps to overcome the limitations.
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads to safely remove surface runoff helps to improve soil performance.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
- Locating camp sites on the higher parts of the landscape allows surface water to run off and helps to keep the sites drier during wet periods.
- Providing raised surfaces of gravel fill material for camp sites helps to minimize the wetness limitation.
- Using diversions helps to remove excess surface water and minimize the permeability limitation.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
- Providing raised surfaces of gravel fill material for tables and other facilities helps to minimize the wetness limitation.
- Locating picnic sites on the higher parts of the landscape allows surface water to run off and helps to keep the sites drier during wet periods.
- Using diversions helps to remove excess surface water and minimize the permeability limitation.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope, wetness, and restricted permeability
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Using an artificial drainage system or diversions helps to remove excess surface water and minimize the wetness and permeability limitations.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

HsD—Hiwassee loam, 15 to 25 percent slopes

Setting

Landform: Uplands and old high stream terraces of the Piedmont, mainly in the vicinity of Barber and Cleveland and areas southward
Landscape position: Very narrow ridges and side slopes
Shape of areas: Long and narrow
Size of areas: 4 to 25 acres

Composition

Hiwassee soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 8 inches—dark reddish brown loam

Subsoil:
8 to 38 inches—dark red clay
38 to 49 inches—red clay loam
49 to 60 inches—red sandy clay loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep
Surface runoff: Rapid
Hazard of water erosion: Very severe
Soil reaction: Slightly acid to very strongly acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from felsic to mafic metamorphic or igneous rock or old alluvium
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Pacolet soils that have a red subsoil and have saprolite within a depth of 40 inches
- Random areas of Hiwassee soils that have a surface layer of clay loam
- The slowly permeable Enon soils that have a subsoil that is yellower than that of the Hiwassee soil and are on the lower side slopes
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of soils that are similar to the Hiwassee soil but have a dark red subsoil that extends to a depth of more than 60 inches

Use and Management

Major Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Poorly suited
Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- Managing this map unit for cultivated crops is difficult because the slope limits equipment use.
- Cultivation should be restricted to the less sloping areas of this map unit, or areas on better suited soils should be selected for cropland.

- Resource management systems that include conservation tillage, crop residue management, stripcropping, and sod-based rotations help to minimize erosion, control surface runoff, and maximize the infiltration of water.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Suited
Suitability for hayland: Poorly suited
Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- The slope limits equipment use in the steeper areas.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Erodibility, equipment use, and slope
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Reforestation immediately after harvest using minimal site preparation and recommended tree species helps to control erosion and siltation of streams.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the slope limitation.

Urban Development

Dwellings
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope and building in the less sloping areas help to overcome the slope limitation.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Slope and low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.

- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.

Recreational Development

Camp areas
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing roads and trails on the contour and locating camping facilities in the less sloping areas help to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing roads and trails on the contour and locating picnic facilities in the less sloping areas help to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Unsuited
Management concerns: Slope
Management measures and considerations:
- This map unit has severe limitations affecting playgrounds.
- A site on better suited soils should be selected.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 8R, based on loblolly pine as the indicator species

HwB2—Hiwassee clay loam, 2 to 8 percent slopes, eroded

Setting

Landform: Uplands and old high stream terraces of the Piedmont, mainly in the vicinity of Barber and Cleveland and areas southward
Landscape position: Broad ridges
Shape of areas: Irregular
Size of areas: 5 to 200 acres

Composition

Hiwassee soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 11 inches—dark reddish brown clay loam
11 to 32 inches—dark red clay

32 to 57 inches—red clay that has strong brown mottles
57 to 67 inches—red clay loam that has strong brown mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Gently sloping
Surface runoff: Medium or rapid
Hazard of water erosion: Severe
Soil reaction: Slightly acid to very strongly acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from felsic to mafic metamorphic or igneous rock or old alluvium
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- The slowly permeable Mecklenburg soils on the lower parts of the landscape
- The slowly permeable Enon soils that have a subsoil that is yellower than that of the Hiwassee soil and are on the lower parts of the landscape

Similar inclusions:
- Random areas of Cecil soils that have a red subsoil
- Random areas of Hiwassee soils that have a surface layer of loam

Use and Management

Major Uses: Cropland and pasture
Other Uses: Woodland and urban development

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility, soil fertility, and tilth
Management measures and considerations:
- Special care is needed to prevent further erosion; using resource management systems that include terraces and diversions, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops helps to stabilize the soil, control surface runoff, and maximize the infiltration of rainfall.
- Restricting tillage to dry periods and incorporating crop residue into the soil or leaving residue on the soil surface help to minimize clodding and crusting and maximize the infiltration of water.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Special care is needed to prevent further erosion when renovating pastures or establishing seedbeds.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.

- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use and seedling survival
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting logging operations to dry periods helps to prevent rutting and possible root damage caused by compaction.
- Preparing the site by harrowing helps to establish seedlings, reduce seedling mortality rates, and increase early seedling growth.

Urban Development

Dwellings
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting dwellings.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Suited
Management concerns: Restricted permeability
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting camp areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Well suited

Management concerns:
- This map unit has few limitations affecting picnic areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 7C, based on loblolly pine as the indicator species

HwC2—Hiwassee clay loam, 8 to 15 percent slopes, eroded

Setting

Landform: Uplands and old high stream terraces of the Piedmont, mainly in the vicinity of Barber and Cleveland and areas southward
Landscape position: Narrow ridges and side slopes
Shape of areas: Oblong or irregular
Size of areas: 4 to 80 acres

Composition

Hiwassee soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 11 inches—dark reddish brown clay loam

Subsoil:
11 to 32 inches—dark red clay
32 to 57 inches—red clay that has strong brown mottles
57 to 67 inches—red clay loam that has strong brown mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping

Surface runoff: Rapid
Hazard of water erosion: Very severe
Soil reaction: Slightly acid to very strongly acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from felsic to mafic metamorphic or igneous rock or old alluvium
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- The slowly permeable Mecklenburg soils on the lower parts of the landscape
- The slowly permeable Enon soils that have a subsoil that is yellower than that of the Hiwassee soil and are on the lower parts of the landscape

Similar inclusions:
- Random areas of Cecil soils that have a red subsoil
- Random areas of Hiwassee soils that have a surface layer of loam

Use and Management

Major Uses: Pasture and cropland
Other Uses: Woodland

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Erodibility, soil fertility, and tilth
Management measures and considerations:
- Special care is needed to prevent further erosion; using resource management systems that include conservation tillage, crop residue management, stripcropping, and sod-based rotations helps to stabilize the soil, control surface runoff, and maximize the infiltration of rainfall.
- Restricting tillage to dry periods and incorporating crop residue into the soil or leaving residue on the soil surface helps to minimize clodding and crusting and maximize the infiltration of water.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Well suited
Suitability for hayland: Suited
Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Special care is needed to prevent further erosion when renovating pastures or establishing seedbeds.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use and seedling survival
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting logging operations to dry periods helps to prevent rutting and possible root damage caused by compaction.
- Preparing the site by harrowing helps to establish seedlings, reduce seedling mortality rates, and increase early seedling growth.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope helps to overcome the slope limitation.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Suited
Management concerns: Restricted permeability and slope
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.

- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Extensive grading, including cutting and filling, is needed.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 7C, based on loblolly pine as the indicator species

IrB—Iredell loam, 1 to 8 percent slopes

Setting

Landform: Piedmont uplands, mainly in the central and northwestern parts of the county
Landscape position: Broad ridges and broad upland flats
Shape of areas: Irregular
Size of areas: 5 to 100 acres

Composition

Iredell soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 6 inches—light olive brown loam

Subsoil:
6 to 13 inches—yellowish brown clay
13 to 21 inches—yellowish brown clay that has pale olive mottles
21 to 25 inches—yellowish brown clay that has light olive brown and olive gray mottles
25 to 32 inches—multicolored sandy clay loam

Underlying material:
32 to 60 inches—multicolored sandy loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
High water table: At a depth of 1.0 to 2.0 feet from December through April; perched
Hazard of flooding: None
Shrink-swell potential: Very high
Slope class: Nearly level or gently sloping
Surface runoff: Medium

Hazard of water erosion: Moderate
Soil reaction: Strongly acid to neutral in the surface layer; neutral to moderately alkaline in the subsoil and underlying material
Parent material: Residuum weathered from mafic metamorphic or igneous rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of the well drained Enon soils that have a high shrink-swell potential
- The well drained Mecklenburg soils that have a subsoil that is redder than that of the Iredell soil, have a moderate shrink-swell potential, and are on small knolls and ridges
- The poorly drained Armenia soils in depressional areas and along drainageways
- Random areas of the well drained Zion soils that have hard bedrock at a depth of 20 to 40 inches
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Sedgefield soils that have a high shrink-swell potential
- Random areas of Iredell soils that have a surface layer of silt loam, fine sandy loam, or sandy loam

Use and Management

Major Uses: Pasture and woodland
Other Uses: Cropland

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Erodibility, wetness, root penetration, and soil fertility
Management measures and considerations:
- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.
- Performing tillage and harvesting operations when the soil is not wet helps to prevent clodding and rutting caused by equipment.
- Using open ditches and diversions to divert water helps to improve productivity.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Wetness and soil fertility
Management measures and considerations:
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increases forage production.
- Preventing overgrazing or preventing grazing when the soil is too wet helps to prevent compaction, decreased productivity, and a rough soil surface.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine

Management concerns: Equipment use and seedling survival
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting the use of standard wheeled and tracked equipment to dry periods helps to prevent rutting and compaction, which occur when the soil is saturated.
- Special site preparation, such as harrowing and bedding, helps to establish seedlings, reduces mortality rates, and increases early seedling growth.

Urban Development

Dwellings
Suitability: Poorly suited
Management concerns: Wetness and shrink-swell potential
Management measures and considerations:
- Constructing dwellings on raised, well compacted fill material helps to reduce the risk of damage caused by wetness.
- Using an artificial drainage system or diversions helps to remove excess surface water.
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Wetness and shrink-swell potential
Management measures and considerations:
- Constructing roads on raised, well compacted fill material helps to overcome the wetness limitation.
- As much of the shrink-swell clay as possible should be removed and the thickness of the base aggravate increased.
- Installing geotextile fabric between the base aggravate and final surface of the road helps to overcome the limitations.

Recreational Development

Camp areas
Suitability: Poorly suited
Management concerns: Wetness
Management measures and considerations:
- Providing raised surfaces of gravel fill material for camp sites helps to minimize the wetness limitation.
- Locating camp sites on the higher parts of the landscape allows surface water to run off and helps to keep the sites drier during wet periods.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Wetness

Management measures and considerations:
- Providing raised surfaces of gravel fill material for tables and other facilities helps to minimize the wetness limitation.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Poorly suited
Management concerns: Wetness
Management measures and considerations:
- Using an artificial drainage system or diversions helps to remove excess surface water and minimize the wetness limitation.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 6C, based on loblolly pine as the indicator species

KcB—Kirksey-Cid complex, 2 to 6 percent slopes

Setting

Landform: Piedmont uplands in the southeastern corner of the county
Landscape position: Broad upland flats and broad ridges
Shape of areas: Irregular
Size of areas: 5 to 40 acres

Composition

Kirksey soil and similar inclusions: 70 percent
Cid soil and similar inclusions: 15 percent
Dissimilar inclusions: 15 percent

Typical Profile

Kirksey
Surface layer:
0 to 8 inches—light yellowish brown silt loam

Subsoil:
8 to 14 inches—olive yellow silty clay loam
14 to 24 inches—olive yellow silty clay loam that has light gray and yellowish brown mottles
24 to 36 inches—mottled olive yellow and light gray silty clay loam
36 to 42 inches—mottled olive yellow, yellowish brown, and light brownish gray silty clay loam

Bedrock:
42 to 45 inches—weathered, partially consolidated argillite
45 inches—unweathered argillite

Cid
Surface layer:
0 to 2 inches—light brownish gray silt loam

Subsurface layer:
2 to 6 inches—light yellowish brown silt loam

Subsoil:
6 to 10 inches—brownish yellow silty clay loam that has pale brown mottles
10 to 19 inches—brownish yellow silty clay
19 to 27 inches—brownish yellow silty clay that has grayish brown mottles
27 to 35 inches—yellowish brown channery silty clay that has light gray mottles

Bedrock:
35 to 39 inches—weathered, partially consolidated argillite
39 inches—unweathered argillite

Soil Properties and Qualities

Depth class: Kirksey—deep; Cid—moderately deep
Drainage class: Kirksey—moderately well drained; Cid—moderately well drained or somewhat poorly drained
Permeability: Kirksey—moderately slow; Cid—slow
High water table: Kirksey—perched at a depth of 1.5 to 3.0 feet from December through March; Cid—perched at a depth of 1.5 to 2.5 feet from December through May
Hazard of flooding: None
Shrink-swell potential: Kirksey—low; Cid—moderate
Slope class: Gently sloping
Surface runoff: Medium
Hazard of water erosion: Severe
Soil reaction: Kirksey—very strongly acid or strongly acid in the surface layer and subsoil except where the surface layer has been limed and strongly acid to extremely acid in the underlying material; Cid—very strongly acid or strongly acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Depth to bedrock: Kirksey—40 to 60 inches to hard bedrock; Cid—20 to 40 inches to hard bedrock

Inclusions

Dissimilar inclusions:
- Random areas of Lignum soils that have a clayey subsoil and have soft bedrock at a depth of 40 to 60 inches
- Random areas of the shallow Misenheimer soils that have soft bedrock at a depth of 10 to 20 inches
- The well drained Badin soils that have a subsoil that is redder than that of the Kirksey or Cid soil and are on small ridges and small knolls
- Oakboro soils that have hard bedrock at a depth of 40 to 60 inches and are along drainageways

Similar inclusions:
- Random areas of Kirksey and Cid soils in which reaction in the lower part of the subsoil and in the underlying material ranges to slightly acid
- Poorly drained soils in depressional areas and along drainageways

Use and Management

Major Uses: Woodland
Other Uses: Cropland and pasture

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Wetness, erodibility, and soil fertility
Management measures and considerations:
- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.
- Performing tillage and harvesting operations when the soils are not wet helps to prevent rutting caused by equipment.
- Installing an artificial drainage system helps to reduce the wetness limitation and improve productivity.
- Planting wetness-tolerant species in undrained areas helps to improve productivity.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Wetness, erodibility, and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Preventing overgrazing or preventing grazing when the soils are too wet helps to prevent compaction, decreased productivity, and a rough soil surface.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Kirksey—slight limitations; Cid—equipment use and windthrow hazard
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting the use of standard wheeled and tracked equipment to dry periods helps to prevent rutting and compaction, which occur when the soils are saturated.
- Productivity may be increased in areas of the Cid soil by harvesting windthrown trees, which result from high winds and the limited rooting depth.

Urban Development

Dwellings
Suitability for dwellings without basements: Suited
Suitability for dwellings with basements: Poorly suited
Management concerns: Kirksey—wetness; Cid—wetness, shrink-swell potential, and depth to bedrock
Management measures and considerations:
- Building structures on the highest part of the landscape and using an artificial drainage system help to reduce the risk of damage caused by wetness.
- Constructing dwellings on raised, well compacted fill material helps to reduce the

risk of damage caused by wetness.
- Only dwellings without basements should be built.
- Reinforcing foundations or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling of the Cid soil.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads to safely remove surface runoff helps to improve soil performance.
- Constructing bridges or using culverts is necessary to cross wet areas and drainageways.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
- Locating camp sites on the higher parts of the landscape allows surface water to run off and keeps the sites drier during wet periods.
- Providing raised surfaces of gravel fill material for camp sites helps to minimize the wetness limitation.
- Diversions help to remove excess surface water.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
- Providing raised surfaces of gravel fill material for tables and other facilities helps to minimize the wetness limitation.
- Locating picnic sites on the higher parts of the landscape allows surface water to run off and keeps the sites drier during wet periods.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope, content of rock fragments, and wetness
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Using an artificial drainage system or diversions helps to remove excess surface water and helps to minimize the wetness limitation.

- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 6W, based on loblolly pine as the indicator species

LgA—Lignum silt loam, 0 to 3 percent slopes

Setting

Landform: Piedmont uplands in the southeastern corner of the county
Landscape position: Broad upland flats and broad ridges
Shape of areas: Oblong or irregular
Size of areas: 5 to 100 acres

Composition

Lignum soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 4 inches—light olive brown silt loam

Subsurface layer:
4 to 9 inches—light yellowish brown silt loam

Subsoil:
9 to 18 inches—brownish yellow silty clay loam that has reddish yellow mottles
18 to 23 inches—brownish yellow silty clay loam that has reddish yellow, olive yellow, and brownish gray mottles
23 to 29 inches—brownish yellow silty clay that has light gray mottles
29 to 36 inches—mottled brownish yellow and light gray silty clay loam

Underlying material:
36 to 54 inches—multicolored channery silt loam saprolite

Bedrock:
54 to 60 inches—weathered, partially consolidated argillite

Soil Properties and Qualities

Depth class: Deep
Drainage class: Moderately well drained or somewhat poorly drained
Permeability: Very slow
High water table: At a depth of 1.5 to 2.5 feet from December through May; perched
Hazard of flooding: None
Shrink-swell potential: Moderate
Slope class: Nearly level
Surface runoff: Slow
Hazard of water erosion: None or slight
Soil reaction: Very strongly acid or strongly acid throughout the profile except where the surface layer has been limed

Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Depth to bedrock: 40 to 60 inches to soft bedrock

Inclusions

Dissimilar inclusions:
- Random areas of Cid soils that have hard bedrock at a depth of 20 to 40 inches
- Random areas of Kirksey soils that have hard bedrock at a depth of 40 to 60 inches
- The well drained Badin soils that have a subsoil that is redder than that of the Lignum soil, have soft bedrock at a depth of 20 to 40 inches, and are on small ridges and small knolls
- Oakboro soils that have hard bedrock at a depth of 40 to 60 inches and are along drainageways

Similar inclusions:
- Random areas of Lignum soils that have a surface layer of loam
- Random areas of Lignum soils in which reaction in the lower part of the subsoil and in the underlying material ranges to slightly acid
- Poorly drained soils in depressional areas and along drainageways

Use and Management

Major Uses: Pasture and woodland
Other Uses: Cropland

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Wetness and soil fertility
Management measures and considerations:
- Performing tillage and harvesting operations when the soil is not wet helps to prevent rutting caused by equipment.
- Using open ditches and diversions to divert water helps to improve productivity.
- Planting wetness-tolerant species in undrained areas helps to improve productivity.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Wetness and soil fertility
Management measures and considerations:
- Preventing overgrazing or preventing grazing when the soil is too wet helps to prevent compaction, decreased productivity, and a rough soil surface.
- Using open ditches and diversions to divert water helps to improve productivity.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Seedling survival
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.

- Bedding prior to planting helps to establish seedlings and increases seedling survival rates.
- Restricting the use of standard wheeled and tracked equipment to dry periods helps to prevent rutting and compaction, which occur when the soil is saturated.

Urban Development

Dwellings
Suitability for dwellings without basements: Suited
Suitability for dwellings with basements: Poorly suited
Management concerns: Wetness and shrink-swell potential
Management measures and considerations:
- Constructing dwellings on raised, well compacted fill material helps to reduce the risk of damage caused by wetness.
- Using an artificial drainage system or diversions helps to remove excess surface water.
- Reinforcing foundations or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads to safely remove surface runoff helps to improve soil performance.
- Constructing bridges or using culverts is necessary to cross wet areas and drainageways.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
- Providing raised surfaces of gravel fill material for camp sites helps to minimize the wetness and permeability limitations.
- Locating camp sites on the higher parts of the landscape allows surface water to run off and helps to keep the sites drier during wet periods.
- Diversions help to remove excess surface water.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
- Locating picnic sites on the higher parts of the landscape allows surface water to run off and helps to keep the sites drier during wet periods.

- Providing raised surfaces of gravel fill material for tables and other facilities helps to minimize the wetness and permeability limitations.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
- Using an artificial drainage system or diversions helps to remove excess surface water and minimize the wetness limitation.
- Using diversions helps to remove excess surface water and minimize the permeability limitation.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IIw
Woodland ordination symbol: 7W, based on loblolly pine as the indicator species

MbB—Mecklenburg loam, 2 to 8 percent slopes

Setting

Landform: Piedmont uplands, mainly in the central and northwestern parts of the county
Landscape position: Broad ridges
Shape of areas: Irregular
Size of areas: 5 to 150 acres

Composition

Mecklenburg soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 7 inches—reddish brown loam

Subsoil:
7 to 28 inches—reddish brown clay
28 to 35 inches—yellowish red clay loam

Underlying material:
35 to 60 inches—yellowish red clay loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Moderate
Slope class: Gently sloping
Surface runoff: Slow or medium
Hazard of water erosion: Moderate

Soil reaction: Strongly acid to slightly acid in the surface layer except where it has been limed; moderately acid to neutral in the subsoil and underlying material
Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Enon soils that have a subsoil that is yellower than that of the Mecklenburg soil
- The moderately permeable Hiwassee soils that have a low shrink-swell potential and are on ridge crests and small knolls
- Random areas of Poindexter soils that have a loamy subsoil that is yellower than that of the Mecklenburg soil
- Random areas of soils that have hard bedrock at a depth of 40 to 60 inches
- Random areas of Mecklenburg soils that have a surface layer of clay loam and commonly occur in cultivated areas
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Mecklenburg soils that have a surface layer of fine sandy loam or sandy loam

Use and Management

Major Uses: Woodland
Other Uses: Cropland and pasture

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns:
- This map unit has slight limitations affecting woodland management.

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and helps to ensure planting success.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Shrink-swell potential
Management measures and considerations:
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Restricted permeability
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Restricted permeability
Management measures and considerations:
- Locating camp sites on the higher parts of the landscape allows good surface drainage.
- Providing a graveled area for tents and other facilities helps to overcome the restricted permeability.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Restricted permeability
Management measures and considerations:
- Locating picnic sites on the higher parts of the landscape allows good surface drainage.
- Providing a graveled area for tables and other facilities helps to overcome the restricted permeability.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope, content of rock fragments, and restricted permeability

Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Using diversions helps to remove excess surface water and helps to minimize the permeability limitation.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

MbC—Mecklenburg loam, 8 to 15 percent slopes

Setting

Landform: Piedmont uplands, mainly in the central and northwestern parts of the county
Landscape position: Side slopes
Shape of areas: Oblong or irregular
Size of areas: 5 to 80 acres

Composition

Mecklenburg soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 7 inches—reddish brown loam

Subsoil:
7 to 28 inches—reddish brown clay
28 to 35 inches—yellowish red clay loam

Underlying material:
35 to 60 inches—yellowish red clay loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Moderate
Slope class: Strongly sloping
Surface runoff: Medium
Hazard of water erosion: Severe
Soil reaction: Strongly acid to slightly acid in the surface layer except where it has been limed; moderately acid to neutral in the subsoil and underlying material

Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Enon soils that have a subsoil that is yellower than that of the Mecklenburg soil
- The moderately permeable Hiwassee soils that have a low shrink-swell potential and are on the upper side slopes
- Random areas of Poindexter soils that have a loamy subsoil that is yellower than that of the Mecklenburg soil
- Random areas of soils that have hard bedrock at a depth of 40 to 60 inches
- Random areas of Mecklenburg soils that have a surface layer of clay loam and commonly occur in cultivated areas
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Mecklenburg soils that have a surface layer of fine sandy loam or sandy loam

Use and Management

Major Uses: Woodland
Other Uses: Cropland and pasture

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Resource management systems that include conservation tillage, crop residue management, stripcropping, and sod-based rotations help to minimize erosion, control surface runoff, and maximize the infiltration of water.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Well suited
Suitability for hayland: Suited
Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine

Management concerns:
- This map unit has slight limitations affecting woodland management.

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Shrink-swell potential and slope
Management measures and considerations:
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Designing structures so that they conform to the natural slope helps to overcome the slope limitation.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Restricted permeability
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Extensive grading, including cutting and filling, is needed.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

MeB2—Mecklenburg clay loam, 2 to 8 percent slopes, eroded

Setting

Landform: Piedmont uplands, mainly in the central and northwestern parts of the county
Landscape position: Broad ridges
Shape of areas: Irregular
Size of areas: 5 to 100 acres

Composition

Mecklenburg soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 7 inches—reddish brown clay loam

Subsoil:
7 to 14 inches—reddish brown clay
14 to 24 inches—red clay
24 to 30 inches—red clay that has reddish yellow mottles
30 to 38 inches—yellowish red clay loam

Underlying material:
38 to 50 inches—multicolored silty clay loam saprolite
50 to 60 inches—multicolored loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Moderate
Slope class: Gently sloping
Surface runoff: Slow or medium
Hazard of water erosion: Severe

Soil reaction: Strongly acid to slightly acid in the surface layer except where it has been limed; moderately acid to neutral in the subsoil and underlying material
Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Enon soils that have a subsoil that is yellower than that of the Mecklenburg soil
- The moderately permeable Hiwassee soils that have a low shrink-swell potential and are on ridge crests and small knolls
- Random areas of Poindexter soils that have a loamy subsoil that is yellower than that of the Mecklenburg soil
- Random areas of soils that have hard bedrock at a depth of 40 to 60 inches

Similar inclusions:
- Random areas of Mecklenburg soils that have a surface layer of loam or sandy clay loam

Use and Management

Major Uses: Cropland and pasture
Other Uses: Woodland

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility, tilth, and soil fertility
Management measures and considerations:
- Special care is needed to prevent further erosion; using resource management systems that include terraces and diversions, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops helps to stabilize the soil, control surface runoff, and maximize the infiltration of rainfall.
- Restricting tillage to dry periods and incorporating crop residue into the soil or leaving residue on the soil surface help to minimize clodding and crusting and maximize the infiltration of water.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Special care is needed to prevent further erosion when renovating pastures or establishing seedbeds.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine

Management concerns: Equipment use and seedling survival
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting logging operations to dry periods helps to prevent rutting and possible root damage caused by compaction.
- Preparing the site by harrowing helps to establish seedlings, reduce seedling mortality rates, and increase early seedling growth.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Shrink-swell potential
Management measures and considerations:
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Restricted permeability
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Restricted permeability
Management measures and considerations:
- Locating camp sites on the higher parts of the landscape allows good surface drainage.
- Providing a graveled area for tents and other facilities helps to overcome the restricted permeability.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Restricted permeability
Management measures and considerations:
- Locating picnic sites on the higher parts of the landscape allows good surface drainage.
- Providing a graveled area for tables and other facilities helps to overcome the restricted permeability.

- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope and restricted permeability
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Using diversions helps to remove excess surface water and minimize the permeability limitation.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 6C, based on loblolly pine as the indicator species

MeC2—Mecklenburg clay loam, 8 to 15 percent slopes, eroded

Setting

Landform: Piedmont uplands, mainly in the central and northwestern parts of the county
Landscape position: Side slopes
Shape of areas: Oblong or irregular
Size of areas: 5 to 50 acres

Composition

Mecklenburg soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 7 inches—reddish brown clay loam

Subsoil:
7 to 14 inches—reddish brown clay
14 to 24 inches—red clay
24 to 30 inches—red clay that has reddish yellow mottles
30 to 38 inches—yellowish red clay loam

Underlying material:
38 to 50 inches—multicolored silty clay loam saprolite
50 to 60 inches—multicolored loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Depth to high water table: More than 6.0 feet
Hazard of flooding: None

Shrink-swell potential: Moderate
Slope class: Strongly sloping
Surface runoff: Medium
Hazard of water erosion: Very severe
Soil reaction: Strongly acid to slightly acid in the surface layer except where it has been limed; moderately acid to neutral in the subsoil and underlying material
Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Enon soils that have a subsoil that is yellower than that of the Mecklenburg soil
- The moderately permeable Hiwassee soils that have a low shrink-swell potential and are on the upper side slopes and on narrow ridgetops
- Random areas of Poindexter soils that have a loamy subsoil that is yellower than that of the Mecklenburg soil
- Random areas of soils that have hard bedrock at a depth of 40 to 60 inches

Similar inclusions:
- Random areas of Mecklenburg soils that have a surface layer of loam or sandy clay loam

Use and Management

Major Uses: Pasture
Other Uses: Woodland and cropland

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Erodibility, tilth, and soil fertility
Management measures and considerations:
- Special care is needed to prevent further erosion; using resource management systems that include conservation tillage, crop residue management, stripcropping, and
sod-based rotations helps to stabilize the soil, control surface runoff, and maximize the infiltration of rainfall.
- Restricting tillage to dry periods and incorporating crop residue into the soil or leaving residue on the soil surface help to minimize clodding and crusting and maximize the infiltration of water.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Well suited
Suitability for hayland: Suited
Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Special care is needed to prevent further erosion when renovating pastures or establishing seedbeds.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.

- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use and seedling survival
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting logging operations to dry periods helps to prevent rutting and possible root damage caused by compaction.
- Preparing the site by harrowing helps to establish seedlings, reduce seedling mortality rates, and increase early seedling growth.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Slope and shrink-swell potential
Management measures and considerations:
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Designing structures so that they conform to the natural slope helps to overcome the slope limitation.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Restricted permeability
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.

- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Extensive grading, including cutting and filling, is needed.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 6C, based on loblolly pine as the indicator species

MkB—Misenheimer-Kirksey complex, 0 to 5 percent slopes

Setting

Landform: Piedmont uplands in the southeastern corner of the county
Landscape position: Broad upland flats and broad ridges
Shape of areas: Irregularly shaped
Size of areas: 5 to 200 acres

Composition

Misenheimer soil and similar inclusions: 65 percent
Kirksey soil and similar inclusions: 20 percent
Dissimilar inclusions: 15 percent

Typical Profile

Misenheimer
Surface layer:
0 to 6 inches—dark grayish brown channery silt loam

Subsoil:
6 to 12 inches—light yellowish brown channery silt loam that has light gray mottles
12 to 18 inches—light yellowish brown channery silt loam that has gray mottles

Bedrock:
18 to 22 inches—weathered, partially consolidated argillite
22 inches—unweathered argillite

Kirksey

Surface layer:
0 to 8 inches—light yellowish brown silt loam

Subsoil:
8 to 14 inches—olive yellow silty clay loam
14 to 24 inches—olive yellow silty clay loam that has light gray and yellowish brown mottles
24 to 36 inches—mottled olive yellow and light gray silty clay loam
36 to 42 inches—mottled olive yellow, yellowish brown, and light brownish gray silty clay loam

Bedrock:
42 to 45 inches—weathered, partially consolidated argillite
45 inches—unweathered argillite

Soil Properties and Qualities

Depth class: Misenheimer—shallow; Kirksey—deep
Drainage class: Misenheimer—moderately well drained or somewhat poorly drained; Kirksey—moderately well drained
Permeability: Misenheimer—moderate or moderately rapid; Kirksey—moderately slow
High water table: Misenheimer—perched at a depth of 1.0 to 1.5 feet from December through April; Kirksey—perched at a depth of 1.5 to 3.0 feet from December through March
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Nearly level or gently sloping
Surface runoff: Slow or medium
Hazard of water erosion: Slight or moderate
Soil reaction: Misenheimer—extremely acid to strongly acid throughout the profile except where the surface layer has been limed; Kirksey—very strongly acid or strongly acid in the surface layer and subsoil except where the surface layer has been limed and strongly acid to extremely acid in the underlying material
Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Depth to bedrock: Misenheimer—10 to 20 inches to soft bedrock and 20 to 40 inches to hard bedrock; Kirksey—40 to 60 inches to hard bedrock

Inclusions

Dissimilar inclusions:
- Random areas of Lignum soils that have a clayey subsoil and have soft bedrock at a depth of 40 to 60 inches
- Random areas of Cid soils that have a clayey subsoil
- The well drained Badin soils that have a subsoil that is redder than that of the Misenheimer or Kirksey soil and are on small ridges and knolls
- The well drained Goldston soils on small ridges and knolls

Similar inclusions:
- Random areas of Misenheimer and Kirksey soils in which reaction in the lower part of the subsoil and in the underlying material ranges to slightly acid

Use and Management

Major Uses: Woodland
Other Uses: Cropland and pasture

Agricultural Development

Cropland

Suitability: Misenheimer—suited; Kirksey—well suited

Management concerns: Misenheimer—wetness, rooting depth, and soil fertility; Kirksey—erodibility, wetness, and soil fertility

Management measures and considerations:

- Performing tillage and harvesting operations when the soils are not wet helps to prevent clodding and rutting caused by equipment.
- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.
- Installing an artificial drainage system helps to reduce the wetness and improve productivity.
- Because of the shallow rooting depth, managing areas of the Misenheimer soil for economical crop production is difficult.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland

Suitability: Misenheimer—poorly suited; Kirksey—well suited

Management concerns: Misenheimer—wetness, rooting depth, and soil fertility; Kirksey—wetness, erodibility, and soil fertility

Management measures and considerations:

- Because of the shallow rooting depth, managing areas of the Misenheimer soil for the economical production of pasture and hay crops is difficult.
- Preventing overgrazing or preventing grazing when the soils are too wet helps to prevent compaction, decreased productivity, and a rough soil surface.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.
- Planting adapted species helps to ensure the production of high-quality forage and minimize erosion.

Woodland

Suitability: Misenheimer—suited; Kirksey—well suited

Productivity class: Misenheimer—moderately high for shortleaf pine; Kirksey—moderately high for loblolly pine

Management concerns: Misenheimer—equipment use, seedling survival, and windthrow hazard; Kirksey—small size of areas

Management measures and considerations:

- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting the use of standard wheeled and tracked equipment to dry periods helps to prevent rutting and compaction, which occur when the soils are saturated.
- Bedding prior to planting helps to establish seedlings and increases seedling survival rates.
- Maintaining surface litter helps to increase water infiltration and reduce seedling mortality rates.
- Increasing the typical number of seedlings per unit area can help to produce an adequate stand.
- Productivity may be increased in areas of the Misenheimer soil by harvesting windthrown trees, which result from high winds and the limited rooting depth.

Urban Development

Dwellings

Suitability for dwellings without basements: Misenheimer—poorly suited; Kirksey—suited

Suitability for dwellings with basements: Poorly suited

Management concerns: Misenheimer—wetness and depth to bedrock; Kirksey—wetness

Management measures and considerations:

- Only dwellings without basements should be built.
- Constructing dwellings on raised, well compacted fill material helps to reduce the risk of damage caused by wetness.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields

Suitability: Poorly suited

Management concerns: Misenheimer—depth to bedrock and wetness; Kirksey—wetness

Management measures and considerations:

- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets

Suitability: Misenheimer—suited; Kirksey—poorly suited

Management concerns: Misenheimer—wetness and depth to bedrock; Kirksey—low strength

Management measures and considerations:

- Constructing roads on raised, well compacted fill material helps to overcome the wetness limitation.
- Constructing bridges or using culverts is necessary to cross drainageways or wet areas.
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas

Suitability: Misenheimer—poorly suited; Kirksey—suited

Management concerns: Misenheimer—wetness and depth to bedrock; Kirksey—wetness and restricted permeability

Management measures and considerations:

- Locating camp sites on the higher parts of the landscape allows surface water to run off and helps to keep the sites drier during wet periods.
- Providing raised surfaces of gravel fill material for camp sites helps to minimize the wetness limitation.
- Using diversions helps to remove excess surface water and minimize the permeability limitation.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas

Suitability: Misenheimer—poorly suited; Kirksey—suited

Management concerns: Misenheimer—depth to bedrock; Kirksey—wetness and restricted permeability

Management measures and considerations:
- Locating picnic sites on the higher parts of the landscape allows surface water to run off and helps to keep the sites drier during wet periods.
- Using diversions helps to remove excess surface water and minimize the permeability limitation.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Misenheimer—poorly suited; Kirksey—suited
Management concerns: Misenheimer—wetness, content of rock fragments, and depth to bedrock; Kirksey—slope and wetness
Management measures and considerations:
- Using an artificial drainage system or diversions helps to remove excess surface water and minimize the wetness limitation.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: Misenheimer—IIIw; Kirksey—IIe
Woodland ordination symbol: Misenheimer—6D, based on shortleaf pine as the indicator species; Kirksey—6W, based on loblolly pine as the indicator species

OkA—Oakboro silt loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: River and stream valleys of the Piedmont, in the southeastern corner of the county
Landscape position: Flood plains
Shape of areas: Long and narrow
Size of areas: 5 to 200 acres

Composition

Oakboro soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 4 inches—light olive brown silt loam

Subsoil:
4 to 13 inches—light yellowish brown silt loam
13 to 19 inches—olive yellow silt loam that has light gray mottles
19 to 28 inches—pale yellow silty clay loam that has light gray and strong brown mottles
28 to 40 inches—olive yellow silty clay loam that has light gray and brownish yellow mottles

40 to 50 inches—mottled olive yellow, brownish yellow, light gray, and gray silty clay loam

Bedrock:
50 inches—unweathered argillite

Soil Properties and Qualities

Depth class: Deep
Drainage class: Moderately well drained or somewhat poorly drained
Permeability: Moderate
High water table: At a depth of 1.0 foot to 2.0 feet from December through April; apparent
Hazard of flooding: Frequent for brief periods from November through April
Shrink-swell potential: Low
Slope class: Nearly level
Surface runoff: Slow
Hazard of water erosion: None or slight
Soil reaction: Very strongly acid to slightly acid throughout the profile except where the surface layer has been limed
Parent material: Recent alluvium derived from argillite and other fine grained rocks of the Carolina Slate Belt
Depth to bedrock: 40 to 60 inches to hard bedrock

Inclusions

Dissimilar inclusions:
- The poorly drained, clayey Armenia soils that have hard bedrock at a depth of more than 60 inches and are in low areas at the base of upland slopes
- Random areas of soils that are similar to the Oakboro soil but have hard bedrock at a depth of more than 60 inches
- Random areas of soils that have hard bedrock at a depth of less than 40 inches

Similar inclusions:
- Random areas of Oakboro soils that have a surface layer of loam
- The deeper, less silty Chewacla soils along streams that originate in areas of igneous rock

Use and Management

Major Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Poorly suited
Management concerns: Flooding and wetness
Management measures and considerations:
- Because of the potential for flooding during the growing season, managing this map unit for cropland is difficult.
- Planting wetness-tolerant crops in undrained areas helps to improve productivity.
- Harvesting crops as soon as possible helps to reduce the risk of damage caused by flooding.
- Installing an artificial drainage system helps to reduce the wetness limitation and improve productivity.

Pasture and hayland
Suitability for pasture: Suited
Suitability for hayland: Poorly suited

Management concerns: Flooding, wetness, and soil fertility
Management measures and considerations:
- Preventing overgrazing or preventing grazing when the soil is too wet helps to prevent compaction, decreased productivity, and a rough soil surface.
- Installing a subsurface drainage system helps to improve the productivity of moisture-sensitive crops.
- Harvesting hay crops as soon as possible helps to reduce the risk of damage caused by flooding.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for yellow-poplar
Management concerns: Equipment use
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting the use of standard wheeled and tracked equipment to dry periods helps to prevent rutting and compaction, which occur when the soil is saturated.

Urban Development

Dwellings
Suitability: Unsuited
Management concerns: Flooding and wetness
Management measures and considerations:
- This map unit has severe limitations affecting dwellings.
- A site on better suited soils should be selected.

Septic tank absorption fields
Suitability: Unsuited
Management concerns: Flooding and wetness
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Flooding
Management measures and considerations:
- Constructing bridges or using culverts is necessary to cross streams and flood plains.

Recreational Development

Camp areas
Suitability: Unsuited
Management concerns: Flooding and wetness
Management measures and considerations:
- This map unit has severe limitations affecting camp areas.
- A site on better suited soils should be selected.

Picnic areas
Suitability: Suited
Management concerns: Flooding and wetness

Management measures and considerations:
- This map unit should be used for picnic areas only during periods when flooding is not a hazard.
- Using an artificial drainage system or diversions helps to remove excess surface water.
- Providing raised surfaces of gravel fill material for tables and other facilities helps to minimize the wetness limitation.

Playgrounds
Suitability: Poorly suited
Management concerns: Flooding and wetness
Management measures and considerations:
- Providing raised surfaces of gravel fill material for facilities helps to minimize the wetness limitation.
- Using an artificial drainage system or diversions helps to remove excess surface water.
- This map unit should not be used after heavy rains when flooding is a hazard.

Interpretive Groups

Land capability classification: IVw
Woodland ordination symbol: 7W, based on yellow-poplar as the indicator species

PaB—Pacolet sandy loam, 2 to 8 percent slopes

Setting

Landform: Piedmont uplands, mainly in the north-central and southwestern parts of the county
Landscape position: Broad to narrow ridges
Shape of areas: Irregular or oblong
Size of areas: 4 to 100 acres

Composition

Pacolet soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 5 inches—dark brown sandy loam

Subsurface layer:
5 to 8 inches—yellowish brown sandy loam

Subsoil:
8 to 24 inches—red clay
24 to 29 inches—red clay loam that has reddish yellow mottles
29 to 38 inches—red sandy clay loam that has reddish yellow mottles

Underlying material:
38 to 60 inches—yellowish red sandy loam saprolite that has yellowish red mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet

Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Gently sloping
Surface runoff: Medium
Hazard of water erosion: Moderate
Soil reaction: Very strongly acid to slightly acid in the surface layer except where it has been limed; very strongly acid to moderately acid in the subsoil and underlying material
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Saw soils that have hard bedrock at a depth of 20 to 40 inches
- Random areas of Rion soils that have a loamy subsoil
- Random areas of Pacolet soils that have a surface layer of sandy clay loam and commonly occur in cultivated areas
- Random areas of Pacolet soils that have a surface layer of gravelly sandy loam

Similar inclusions:
- Random areas of Wedowee soils that have a subsoil that is yellower than that of the Pacolet soil
- Random areas of Cecil soils that have saprolite at a depth of more than 40 inches
- Random areas of Pacolet soils that have a surface layer of loam

Use and Management

Major Uses: Woodland
Other Uses: Cropland and pasture

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine

Management concerns:
- This map unit has slight limitations affecting woodland management.

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.

Urban Development

Dwellings
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting dwellings.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Suited
Management concerns: Restricted permeability
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting camp areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting picnic areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope and content of rock fragments
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.

- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

PaC—Pacolet sandy loam, 8 to 15 percent slopes

Setting

Landform: Piedmont uplands, mainly in the north-central and southwestern parts of the county
Landscape position: Narrow ridges and side slopes
Shape of areas: Oblong or long and narrow
Size of areas: 5 to 50 acres

Composition

Pacolet soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 5 inches—dark brown sandy loam

Subsurface layer:
5 to 8 inches—yellowish brown sandy loam

Subsoil:
8 to 24 inches—red clay
24 to 29 inches—red clay loam that has reddish yellow mottles
29 to 38 inches—red sandy clay loam that has reddish yellow mottles

Underlying material:
38 to 60 inches—yellowish red sandy loam saprolite that has yellowish red mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Surface runoff: Medium or rapid
Hazard of water erosion: Severe
Soil reaction: Very strongly acid to slightly acid in the surface layer except where it has been limed; very strongly acid to moderately acid in the subsoil and underlying material
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Saw soils that have hard bedrock at a depth of 20 to 40 inches
- Random areas of Rion soils that have a loamy subsoil that is yellower than that of the Pacolet soil
- Random areas of Pacolet soils that have a surface layer of sandy clay loam and commonly occur in cultivated areas
- Random areas of Pacolet soils that have a surface layer of gravelly sandy loam

Similar inclusions:
- Random areas of Wedowee soils that have a subsoil that is yellower than that of the Pacolet soil
- Random areas of Cecil soils that have saprolite at a depth of more than 40 inches
- Random areas of Pacolet soils that have a surface layer of loam

Use and Management

Major Uses: Woodland
Other Uses: Pasture and cropland

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Resource management systems that include conservation tillage, crop residue management, stripcropping, and sod-based rotations help to minimize erosion, control surface runoff, and maximize the infiltration of water.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Well suited
Suitability for hayland: Suited
Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns:
- This map unit has slight limitations affecting woodland management.

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope helps to overcome the slope limitation.
- Vegetating disturbed areas and using erosion-control structures, such as sediment fences and catch basins, help to keep sediments onsite.

Septic tank absorption fields
Suitability: Suited
Management concerns: Restricted permeability and slope
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Extensive grading, including cutting and filling, is needed.

- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

PaD—Pacolet sandy loam, 15 to 25 percent slopes

Setting

Landform: Piedmont uplands, mainly in the north-central and southwestern parts of the county
Landscape position: Narrow ridges and side slopes
Shape of areas: Oblong or long and narrow
Size of areas: 5 to 50 acres

Composition

Pacolet soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 5 inches—dark brown sandy loam

Subsurface layer:
5 to 8 inches—yellowish brown sandy loam

Subsoil:
8 to 24 inches—red clay
24 to 29 inches—red clay loam that has reddish yellow mottles
29 to 38 inches—red sandy clay loam that has reddish yellow mottles

Underlying material:
38 to 60 inches—yellowish red sandy loam saprolite that has yellowish red mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep
Surface runoff: Rapid
Hazard of water erosion: Very severe
Soil reaction: Very strongly acid to slightly acid in the surface layer except where it has been limed; very strongly acid to moderately acid in the subsoil and underlying material
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of soils that have hard bedrock at a depth of 20 to 60 inches
- Random areas of soils that have a loamy subsoil
- Random areas of Pacolet soils that have a surface layer of sandy clay loam or gravelly sandy loam
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Wedowee soils that have a subsoil that is yellower than that of the Pacolet soil
- Random areas of Pacolet soils that have a surface layer of loam

Use and Management

Major Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Poorly suited
Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- Managing this map unit for cultivated crops is difficult because the slope limits equipment use.
- Cultivation should be restricted to the less sloping areas in this map unit, or areas on better suited soils should be selected for cropland.
- Resource management systems that include conservation tillage, crop residue management, stripcropping, and sod-based rotations help to minimize erosion, control surface runoff, and maximize the infiltration of water.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Suited
Suitability for hayland: Poorly suited
Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- The slope limits equipment use in the steeper areas.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- Constructing trails facilitates the grazing of livestock in areas where access is limited.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating pastures.

Woodland
Suitability: Suited
Productivity class: Moderately high for loblolly pine
Management concerns: Erodibility, equipment use, and slope
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.

- Reforestation immediately after harvest using minimal site preparation and recommended tree species helps to control erosion and siltation of streams.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the slope limitation.

Urban Development

Dwellings
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope and building in the less sloping areas help to overcome the slope limitation.
- Vegetating disturbed areas and using erosion-control structures, such as sediment fences and catch basins, help to keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing roads and trails on the contour and locating camping facilities in the less sloping areas help to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing roads and trails on the contour and locating picnic facilities in the less sloping areas help to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Unsuited

Management concerns: Slope
Management measures and considerations:
- This map unit has severe limitations affecting playgrounds.
- A site on better suited soils should be selected.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: 8R, based on loblolly pine as the indicator species

PaE—Pacolet sandy loam, 25 to 45 percent slopes

Setting

Landform: Piedmont uplands, mainly in the north-central and southwestern parts of the county
Landscape position: Narrow side slopes
Shape of areas: Long and narrow
Size of areas: 5 to 50 acres

Composition

Pacolet soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 5 inches—dark brown sandy loam

Subsurface layer:
5 to 8 inches—yellowish brown sandy loam

Subsoil:
8 to 19 inches—red clay
19 to 24 inches—red clay loam that has reddish yellow mottles
24 to 29 inches—red sandy clay loam that has reddish yellow mottles

Underlying material:
29 to 50 inches—yellowish red sandy loam saprolite that has yellowish red mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Steep
Surface runoff: Rapid
Hazard of water erosion: Very severe
Soil reaction: Very strongly acid to slightly acid in the surface layer except where it has been limed; very strongly acid to moderately acid in the subsoil and underlying material
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of soils that have a yellow loamy subsoil
- Random areas of Pacolet soils that have a surface layer of sandy clay loam or gravelly sandy loam
- Random areas of soils that have hard bedrock at a depth of 20 to 60 inches
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Pacolet soils that have a surface layer of loam

Use and Management

Major Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Erodibility and equipment use
Management measures and considerations:
- This map unit has severe limitations affecting crop production because of the slope.
- A site on better suited soils should be selected.

Pasture and hayland
Suitability for pasture: Poorly suited
Suitability for hayland: Unsuited
Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- Because of the slope, managing this map unit for pasture and hayland is difficult.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Constructing trails facilitates the grazing of livestock in areas where access is limited.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating pasture.

Woodland
Suitability: Suited
Productivity class: Moderately high for loblolly pine
Management concerns: Erodibility, equipment use, and slope
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the slope limitation.
- Using cable logging methods helps to overcome the equipment use limitation and prevent the acceleration of erosion caused by road construction, skid trails, and disturbance of the forest floor by machinery.
- Reforestation immediately after harvest using minimal site preparation and recommended tree species helps to control erosion and siltation of streams.

Urban Development

Dwellings
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- This map unit has severe limitations affecting dwellings because of the slope.
- A site on better suited soils should be selected.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing roads and trails on the contour and locating camping facilities in the less sloping areas help to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing roads and trails on the contour and locating picnic facilities in the less sloping areas help to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Unsuited
Management concerns: Slope
Management measures and considerations:
- This map unit has severe limitations affecting playgrounds.
- A site on better suited soils should be selected.

Interpretive Groups

Land capability classification: VIIe
Woodland ordination symbol: 8R, based on loblolly pine as the indicator species

PcB2—Pacolet sandy clay loam, 2 to 8 percent slopes, eroded

Setting

Landform: Piedmont uplands, mainly in the north-central and southwestern parts of the county
Landscape position: Broad to narrow ridges
Shape of areas: Irregular or oblong
Size of areas: 4 to 100 acres

Composition

Pacolet soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 7 inches—reddish brown sandy clay loam

Subsoil:
7 to 18 inches—red clay
18 to 24 inches—red sandy clay that has reddish yellow mottles
24 to 33 inches—red sandy clay loam

Underlying material:
33 to 44 inches—red loam saprolite that has reddish yellow, yellowish red, and yellowish brown mottles
44 to 60 inches—yellowish red loam saprolite
60 to 72 inches—multicolored loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Gently sloping
Surface runoff: Medium
Hazard of water erosion: Severe
Soil reaction: Very strongly acid to slightly acid in the surface layer except where it has been limed; very strongly acid to moderately acid in the subsoil and underlying material
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Saw soils that have hard bedrock at a depth of 20 to 40 inches

- Random areas of Rion soils that have a loamy subsoil
- Random areas of Pacolet soils that have a surface layer of sandy loam or gravelly sandy loam

Similar inclusions:

- Random areas of Wedowee soils that have a subsoil that is yellower than that of the Pacolet soil
- Random areas of Cecil soils that have saprolite at a depth of more than 40 inches
- Random areas of Pacolet soils that have a surface layer of clay loam

Use and Management

Major Uses: Cropland and pasture
Other Uses: Woodland and urban development

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility, tilth, and soil fertility
Management measures and considerations:

- Special care is needed to prevent further erosion; using resource management systems that include terraces and diversions, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops helps to stabilize the soil, control surface runoff, and maximize the infiltration of rainfall.
- Restricting tillage to dry periods and incorporating crop residue into the soil or leaving residue on the soil surface help to minimize clodding and crusting and maximize the infiltration of water.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:

- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Special care is needed to prevent further erosion when renovating pastures or establishing seedbeds.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use and seedling survival
Management measures and considerations:

- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting logging operations to dry periods helps to prevent rutting and possible root damage caused by compaction.
- Preparing the site by harrowing helps to establish seedlings, reduce seedling mortality rates, and increase early seedling growth.

Urban Development

Dwellings
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting dwellings.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Suited
Management concerns: Restricted permeability
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting camp areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting picnic areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 6C, based on loblolly pine as the indicator species

PcC2—Pacolet sandy clay loam, 8 to 15 percent slopes, eroded

Setting

Landform: Piedmont uplands, mainly in the north-central and southwestern parts of the county
Landscape position: Narrow ridges and side slopes
Shape of areas: Oblong or irregular
Size of areas: 5 to 50 acres

Composition

Pacolet soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 7 inches—reddish brown sandy clay loam

Subsoil:
7 to 18 inches—red clay
18 to 24 inches—red sandy clay that has reddish yellow mottles
24 to 33 inches—red sandy clay loam

Underlying material:
33 to 44 inches—red loam saprolite that has reddish yellow, yellowish red, and yellowish brown mottles
44 to 60 inches—yellowish red loam saprolite
60 to 72 inches—multicolored loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Surface runoff: Rapid
Hazard of water erosion: Very severe
Soil reaction: Very strongly acid to slightly acid in the surface layer except where it has been limed; very strongly acid to moderately acid in the subsoil and underlying material
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Saw soils that have hard bedrock at a depth of 20 to 40 inches
- Random areas of Rion soils that have a loamy subsoil

- Random areas of Pacolet soils that have a surface layer of sandy loam or gravelly sandy loam

Similar inclusions:
- Random areas of Wedowee soils that have a subsoil that is yellower than that of the Pacolet soil
- Random areas of Cecil soils that have saprolite at a depth of more than 40 inches
- Random areas of Pacolet soils that have a surface layer of clay loam

Use and Management

Major Uses: Cropland and pasture
Other Uses: Woodland and urban development

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Erodibility, tilth, and soil fertility
Management measures and considerations:
- Special care is needed to prevent further erosion; using resource management systems that include conservation tillage, crop residue management, stripcropping, and sod-based rotations helps to stabilize the soil, control surface runoff, and maximize the infiltration of rainfall.
- Restricting tillage to dry periods and incorporating crop residue into the soil or leaving residue on the soil surface help to minimize clodding and crusting and maximize the infiltration of water.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Well suited
Suitability for hayland: Suited
Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- Special care is needed to prevent further erosion when renovating pastures or establishing seedbeds.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use and seedling survival
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting logging operations to dry periods helps to prevent rutting and possible root damage caused by compaction.
- Preparing the site by harrowing helps to establish seedlings, reduce seedling mortality rates, and increase early seedling growth.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope helps to overcome the slope limitation.
- Vegetating disturbed areas and using erosion-control structures, such as sediment fences and catch basins, help to keep sediments onsite.

Septic tank absorption fields
Suitability: Suited
Management concerns: Restricted permeability and slope
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Extensive grading, including cutting and filling, is needed.

- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 6C, based on loblolly pine as the indicator species

Pt—Pits, quarries

Setting

Landform: Piedmont uplands, in areas throughout the county; the largest quarries are located at Woodleaf and southeast of Salisbury
Landscape position: Broad ridges and side slopes
Shape of areas: Rectangular or irregular
Size of areas: 4 to 100 acres

Composition

Pits and quarries consist of excavated areas where the soil has been removed and the underlying bedrock has been mined for use mostly as construction aggregate or as block granite. Pits are as much as 250 feet or more deep, and most have nearly vertical side walls. Most of the abandoned quarries are filled with water.

Inclusions

- Areas of undisturbed soils along the outer edge of map unit delineations
- Rubble and spoil embankments along the outer edge of map unit delineations
- Random areas that have been graded or filled to facilitate quarrying operations

Use and Management

Recommendations for reclamation and use of this map unit require onsite examination.

Agricultural Development

The exposed rock and rock rubble cannot support significant plant growth.

Urban Development

Areas of this map unit are unsuited for urban development because of the open pits, exposed rock, and rock rubble.

Recreational Development

Areas of this map unit are unsuited for recreational development because of the open pits, exposed rock, and rock rubble.

Interpretive Groups

Land capability classification: VIIIs
Woodland ordination symbol: None assigned

PxB—Poindexter-Mocksville complex, 2 to 8 percent slopes

Setting

Landform: Piedmont uplands, mainly in the northwestern and southern parts of the county
Landscape position: Ridges
Shape of areas: Irregular
Size of areas: 5 to 40 acres

Composition

Poindexter soil and similar inclusions: 50 percent
Mocksville soil and similar inclusions: 35 percent
Dissimilar inclusions: 15 percent

Typical Profile

Poindexter
Surface layer:
0 to 3 inches—very dark grayish brown loam

Subsurface layer:
3 to 7 inches—dark yellowish brown and strong brown loam

Subsoil:
7 to 15 inches—brown sandy clay loam
15 to 26 inches—strong brown sandy clay loam

Underlying material:
26 to 39 inches—loam saprolite that is multicolored in shades of green, black, and yellow

Bedrock:
39 to 43 inches—weathered, partially consolidated mafic igneous rock
43 inches—unweathered mafic igneous rock

Mocksville
Surface layer:
0 to 2 inches—very dark grayish brown loam

Subsurface layer:
2 to 9 inches—yellowish brown loam

Subsoil:
9 to 15 inches—brownish yellow sandy clay loam
15 to 21 inches—brownish yellow sandy clay loam that has very pale brown and strong brown mottles
21 to 29 inches—mottled strong brown, yellowish brown, and brownish yellow sandy clay loam

Underlying material:
29 to 42 inches—multicolored fine sandy loam saprolite
42 to 60 inches—multicolored loam saprolite

Soil Properties and Qualities

Depth class: Poindexter—moderately deep; Mocksville—very deep
Drainage class: Well drained
Permeability: Moderate

Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Gently sloping
Surface runoff: Medium
Hazard of water erosion: Poindexter—severe; Mocksville—moderate
Soil reaction: Poindexter—strongly acid to neutral throughout the profile except where the surface layer has been limed; Mocksville—strongly acid to neutral in the surface layer and slightly acid to slightly alkaline in the subsoil and underlying material
Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock
Depth to bedrock: Poindexter—20 to 40 inches to soft bedrock; Mocksville—more than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Enon soils that have a clayey subsoil
- Random areas of Mecklenburg soils that have a red clayey subsoil
- Random areas of Zion soils that have a clayey subsoil and have hard bedrock at a depth of 20 to 40 inches
- The moderately well drained, clayey Sedgefield soils along drainageways
- Random areas of soils that have bedrock at a depth of 40 to 60 inches
- Random areas of Poindexter and Mocksville soils that have a gravelly surface layer
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Poindexter and Mocksville soils that have a surface layer of sandy loam or fine sandy loam

Use and Management

Major Uses: Woodland and pasture
Other Uses: Cropland

Agricultural Development

Cropland
Suitability: Poindexter—suited; Mocksville—well suited
Management concerns: Poindexter—erodibility, rooting depth, and soil fertility; Mocksville—erodibility and soil fertility
Management measures and considerations:
- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.
- Incorporating plant residue into the soil helps to improve the water-holding capacity, and using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Poindexter soil.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.

- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns:
- This map unit has slight limitations affecting woodland management.

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.

Urban Development

Dwellings
Suitability for dwellings without basements: Well suited
Suitability for dwellings with basements: Poindexter—suited; Mocksville—well suited
Management concerns: Poindexter—depth to bedrock and erodibility; Mocksville—erodibility
Management measures and considerations:
- Special earthmoving equipment may be needed to grade areas of the Poindexter soil prior to building.
- Vegetating disturbed areas and using erosion-control structures, such as sediment fences and catch basins, help to keep sediments onsite.

Septic tank absorption fields
Suitability: Poindexter—poorly suited; Mocksville—suited
Management concerns: Poindexter—depth to bedrock; Mocksville—restricted permeability
Management measures and considerations:
- The Poindexter soil has severe limitations affecting septic tank absorption fields.
- Absorption fields should be located in areas of the Mocksville soil.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poindexter—suited; Mocksville—well suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting camp areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Well suited

Management concerns:
- This map unit has few limitations affecting picnic areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope and content of rock fragments
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: Based on loblolly pine as the indicator species, 6A in areas of the Poindexter soil and 8A in areas of the Mocksville soil

PxC—Poindexter-Mocksville complex, 8 to 15 percent slopes

Setting

Landform: Piedmont uplands, mainly in the northwestern and southern parts of the county
Landscape position: Narrow ridges and side slopes
Shape of areas: Oblong or irregular
Size of areas: 5 to 75 acres

Composition

Poindexter soil and similar inclusions: 45 percent
Mocksville soil and similar inclusions: 40 percent
Dissimilar inclusions: 15 percent

Typical Profile

Poindexter
Surface layer:
0 to 3 inches—very dark grayish brown loam

Subsurface layer:
3 to 7 inches—dark yellowish brown and strong brown loam

Subsoil:
7 to 15 inches—brown sandy clay loam
15 to 26 inches—strong brown sandy clay loam

Underlying material:
26 to 39 inches—loam saprolite that is multicolored in shades of green, black, and yellow

Bedrock:
39 to 43 inches—weathered, partially consolidated mafic igneous rock
43 inches—unweathered mafic igneous rock

Mocksville
Surface layer:
0 to 2 inches—very dark grayish brown loam

Subsurface layer:
2 to 9 inches—yellowish brown loam

Subsoil:
9 to 15 inches—brownish yellow sandy clay loam
15 to 21 inches—brownish yellow sandy clay loam that has very pale brown and strong brown mottles
21 to 29 inches—mottled strong brown, yellowish brown, and brownish yellow sandy clay loam

Underlying material:
29 to 42 inches—multicolored fine sandy loam saprolite
42 to 60 inches—multicolored loam saprolite

Soil Properties and Qualities

Depth class: Poindexter—moderately deep; Mocksville—very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Surface runoff: Rapid
Hazard of water erosion: Severe
Soil reaction: Poindexter—strongly acid to neutral throughout the profile except where the surface layer has been limed; Mocksville—strongly acid to neutral in the surface layer and slightly acid to slightly alkaline in the subsoil and underlying material
Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock
Depth to bedrock: Poindexter—20 to 40 inches to soft bedrock; Mocksville—more than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Enon soils that have a clayey subsoil
- Random areas of Zion soils that have a clayey subsoil and have hard bedrock at a depth of 20 to 40 inches
- Random areas of Mecklenburg soils that have a red clayey subsoil
- Random areas of soils that have bedrock at a depth of 40 to 60 inches
- Random areas of soils that have bedrock at a depth of less than 20 inches
- Random areas of Poindexter and Mocksville soils that have a gravelly surface layer
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Poindexter and Mocksville soils that have a surface layer of sandy loam or fine sandy loam

Use and Management

Major Uses: Woodland and pasture
Other Uses: Cropland

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Poindexter—erodibility, rooting depth, and soil fertility; Mocksville—erodibility and soil fertility
Management measures and considerations:
- Resource management systems that include conservation tillage, crop residue management, stripcropping, and sod-based rotations help to minimize erosion, control surface runoff, and maximize the infiltration of water.
- Incorporating plant residue into the soil helps to improve the water-holding capacity, and using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Poindexter soil.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Well suited
Suitability for hayland: Suited
Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns:
- This map unit has slight limitations affecting woodland management.

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Poindexter—slope, depth to bedrock, and erodibility; Mocksville—slope and erodibility
Management measures and considerations:
- Designing structures so that they conform to the natural slope helps to overcome the slope limitation.
- Special earthmoving equipment may be needed to grade these soils prior to building.

- Vegetating disturbed areas and using erosion-control structures, such as sediment fences and catch basins, help to keep sediments onsite.

Septic tank absorption fields
Suitability: Poindexter—poorly suited; Mocksville—suited
Management concerns: Poindexter—depth to bedrock; Mocksville—restricted permeability and slope
Management measures and considerations:
- The Poindexter soil has severe limitations affecting septic tank absorption fields.
- Absorption fields should be located in areas of the Mocksville soil.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Extensive grading, including cutting and filling, is needed.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: Poindexter—IIIe; Mocksville—IVe

Woodland ordination symbol: Based on loblolly pine as the indicator species, 6A in areas of the Poindexter soil and 8A in areas of the Mocksville soil

PxD—Poindexter-Mocksville complex, 15 to 25 percent slopes

Setting

Landform: Piedmont uplands, mainly in the northwestern and southern parts of the county
Landscape position: Very narrow ridges and side slopes
Shape of areas: Long and narrow or oblong
Size of areas: 5 to 60 acres

Composition

Poindexter soil and similar inclusions: 45 percent
Mocksville soil and similar inclusions: 40 percent
Dissimilar inclusions: 15 percent

Typical Profile

Poindexter
Surface layer:
0 to 3 inches—very dark grayish brown loam

Subsurface layer:
3 to 7 inches—dark yellowish brown and strong brown loam

Subsoil:
7 to 15 inches—brown sandy clay loam
15 to 26 inches—strong brown sandy clay loam

Underlying material:
26 to 39 inches—loam saprolite that is multicolored in shades of green, black, and yellow

Bedrock:
39 to 43 inches—weathered, partially consolidated mafic igneous rock
43 inches—unweathered mafic igneous rock

Mocksville
Surface layer:
0 to 2 inches—very dark grayish brown loam

Subsurface layer:
2 to 9 inches—yellowish brown loam

Subsoil:
9 to 15 inches—brownish yellow sandy clay loam
15 to 21 inches—brownish yellow sandy clay loam that has very pale brown and strong brown mottles
21 to 29 inches—mottled strong brown, yellowish brown, and brownish yellow sandy clay loam

Underlying material:
29 to 42 inches—multicolored fine sandy loam saprolite
42 to 60 inches—multicolored loam saprolite

Soil Properties and Qualities

Depth class: Poindexter—moderately deep; Mocksville—very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Moderately steep
Surface runoff: Rapid
Hazard of water erosion: Very severe
Soil reaction: Poindexter—strongly acid to neutral throughout the profile except where the surface layer has been limed; Mocksville—strongly acid to neutral in the surface layer and slightly acid to slightly alkaline in the subsoil and underlying material
Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock
Depth to bedrock: Poindexter—20 to 40 inches to soft bedrock; Mocksville—more than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of the stony Enon soils that have a clayey subsoil
- Zion soils that have a clayey subsoil, have hard bedrock at a depth of 20 to 40 inches, and are on the lower, less sloping side slopes
- Random areas of soils that have bedrock at a depth of 40 to 60 inches
- Random areas of soils that have bedrock at a depth of less than 20 inches
- Random areas of Poindexter and Mocksville soils that have a gravelly surface layer
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Poindexter and Mocksville soils that have a surface layer of sandy loam or fine sandy loam

Use and Management

Major Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Poorly suited
Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- Managing this map unit for cultivated crops is difficult because the slope limits equipment use.
- Cultivation should be restricted to the less sloping areas of this map unit, or areas on better suited soils should be selected for cropland.
- Resource management systems that include conservation tillage, crop residue management, stripcropping, and sod-based rotations help to minimize erosion, control surface runoff, and maximize the infiltration of water.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Suited
Suitability for hayland: Poorly suited

Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- The slope limits equipment use in the steeper areas.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Erodibility, equipment use, and slope
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the slope limitation.
- Reforestation immediately after harvest using minimal site preparation and recommended tree species helps to control erosion and siltation of streams.

Urban Development

Dwellings
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope and building in the less sloping areas help to overcome the slope limitation.
- Vegetating disturbed areas and using erosion-control structures, such as sediment fences and catch basins, help to keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Poindexter—slope and depth to bedrock; Mocksville—slope
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing roads and trails on the contour and locating camping facilities in the less sloping areas help to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.

- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing roads and trails on the contour and locating picnic facilities in the less sloping areas help to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Unsuited
Management concerns: Slope
Management measures and considerations:
- This map unit has severe limitations affecting playgrounds.
- A site on better suited soils should be selected.

Interpretive Groups

Land capability classification: VIe
Woodland ordination symbol: Based on loblolly pine as the indicator species, 6R in areas of the Poindexter soil and 8R in areas of the Mocksville soil

PxE—Poindexter-Mocksville complex, 25 to 45 percent slopes

Setting

Landform: Piedmont uplands, mainly in the northwestern and southern parts of the county
Landscape position: Narrow side slopes
Shape of areas: Long and narrow
Size of areas: 5 to 30 acres

Composition

Poindexter soil and similar inclusions: 45 percent
Mocksville soil and similar inclusions: 40 percent
Dissimilar inclusions: 15 percent

Typical Profile

Poindexter
Surface layer:
0 to 3 inches—very dark grayish brown loam

Subsurface layer:
3 to 7 inches—dark yellowish brown and strong brown loam

Subsoil:
7 to 15 inches—brown sandy clay loam
15 to 26 inches—strong brown sandy clay loam

Underlying material:
26 to 39 inches—loam saprolite that is multicolored in shades of green, black, and yellow

Bedrock:
39 to 43 inches—weathered, partially consolidated mafic igneous rock
43 inches—unweathered mafic igneous rock

Mocksville
Surface layer:
0 to 2 inches—very dark grayish brown loam

Subsurface layer:
2 to 9 inches—yellowish brown loam

Subsoil:
9 to 15 inches—brownish yellow sandy clay loam
15 to 21 inches—brownish yellow sandy clay loam that has very pale brown and strong brown mottles
21 to 29 inches—mottled strong brown, yellowish brown, and brownish yellow sandy clay loam

Underlying material:
29 to 42 inches—multicolored fine sandy loam saprolite
42 to 60 inches—multicolored loam saprolite

Soil Properties and Qualities

Depth class: Poindexter—moderately deep; Mocksville—very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Steep
Surface runoff: Rapid
Hazard of water erosion: Very severe
Soil reaction: Poindexter—strongly acid to neutral throughout the profile except where the surface layer has been limed; Mocksville—strongly acid to neutral in the surface layer and slightly acid to slightly alkaline in the subsoil and underlying material
Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock
Depth to bedrock: Poindexter—20 to 40 inches to soft bedrock; Mocksville—more than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of soils that have a clayey subsoil
- Random areas of soils that have bedrock at a depth of 40 to 60 inches
- Random areas of soils that have bedrock at a depth of less than 20 inches
- Random areas of Poindexter and Mocksville soils that have a gravelly surface layer
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Poindexter and Mocksville soils that have a surface layer of sandy loam or fine sandy loam

Use and Management

Major Uses: Woodland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Erodibility and equipment use
Management measures and considerations:
- This map unit has severe limitations affecting crop production because of the slope.
- A site on better suited soils should be selected.

Pasture and hayland
Suitability for pasture: Poorly suited
Suitability for hayland: Unsuited
Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- Because of the slope, managing this map unit for pasture and hayland is difficult.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Constructing trails facilitates the grazing of livestock in areas where access is limited.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating pasture.

Woodland
Suitability: Suited
Productivity class: Moderately high for loblolly pine
Management concerns: Erodibility, equipment use, and slope
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Constructing roads, fire lanes, and skid trails on the contour helps to overcome the slope limitation.
- Reforestation immediately after harvest using minimal site preparation and recommended tree species helps to control erosion and siltation of streams.
- Using cable logging methods helps to overcome the equipment use limitation and prevent the acceleration of erosion caused by road construction, skid trails, and disturbance of the forest floor by machinery.

Urban Development

Dwellings
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- This map unit has severe limitations affecting dwellings because of the slope.
- A site on better suited soils should be selected.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Poindexter—slope and depth to bedrock; Mocksville—slope

Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing roads and trails on the contour and locating camping facilities in the less sloping areas help to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing roads and trails on the contour and locating picnic facilities in the less sloping areas help to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Unsuited
Management concerns: Slope
Management measures and considerations:
- This map unit has severe limitations affecting playgrounds.
- A site on better suited soils should be selected.

Interpretive Groups

Land capability classification: VIIe
Woodland ordination symbol: Based on loblolly pine as the indicator species, 6R in areas of the Poindexter soil and 8R in areas of the Mocksville soil

RnB—Rion-Wedowee complex, 2 to 8 percent slopes

Setting

Landform: Piedmont uplands, mainly in the southwestern part of the county
Landscape position: Ridges
Shape of areas: Irregular
Size of areas: 5 to 100 acres

Composition

Rion soil and similar inclusions: 50 percent
Wedowee soil and similar inclusions: 35 percent
Dissimilar inclusions: 15 percent

Typical Profile

Rion
Surface layer:
0 to 8 inches—brown sandy loam

Subsoil:
8 to 11 inches—light yellowish brown sandy clay loam
11 to 21 inches—brown sandy clay loam
21 to 26 inches—strong brown sandy clay loam
26 to 38 inches—mottled brown and strong brown sandy clay loam

Underlying material:
38 to 46 inches—multicolored sandy loam saprolite
46 to 60 inches—multicolored fine sandy loam saprolite

Wedowee
Surface layer:
0 to 8 inches—brown sandy loam

Subsurface layer:
8 to 12 inches—brownish yellow sandy loam

Subsoil:
12 to 15 inches—strong brown sandy clay loam that has brownish yellow mottles
15 to 20 inches—strong brown clay that has yellowish red mottles
20 to 29 inches—yellowish red clay that has red and brownish yellow mottles
29 to 34 inches—yellowish red sandy clay loam that has red, brownish yellow, and strong brown mottles

Underlying material:
34 to 60 inches—multicolored sandy loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Gently sloping
Surface runoff: Medium
Hazard of water erosion: Moderate
Soil reaction: Rion—very strongly acid to slightly acid throughout the profile except where the surface layer has been limed; Wedowee—extremely acid to strongly acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of the slowly permeable Vance soils

- The moderately well drained Helena soils along drainageways and in depressional areas
- Random areas of Rion and Wedowee soils that have a gravelly surface layer
- Random areas of Wedowee soils that have a surface layer of sandy clay loam and commonly occur in cultivated areas
- Random areas of Ashlar and Saw soils that have hard bedrock at a depth of 20 to 40 inches
- Random areas where stones, boulders, and rock outcrops are widely scattered on the surface

Similar inclusions:

- Pacolet soils that have a subsoil that is redder than that of the Rion or Wedowee soil and are on small knolls and ridge crests
- Random areas of Appling soils that have saprolite at a depth of more 40 inches
- Cecil soils that have a subsoil that is redder than that of the Rion or Wedowee soil, have saprolite at a depth of more than 40 inches, and are on small knolls and on ridge crests
- Random areas of Rion and Wedowee soils that have a surface layer of loam or loamy sand

Use and Management

Major Uses: Woodland and cropland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:

- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:

- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns:

- This map unit has slight limitations affecting woodland management.

Management measures and considerations:

- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.

Urban Development

Dwellings
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting dwellings.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Rion—well suited; Wedowee—suited
Management concerns: Rion—few limitations; Wedowee—restricted permeability
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls in areas of the Wedowee soil.

Local roads and streets
Suitability: Rion—well suited; Wedowee—suited
Management concerns: Rion—few limitations; Wedowee—low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength in areas of the Wedowee soil.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting camp areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting picnic areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope and content of rock fragments
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

RnC—Rion-Wedowee complex, 8 to 15 percent slopes

Setting

Landform: Piedmont uplands, mainly in the southwestern part of the county
Landscape position: Narrow ridges and side slopes
Shape of areas: Oblong or irregular
Size of areas: 5 to 50 acres

Composition

Rion soil and similar inclusions: 55 percent
Wedowee soil and similar inclusions: 30 percent
Dissimilar inclusions: 15 percent

Typical Profile

Rion
Surface layer:
0 to 8 inches—brown sandy loam

Subsoil:
8 to 11 inches—light yellowish brown sandy clay loam
11 to 21 inches—brown sandy clay loam
21 to 26 inches—strong brown sandy clay loam
26 to 38 inches—mottled brown and strong brown sandy clay loam

Underlying material:
38 to 46 inches—multicolored sandy loam saprolite
46 to 60 inches—multicolored fine sandy loam saprolite

Wedowee
Surface layer:
0 to 8 inches—brown sandy loam

Subsurface layer:
8 to 12 inches—brownish yellow sandy loam

Subsoil:
12 to 15 inches—strong brown sandy clay loam that has brownish yellow mottles
15 to 20 inches—strong brown clay that has yellowish red mottles
20 to 29 inches—yellowish red clay that has red, brownish yellow, and strong brown mottles
29 to 34 inches—yellowish red sandy clay loam that has red and brownish yellow mottles

Underlying material:
34 to 60 inches—multicolored sandy loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet

Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Surface runoff: Rapid
Hazard of water erosion: Severe
Soil reaction: Rion—very strongly acid to slightly acid throughout the profile except where the surface layer has been limed; Wedowee—extremely acid to strongly acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of the slowly permeable Vance soils
- The moderately well drained Helena soils along drainageways
- Random areas of Rion and Wedowee soils that have a surface layer of gravelly sandy loam
- Random areas of Ashlar and Saw soils that have hard bedrock at a depth of 20 to 40 inches
- Random areas where stones, boulders, and rock outcrops are widely scattered on the surface

Similar inclusions:
- Random areas of Pacolet soils that have a subsoil that is redder than that of the Rion or Wedowee soil
- Random areas of Cecil soils that have a subsoil that is redder than that of the Rion or Wedowee soil and have saprolite at a depth of more than 40 inches
- Random areas of Rion and Wedowee soils that have a surface layer of loamy sand

Use and Management

Major Uses: Woodland and pasture
Other Uses: Cropland

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Resource management systems that include conservation tillage, crop residue management, stripcropping, and sod-based rotations help to minimize erosion, control surface runoff, and maximize the infiltration of water.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Well suited
Suitability for hayland: Suited
Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.

- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns:
- This map unit has slight limitations affecting woodland management.

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope helps to overcome the slope limitation.
- Vegetating disturbed areas and using erosion-control structures, such as sediment fences and catch basins, help to keep sediments onsite.

Septic tank absorption fields
Suitability: Suited
Management concerns: Rion—slope; Wedowee—restricted permeability and slope
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls in areas of the Wedowee soil.

Local roads and streets
Suitability: Suited
Management concerns: Rion—slope; Wedowee—low strength and slope
Management measures and considerations:
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Slope

Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Extensive grading, including cutting and filling, is needed.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

RoB—Rion-Wedowee-Ashlar complex, 2 to 8 percent slopes

Setting

Landform: Piedmont uplands, mainly in the southern part of the county
Landscape position: Ridges
Shape of areas: Irregular
Size of areas: 5 to 100 acres

Composition

Rion soil and similar inclusions: 30 percent
Wedowee soil and similar inclusions: 30 percent
Ashlar soil and similar inclusions: 25 percent
Dissimilar inclusions: 15 percent

Typical Profile

Rion
Surface layer:
0 to 8 inches—brown sandy loam

Subsoil:
8 to 11 inches—light yellowish brown sandy clay loam
11 to 21 inches—brown sandy clay loam
21 to 26 inches—strong brown sandy clay loam
26 to 38 inches—mottled brown and strong brown sandy clay loam

Underlying material:
38 to 46 inches—multicolored sandy loam saprolite
46 to 60 inches—multicolored fine sandy loam saprolite

Wedowee
Surface layer:
0 to 8 inches—brown sandy loam

Subsurface layer:
8 to 12 inches—brownish yellow sandy loam

Subsoil:
12 to 15 inches—strong brown sandy clay loam that has brownish yellow mottles
15 to 20 inches—strong brown clay that has yellowish red mottles
20 to 29 inches—yellowish red clay that has red, brownish yellow, and strong brown mottles
29 to 34 inches—yellowish red sandy clay loam that has red and brownish yellow mottles

Underlying material:
34 to 60 inches—multicolored sandy loam saprolite

Ashlar
Surface layer:
0 to 9 inches—brown sandy loam

Subsoil:
9 to 17 inches—brownish yellow sandy loam
17 to 30 inches—light yellowish brown sandy loam that has reddish yellow mottles

Underlying material:
30 to 37 inches—mottled reddish yellow and light yellowish brown gravelly sandy loam saprolite

Bedrock:
37 inches—unweathered granite

Soil Properties and Qualities

Depth class: Rion and Wedowee—very deep; Ashlar—moderately deep
Drainage class: Well drained
Permeability: Rion and Wedowee—moderate; Ashlar—moderately rapid
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Gently sloping
Surface runoff: Medium
Hazard of water erosion: Moderate
Soil reaction: Rion—very strongly acid to slightly acid throughout the profile except where the surface layer has been limed; Wedowee—extremely acid to strongly acid throughout the profile except where the surface layer has been limed; Ashlar—moderately acid to very strongly acid in the surface layer except where it has been limed and strongly acid or very strongly acid in the subsoil and underlying material
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: Rion and Wedowee—more than 60 inches; Ashlar—20 to 40 inches to hard bedrock

Inclusions

Dissimilar inclusions:
- Random areas of the slowly permeable Vance soils
- The moderately well drained Helena soils along drainageways and in depressional areas
- Random areas of Rion, Wedowee, and Ashlar soils that have a gravelly surface layer
- Random areas of soils that have hard bedrock at a depth of 40 to 60 inches

- Random areas where stones, boulders, and rock outcrops are widely scattered on the surface

Similar inclusions:
- Pacolet soils that have a subsoil that is redder than that of the Rion, Wedowee, or Ashlar soil and are on small knolls and on ridge crests
- Random areas of Saw soils
- Random areas of Appling soils that have saprolite at a depth of more 40 inches
- Cecil soils that have a subsoil that is redder than that of the Rion, Wedowee, or Ashlar soil, have saprolite at a depth of more than 40 inches, and are on small knolls and on ridge crests
- Random areas of Rion, Wedowee, and Ashlar soils that have a surface layer of loamy sand

Use and Management

Major Uses: Woodland
Other Uses: Cropland and pasture

Agricultural Development

Cropland
Suitability: Rion and Wedowee—well suited; Ashlar—suited
Management concerns: Rion and Wedowee—erodibility and soil fertility; Ashlar—erodibility, rooting depth, and soil fertility
Management measures and considerations:
- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.
- Incorporating plant residue into the soil helps to improve the water-holding capacity, and using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Ashlar soil.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Rion and Wedowee—well suited; Ashlar—suited
Management concerns: Rion and Wedowee—erodibility and soil fertility; Ashlar—erodibility, rooting depth, and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Using shallow-rooted or drought-tolerant plants helps to improve productivity in areas of the Ashlar soil.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Rion and Wedowee—slight limitations; Ashlar—windthrow hazard

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Productivity may be increased in areas of the Ashlar soil by harvesting windthrown trees, which result from high winds and the limited rooting depth.

Urban Development

Dwellings

Suitability for dwellings without basements: Rion and Wedowee—well suited; Ashlar—suited

Suitability for dwellings with basements: Rion and Wedowee—well suited; Ashlar—poorly suited

Management concerns: Rion and Wedowee—few limitations; Ashlar—depth to bedrock

Management measures and considerations:
- Drilling and blasting of rock or special earthmoving equipment may be needed to grade areas of the Ashlar soil.
- Only dwellings without basements should be built on the Ashlar soil.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields

Suitability: Rion—well suited; Wedowee—suited; Ashlar—poorly suited

Management concerns: Rion—few limitations; Wedowee—restricted permeability; Ashlar—depth to bedrock

Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Areas of the Rion and Wedowee soils should be used for absorption fields.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls in areas of the Wedowee soil.

Local roads and streets

Suitability: Rion—well suited; Wedowee and Ashlar—suited

Management concerns: Rion—few limitations; Wedowee—low strength; Ashlar—depth to bedrock

Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength in areas of the Wedowee soil.
- Blasting or special grading equipment may be needed to construct roads on the Ashlar soil.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas

Suitability: Well suited

Management concerns:
- This map unit has few limitations affecting camp areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas

Suitability: Well suited

Management concerns:
- This map unit has few limitations affecting picnic areas

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope and small stones
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: Rion and Wedowee—IIe; Ashlar—IIIe
Woodland ordination symbol: Based on loblolly pine as the indicator species, 8A in areas of the Rion and Wedowee soils and 8S in areas of the Ashlar soil

RoC—Rion-Wedowee-Ashlar complex, 8 to 15 percent slopes

Setting

Landform: Piedmont uplands, mainly in the southern part of the county
Landscape position: Narrow ridges and side slopes
Shape of areas: Oblong or irregular
Size of areas: 5 to 50 acres

Composition

Rion soil and similar inclusions: 30 percent
Wedowee soil and similar inclusions: 30 percent
Ashlar soil and similar inclusions: 25 percent
Dissimilar inclusions: 15 percent

Typical Profile

Rion
Surface layer:
0 to 8 inches—brown sandy loam

Subsoil:
8 to 11 inches—light yellowish brown sandy clay loam
11 to 21 inches—brown sandy clay loam
21 to 26 inches—strong brown sandy clay loam
26 to 38 inches—mottled brown and strong brown sandy clay loam

Underlying material:
38 to 46 inches—multicolored sandy loam saprolite
46 to 60 inches—multicolored fine sandy loam saprolite

Wedowee
Surface layer:
0 to 8 inches—brown sandy loam

Subsurface layer:
8 to 12 inches—brownish yellow sandy loam

Subsoil:
12 to 15 inches—strong brown sandy clay loam that has brownish yellow mottles
15 to 20 inches—strong brown clay that has yellowish red mottles
20 to 29 inches—yellowish red clay that has red and brownish yellow mottles
29 to 34 inches—yellowish red sandy clay loam that has red, brownish yellow, and strong brown mottles

Underlying material:
34 to 60 inches—multicolored sandy loam saprolite

Ashlar
Surface layer:
0 to 9 inches—brown sandy loam

Subsoil:
9 to 17 inches—brownish yellow sandy loam
17 to 30 inches—light yellowish brown sandy loam that has reddish yellow mottles

Underlying material:
30 to 37 inches—mottled reddish yellow and light yellowish brown gravelly sandy loam saprolite

Bedrock:
37 inches—unweathered granite

Soil Properties and Qualities

Depth class: Rion and Wedowee—very deep; Ashlar—moderately deep
Drainage class: Well drained
Permeability: Rion and Wedowee—moderate; Ashlar—moderately rapid
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Surface runoff: Rapid
Hazard of water erosion: Severe
Soil reaction: Rion—very strongly acid to slightly acid throughout the profile except where the surface layer has been limed; Wedowee—extremely acid to strongly acid throughout the profile except where the surface layer has been limed; Ashlar—moderately acid to very strongly acid in the surface layer except where it has been limed and strongly acid or very strongly acid in the subsoil and underlying material
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: Rion and Wedowee—more than 60 inches; Ashlar—20 to 40 inches to hard bedrock

Inclusions

Dissimilar inclusions:
- Random areas of the slowly permeable Vance soils
- The moderately well drained Helena soils along drainageways and in depressional areas
- Random areas of Rion, Wedowee, and Ashlar soils that have a gravelly surface layer

- Random areas of soils that have hard bedrock at a depth of 40 to 60 inches
- Random areas where stones, boulders, and rock outcrops are widely scattered on the surface

Similar inclusions:

- Random areas of Pacolet soils that have a subsoil that is redder than that of the Rion, Wedowee, or Ashlar soil
- Random areas of Saw soils
- Random areas of Cecil soils that have a subsoil that is redder than that of the Rion, Wedowee, or Ashlar soil and have saprolite at a depth of more than 40 inches
- Random areas of Rion, Wedowee, and Ashlar soils that have a surface layer of loamy sand

Use and Management

Major Uses: Woodland
Other Uses: Cropland and pasture

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Rion and Wedowee—erodibility and soil fertility; Ashlar—erodibility, rooting depth, and soil fertility
Management measures and considerations:

- Resource management systems that include conservation tillage, crop residue management, stripcropping, and sod-based rotations help to minimize erosion, control surface runoff, and maximize the infiltration of water.
- Incorporating plant residue into the soil helps to improve the water-holding capacity, and using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Ashlar soil.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Rion and Wedowee—well suited; Ashlar—suited
Management concerns: Rion and Wedowee—erodibility, equipment use, and soil fertility; Ashlar—erodibility, equipment use, rooting depth, and soil fertility
Management measures and considerations:

- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- Using shallow-rooted or drought-tolerant plants helps to improve productivity in areas of the Ashlar soil.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Rion and Wedowee—slight limitations; Ashlar—windthrow hazard

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Productivity may be increased in areas of the Ashlar soil by harvesting windthrown trees, which result from high winds and the limited rooting depth.

Urban Development

Dwellings
Suitability for dwellings without basements: Suited
Suitability for dwellings with basements: Rion and Wedowee—suited; Ashlar—poorly suited
Management concerns: Rion and Wedowee—slope; Ashlar—slope and depth to bedrock
Management measures and considerations:
- Designing structures so that they conform to the natural slope helps to overcome the slope limitation.
- Drilling and blasting of rock or special earthmoving equipment may be needed to grade areas of the Ashlar soil.
- Only dwellings without basements should be built on the Ashlar soil.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Rion and Wedowee—suited; Ashlar—poorly suited
Management concerns: Rion—slope; Wedowee—restricted permeability and slope; Ashlar—depth to bedrock and slope
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Areas of the Rion and Wedowee soils should be used for absorption fields.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls in areas of the Wedowee soil.

Local roads and streets
Suitability: Suited
Management concerns: Rion—slope; Wedowee—low strength and slope; Ashlar—depth to bedrock and slope
Management measures and considerations:
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Blasting or special grading equipment may be needed to construct roads in areas of the Ashlar soil.
- Providing sand and gravel and compacting roadbeds help to improve soil strength in areas of the Wedowee soil.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.

- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Extensive grading, including cutting and filling, is needed.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: Based on loblolly pine as the indicator species, 8A in areas of the Rion and Wedowee soils and 8S in areas of the Ashlar soil

RvA—Riverview loam, 0 to 2 percent slopes, occasionally flooded

Setting

Landform: River and stream valleys of the Piedmont, in areas throughout the county
Landscape position: Flood plains
Shape of areas: Long and narrow or oblong
Size of areas: 5 to 100 acres

Composition

Riverview soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 10 inches—brown loam

Subsoil:
10 to 18 inches—brown loam
18 to 29 inches—yellowish brown loam
29 to 36 inches—strong brown loam that has very pale brown mottles
36 to 49 inches—brown loam that has light gray and yellowish red mottles
49 to 59 inches—mottled brown and light gray loam

Underlying material:
59 to 72 inches—brown sandy loam that has light gray and brownish yellow mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
High water table: At a depth of 3.0 to 5.0 feet from December through March; apparent
Hazard of flooding: Occasional for brief periods from December through March
Shrink-swell potential: Low
Slope class: Nearly level
Surface runoff: Slow
Hazard of water erosion: None or slight
Soil reaction: Very strongly acid to moderately acid throughout the profile except where the surface layer has been limed
Parent material: Recent alluvium
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- The somewhat poorly drained Chewacla soils in low, depressional areas at the foot of upland slopes
- Excessively drained, sandy soils adjacent to the deeper stream channels
- Moderately well drained soils in the slightly lower landscape positions

Similar inclusions:
- Random areas of Riverview soils that have a surface layer of silt loam or fine sandy loam

Use and Management

Major Uses: Cropland and pasture
Other Uses: Woodland

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Flooding and soil fertility
Management measures and considerations:
- Harvesting row crops as soon as possible helps to reduce the risk of damage caused by flooding.
- Performing tillage and harvesting operations when the soil is not wet helps to prevent rutting caused by equipment.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Well suited
Suitability for hayland: Suited
Management concerns: Flooding and soil fertility
Management measures and considerations:
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Harvesting hay crops as soon as possible helps to reduce the risk of damage caused by flooding.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: High for loblolly pine
Management concerns:
- This map unit has slight limitations affecting woodland management.

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.

Urban Development

Dwellings
Suitability: Unsuited
Management concerns: Flooding
Management measures and considerations:
- This map unit has severe limitations affecting dwellings.
- A site on better suited soils should be selected.

Septic tank absorption fields
Suitability: Unsuited
Management concerns: Flooding and wetness
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Flooding
Management measures and considerations:
- Constructing bridges or using culverts is necessary to cross streams and flood plains.
- Constructing roads on raised, well compacted fill material helps to overcome the flooding limitation.

Recreational Development

Camp areas
Suitability: Unsuited
Management concerns: Flooding
Management measures and considerations:
- This map unit has severe limitations affecting camp areas.
- A site on better suited soils should be selected.

Picnic areas
Suitability: Well suited
Management concerns: Flooding
Management measures and considerations:
- This map unit should not be used for picnic areas during periods when flooding is a hazard.

Playgrounds
Suitability: Suited
Management concerns: Flooding
Management measures and considerations:
- This map unit should not be used for playgrounds after heavy rains when flooding is a hazard.

- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IIw
Woodland ordination symbol: 11A, based on loblolly pine as the indicator species

SaB—Saw-Pacolet complex, 2 to 8 percent slopes

Setting

Landform: Piedmont uplands, mainly in the southwestern part of the county
Landscape position: Ridges
Shape of areas: Irregular
Size of areas: 4 to 50 acres

Composition

Saw soil and similar inclusions: 45 percent
Pacolet soil and similar inclusions: 45 percent
Dissimilar inclusions: 10 percent

Typical Profile

Saw
Surface layer:
0 to 8 inches—brown sandy loam

Subsoil:
8 to 20 inches—red clay that has brownish yellow mottles
20 to 23 inches—red sandy clay loam
23 to 26 inches—red sandy loam

Underlying material:
26 to 29 inches—multicolored gravelly sandy loam saprolite

Bedrock:
29 inches—unweathered granite

Pacolet
Surface layer:
0 to 5 inches—dark brown sandy loam

Subsurface layer:
5 to 8 inches—yellowish brown sandy loam

Subsoil:
8 to 24 inches—red clay
24 to 29 inches—red clay loam that has reddish yellow mottles
29 to 38 inches—red sandy clay loam that has reddish yellow mottles

Underlying material:
38 to 60 inches—yellowish red sandy loam saprolite that has yellowish red mottles

Soil Properties and Qualities

Depth class: Saw—moderately deep; Pacolet—very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet

Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Gently sloping
Surface runoff: Medium
Hazard of water erosion: Moderate
Soil reaction: Saw—very strongly acid to moderately acid throughout the profile except where the surface layer has been limed; Pacolet—very strongly acid to slightly acid in the surface layer except where it has been limed and very strongly acid to moderately acid in the subsoil and underlying material
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: Saw—20 to 40 inches to hard bedrock; Pacolet—more than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Rion and Ashlar soils that have a loamy subsoil
- Random areas of Saw and Pacolet soils that have a gravelly surface layer
- Random areas of Saw and Pacolet soils that have a surface layer of sandy clay loam
- Random areas of soils that have bedrock at a depth of 40 to 60 inches
- Random areas where stones, boulders, and rock outcrops are widely scattered on the surface

Similar inclusions:
- Random areas of Wedowee soils that have a subsoil that is yellower than that of the Saw or Pacolet soil

Use and Management

Major Uses: Woodland
Other Uses: Cropland and pasture

Agricultural Development

Cropland
Suitability: Saw—suited; Pacolet—well suited
Management concerns: Saw—erodibility, rooting depth, soil fertility; Pacolet—erodibility and soil fertility
Management measures and considerations:
- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.
- Incorporating plant residue into the soil helps to improve the water-holding capacity, and using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Saw soil.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Saw—erodibility, rooting depth, and soil fertility; Pacolet—erodibility and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Using shallow-rooted or drought-tolerant plants helps to improve productivity in areas of the Saw soil.

- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Saw—windthrow hazard; Pacolet—slight limitations
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Productivity may be increased in areas of the Saw soil by harvesting windthrown trees, which result from high winds and the limited rooting depth.

Urban Development

Dwellings
Suitability for dwellings without basements: Saw—suited; Pacolet—well suited
Suitability for dwellings with basements: Saw—poorly suited; Pacolet—well suited
Management concerns: Saw—depth to bedrock; Pacolet—few limitations
Management measures and considerations:
- Only dwellings without basements should be built on the Saw soil.
- Drilling and blasting of rock or special earthmoving equipment may be needed to grade areas of the Saw soil.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Saw—poorly suited; Pacolet—suited
Management concerns: Saw—depth to bedrock; Pacolet—restricted permeability
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Areas of the Pacolet soil should be used for absorption fields.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Suited
Management concerns: Saw—depth to bedrock and low strength; Pacolet—low strength
Management measures and considerations:
- Blasting or special grading equipment may be needed to construct roads on the Saw soil.
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting camp areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting picnic areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Pacolet—slope; Saw—slope, small stones, and depth to bedrock
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- The depth to bedrock should be determined before grading for playgrounds.
- Small stones should be removed.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: Based on loblolly pine as the indicator species, 6D in areas of the Saw soil and 8A in areas of the Pacolet soil

SaC—Saw-Pacolet complex, 8 to 15 percent slopes

Setting

Landform: Piedmont uplands, mainly in the southwestern part of the county
Landscape position: Narrow ridges and side slopes
Shape of areas: Oblong or irregular
Size of areas: 4 to 20 acres

Composition

Saw soil and similar inclusions: 45 percent
Pacolet soil and similar inclusions: 45 percent
Dissimilar inclusions: 10 percent

Typical Profile

Saw
Surface layer:
0 to 8 inches—brown sandy loam

Subsoil:
8 to 20 inches—red clay that has brownish yellow mottles
20 to 23 inches—red sandy clay loam

23 to 26 inches—red sandy loam

Underlying material:
26 to 29 inches—multicolored gravelly sandy loam saprolite

Bedrock:
29 inches—unweathered granite

Pacolet
Surface layer:
0 to 5 inches—dark brown sandy loam

Subsurface layer:
5 to 8 inches—yellowish brown sandy loam

Subsoil:
8 to 24 inches—red clay
24 to 29 inches—red clay loam that has reddish yellow mottles
29 to 38 inches—red sandy clay loam that has reddish yellow mottles

Underlying material:
38 to 60 inches—yellowish red sandy loam saprolite that has yellowish red mottles

Soil Properties and Qualities

Depth class: Saw—moderately deep; Pacolet—very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Strongly sloping
Surface runoff: Rapid
Hazard of water erosion: Severe
Soil reaction: Saw—very strongly acid to moderately acid throughout the profile except where the surface layer has been limed; Pacolet—very strongly acid to slightly acid in the surface layer except where it has been limed and very strongly acid to moderately acid in the subsoil and underlying material
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: Saw—20 to 40 inches to hard bedrock; Pacolet—more than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Rion and Ashlar soils that have a loamy subsoil
- Random areas of Saw and Pacolet soils that have a gravelly surface layer
- Random areas of Saw and Pacolet soils that have a surface layer of sandy clay loam
- Random areas of soils that have bedrock at a depth of 40 to 60 inches
- Random areas where stones, boulders, and rock outcrops are widely scattered on the surface

Similar inclusions:
- Random areas of Wedowee soils that have a subsoil that is yellower than that of the Saw or Pacolet soil

Use and Management

Major Uses: Woodland
Other Uses: Cropland and pasture

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Saw—erodibility, rooting depth, and soil fertility; Pacolet—erodibility and soil fertility
Management measures and considerations:
- Resource management systems that include conservation tillage, crop residue management, stripcropping, and sod-based rotations help to minimize erosion, control surface runoff, and maximize the infiltration of water.
- Incorporating plant residue into the soil helps to improve the water-holding capacity, and using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Saw soil.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Well suited
Suitability for hayland: Suited
Management concerns: Saw—erodibility, rooting depth, equipment use, and soil fertility; Pacolet—erodibility, equipment use, and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Using shallow-rooted or drought-tolerant plants helps to improve productivity in areas of the Saw soil.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Saw—windthrow hazard; Pacolet—slight limitations
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Productivity may be increased in areas of the Saw soil by harvesting windthrown trees, which result from high winds and the limited rooting depth.

Urban Development

Dwellings
Suitability for dwellings without basements: Suited
Suitability for dwellings with basements: Saw—poorly suited; Pacolet—suited
Management concerns: Saw—depth to bedrock; Pacolet—slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope helps to overcome the slope limitation.
- Only dwellings without basements should be built on the Saw soil.

- Drilling and blasting of rock or special earthmoving equipment may be needed to grade areas of the Saw soil.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and prevent sediments from leaving the site.

Septic tank absorption fields
Suitability: Saw—poorly suited; Pacolet—suited
Management concerns: Saw—depth to bedrock; Pacolet—restricted permeability and slope
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Areas of the Pacolet soil should be used for absorption fields.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Suited
Management concerns: Saw—depth to bedrock, low strength, and slope; Pacolet—low strength and slope
Management measures and considerations:
- Blasting or special grading equipment may be needed to construct roads on the Saw soil.
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Extensive grading, including cutting and filling, is needed.
- The depth to bedrock should be determined before grading for playgrounds.

- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: Saw—IIIe; Pacolet—IVe
Woodland ordination symbol: Based on loblolly pine as the indicator species, 6D in areas of the Saw soil
and 8A in areas of the Pacolet soil

ScB2—Saw-Pacolet complex, 2 to 8 percent slopes, eroded

Setting

Landform: Piedmont uplands, mainly in the southwestern part of the county
Landscape position: Ridges
Shape of areas: Irregular
Size of areas: 4 to 100 acres

Composition

Saw soil and similar inclusions: 45 percent
Pacolet soil and similar inclusions: 45 percent
Dissimilar inclusions: 10 percent

Typical Profile

Saw
Surface layer:
0 to 5 inches—reddish brown sandy clay loam

Subsoil:
5 to 23 inches—red clay that has brownish yellow mottles
23 to 29 inches—red sandy clay loam

Underlying material:
29 to 34 inches—multicolored gravelly sandy loam saprolite

Bedrock:
34 inches—unweathered granite

Pacolet
Surface layer:
0 to 7 inches—reddish brown sandy clay loam

Subsoil:
7 to 18 inches—red clay
18 to 24 inches—red sandy clay that has reddish yellow mottles
24 to 33 inches—red sandy clay loam

Underlying material:
33 to 44 inches—red loam saprolite that has reddish yellow, yellowish red, and yellowish brown mottles
44 to 60 inches—yellowish red loam saprolite
60 to 72 inches—multicolored loam saprolite

Soil Properties and Qualities

Depth class: Saw—moderately deep; Pacolet—deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Gently sloping
Surface runoff: Medium or rapid
Hazard of water erosion: Severe
Soil reaction: Saw—very strongly acid to moderately acid throughout the profile except where the surface layer has been limed; Pacolet—very strongly acid to slightly acid in the surface layer except where it has been limed and very strongly acid to moderately acid in the subsoil and underlying material
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: Saw—20 to 40 inches to hard bedrock; Pacolet—more than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Rion and Ashlar soils that have a loamy subsoil
- Random areas of Saw and Pacolet soils that have a gravelly surface layer
- Random areas of Saw and Pacolet soils that have a surface layer of sandy loam
- Random areas of soils that have bedrock at a depth of 40 to 60 inches
- Random areas where stones, boulders, and rock outcrops are widely scattered on the surface

Similar inclusions:
- Random areas of Wedowee soils that have a subsoil that is yellower than that of the Saw or Pacolet soil
- Random areas of Saw and Pacolet soils that have a surface layer of clay loam

Use and Management

Major Uses: Cropland and pasture
Other Uses: Woodland

Agricultural Development

Cropland
Suitability: Saw—suited; Pacolet—well suited
Management concerns: Saw—erodibility, rooting depth, tilth, and soil fertility; Pacolet—erodibility, tilth, and soil fertility
Management measures and considerations:
- Special care is needed to prevent further erosion; using resource management systems that include terraces and diversions, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops helps to stabilize the soil, control surface runoff, and maximize the infiltration of rainfall.
- Incorporating plant residue into the soil helps to improve the water-holding capacity, and using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Saw soil.
- Restricting tillage to dry periods and incorporating crop residue into the soil or leaving residue on the soil surface help to minimize clodding and crusting and maximize the infiltration of water.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Saw—erodibility, rooting depth, and soil fertility; Pacolet—erodibility and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Using shallow-rooted or drought-tolerant plants helps to improve productivity in areas of the Saw soil.
- Special care is needed to prevent further erosion when renovating pastures or establishing seedbeds.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Suited
Productivity class: Moderately high for loblolly pine
Management concerns: Saw—equipment use, seedling survival, and windthrow hazard; Pacolet—equipment use and seedling survival
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting logging operations to dry periods helps to prevent rutting and possible root damage caused by compaction.
- Preparing the site by harrowing helps to establish seedlings, reduce seedling mortality rates, and increase early seedling growth.
- Productivity may be increased in areas of the Saw soil by harvesting windthrown trees, which result from high winds and the limited rooting depth.

Urban Development

Dwellings
Suitability for dwellings without basements: Saw—suited; Pacolet—well suited
Suitability for dwellings with basements: Saw—poorly suited; Pacolet—well suited
Management concerns: Saw—depth to bedrock; Pacolet—few limitations
Management measures and considerations:
- Only dwellings without basements should be built on the Saw soil.
- Drilling and blasting of rock or special earthmoving equipment may be needed to grade areas of the Saw soil.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Saw—poorly suited; Pacolet—suited
Management concerns: Saw—depth to bedrock; Pacolet—restricted permeability
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Areas of the Pacolet soil should be used for absorption fields.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Suited
Management concerns: Saw—depth to bedrock and low strength; Pacolet—low strength
Management measures and considerations:
- Blasting or special grading equipment may be needed to construct roads on the Saw soil.
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting camp areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting picnic areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Saw—slope, small stones, and depth to bedrock; Pacolet—slope
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- The depth to bedrock should be determined before grading for playgrounds.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.
- Small stones should be removed.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: Based on loblolly pine as the indicator species, 6D in areas of the Saw soil and 6C in areas of the Pacolet soil

SeB—Sedgefield fine sandy loam, 1 to 6 percent slopes

Setting

Landform: Piedmont uplands, mainly in the northwestern, central, and south-central parts of the county
Landscape position: Broad ridges, toe slopes, head of drainageways, areas along drainageways, and depressional areas

Shape of areas: Oblong or irregular
Size of areas: 5 to 150 acres

Composition

Sedgefield soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 3 inches—dark grayish brown fine sandy loam

Subsurface layer:
3 to 8 inches—pale yellow fine sandy loam

Subsoil:
8 to 13 inches—yellowish brown clay loam that has light olive gray mottles
13 to 24 inches—yellowish brown clay that has light brownish gray mottles
24 to 31 inches—yellowish brown clay that has light olive brown and light brownish gray mottles
31 to 35 inches—yellowish brown clay that has gray mottles
35 to 40 inches—mottled yellowish brown, olive gray, and light gray clay

Underlying material:
40 to 62 inches—multicolored loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Moderately well drained or somewhat poorly drained
Permeability: Slow
High water table: At a depth of 1.0 to 1.5 feet from January through March; perched
Hazard of flooding: None
Shrink-swell potential: High
Slope class: Nearly level or gently sloping
Surface runoff: Medium or slow
Hazard of water erosion: Moderate
Soil reaction: Strongly acid to slightly acid in the surface layer and subsoil except where the surface layer has been limed and moderately acid to slightly alkaline in the underlying material
Parent material: Residuum weathered from intermediate and mafic metamorphic or igneous rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Helena soils that are more acid than the Sedgefield soil
- The well drained Enon soils on ridge crests and small knolls
- The poorly drained Armenia soils along drainageways and in depressional areas

Similar inclusions:
- Random areas of Sedgefield soils that have a surface layer of loam
- Random areas of Iredell soils that have a very high shrink-swell potential

Use and Management

Major Uses: Woodland and pasture
Other Uses: Cropland

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility, wetness, and soil fertility
Management measures and considerations:
- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.
- Performing tillage and harvesting operations when the soil is not wet helps to prevent rutting caused by equipment.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility, wetness, and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Preventing overgrazing or preventing grazing when the soil is too wet helps to prevent compaction, decreased productivity, and a rough soil surface.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting the use of standard wheeled and tracked equipment to dry periods helps to prevent rutting and compaction, which occur when the soil is saturated.

Urban Development

Dwellings
Suitability: Poorly suited
Management concerns: Wetness and shrink-swell potential
Management measures and considerations:
- Constructing dwellings on raised, well compacted fill material helps to reduce the risk of damage caused by wetness.
- Using an artificial drainage system or diversions helps to remove excess surface water.
- Reinforcing foundations or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Wetness and restricted permeability

Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Wetness and shrink-swell potential
Management measures and considerations:
- Constructing roads on raised, well compacted fill material helps to overcome the wetness limitation.
- As much of the shrink-swell clay as possible should be removed and the thickness of the base aggravate increased.
- Installing geotextile fabric between the base aggravate and final surface of the road helps to overcome the limitations.

Recreational Development

Camp areas
Suitability: Poorly suited
Management concerns: Wetness
Management measures and considerations:
- Providing raised surfaces of gravel fill material for camp sites helps to minimize the wetness limitation.
- Diversions help to remove excess surface water.
- Locating camp sites on the higher parts of the landscape allows surface water to run off and helps to keep the sites drier during wet periods.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Wetness and restricted permeability
Management measures and considerations:
- Providing raised surfaces of gravel fill material for tables and other facilities helps to minimize the wetness limitation.
- Locating picnic sites on the higher parts of the landscape allows surface water to run off and helps to keep the sites drier during wet periods.
- Using diversions helps to remove excess surface water and minimize the permeability limitation.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Poorly suited
Management concerns: Wetness
Management measures and considerations:
- Using an artificial drainage system or diversions helps to remove excess surface water and minimize the wetness limitation.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 8W, based on loblolly pine as the indicator species

TaB—Tatum-Badin complex, 2 to 8 percent slopes

Setting

Landform: Piedmont uplands in the southeastern corner of the county
Landscape position: Ridges
Shape of areas: Irregular
Size of areas: 5 to 150 acres

Composition

Tatum soil and similar inclusions: 50 percent
Badin soil and similar inclusions: 35 percent
Dissimilar inclusions: 15 percent

Typical Profile

Tatum
Surface layer:
0 to 2 inches—very dark grayish brown silt loam

Subsurface layer:
2 to 9 inches—yellow silt loam

Subsoil:
9 to 15 inches—red silty clay
15 to 30 inches—red clay
30 to 41 inches—red clay that has brownish yellow mottles
41 to 50 inches—red silty clay loam that has brownish yellow mottles

Underlying material:
50 to 58 inches—multicolored silt loam saprolite

Bedrock:
58 to 60 inches—weathered, partially consolidated argillite

Badin
Surface layer:
0 to 6 inches—yellowish brown channery silt loam

Subsoil:
6 to 9 inches—reddish yellow silty clay loam
9 to 16 inches—yellowish red silty clay
16 to 25 inches—red silty clay
25 to 35 inches—mottled red and reddish yellow channery silty clay loam

Bedrock:
35 to 43 inches—weathered, partially consolidated argillite
43 inches—unweathered argillite

Soil Properties and Qualities

Depth class: Tatum—deep; Badin—moderately deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Moderate
Slope class: Gently sloping
Surface runoff: Medium
Hazard of water erosion: Tatum—severe; Badin—moderate

Soil reaction: Tatum—very strongly acid or strongly acid throughout the profile except where the surface layer has been limed; Badin—strongly acid to extremely acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Depth to bedrock: Tatum—40 to 60 inches to soft bedrock; Badin—20 to 40 inches to soft bedrock

Inclusions

Dissimilar inclusions:
- Random areas of Uwharrie soils that have soft bedrock at a depth of more than 60 inches
- Random areas of Tatum and Badin soils that have a surface layer of silty clay loam
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Tatum and Badin soils that have a surface layer of loam or very fine sandy loam

Use and Management

Major Uses: Woodland
Other Uses: Cropland and pasture

Agricultural Development

Cropland
Suitability: Tatum—well suited; Badin—suited
Management concerns: Tatum—erodibility and soil fertility; Badin—erodibility, rooting depth, and soil fertility
Management measures and considerations:
- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.
- Incorporating plant residue into the soil helps to improve the water-holding capacity, and using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Badin soil.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Tatum—slight limitations; Badin—windthrow hazard

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Productivity may be increased in areas of the Badin soil by harvesting windthrown trees, which result from high winds and the limited rooting depth.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Tatum—shrink-swell potential; Badin—depth to bedrock and shrink-swell potential
Management measures and considerations:
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Special earthmoving equipment may be needed to grade areas of the Badin soil prior to building.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and prevent sediments from leaving the site.

Septic tank absorption fields
Suitability: Tatum—suited; Badin—poorly suited
Management concerns: Tatum—depth to bedrock and restricted permeability; Badin—depth to bedrock
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Areas of the Tatum soil should be used for absorption fields.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Tatum—well suited; Badin—suited
Management concerns: Tatum—few limitations; Badin—content of rock fragments
Management measures and considerations:
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Tatum—well suited; Badin—suited
Management concerns: Tatum—few limitations; Badin—content of rock fragments
Management measures and considerations:
- Rock fragments should be removed by raking, and the surface should be covered with fill material.

- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Tatum—suited; Badin—poorly suited
Management concerns: Slope and content of rock fragments
Management measures and considerations:
- Playgrounds should be located in areas of the Tatum soil, where large enough.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Interpretive Groups

Land capability classification: Tatum—IIe; Badin—IIIe
Woodland ordination symbol: Based on loblolly pine as the indicator species, 8A in areas of the Tatum soil and 8D in areas of the Badin soil

TaC—Tatum-Badin complex, 8 to 15 percent slopes

Setting

Landform: Piedmont uplands in the southeastern corner of the county
Landscape position: Narrow ridges and side slopes
Shape of areas: Oblong or irregular
Size of areas: 5 to 100 acres

Composition

Tatum soil and similar inclusions: 50 percent
Badin soil and similar inclusions: 35 percent
Dissimilar inclusions: 15 percent

Typical Profile

Tatum
Surface layer:
0 to 2 inches—very dark grayish brown silt loam

Subsurface layer:
2 to 9 inches—yellow silt loam

Subsoil:
9 to 15 inches—red silty clay
15 to 30 inches—red clay
30 to 41 inches—red clay that has brownish yellow mottles
41 to 50 inches—red silty clay loam that has brownish yellow mottles

Underlying material:
50 to 58 inches—multicolored silt loam saprolite

Bedrock:
58 to 60 inches—weathered, partially consolidated argillite

Badin
Surface layer:
0 to 6 inches—yellowish brown channery silt loam

Subsoil:
6 to 9 inches—reddish yellow silty clay loam
9 to 16 inches—yellowish red silty clay
16 to 25 inches—red silty clay
25 to 35 inches—mottled red and reddish yellow channery silty clay loam

Bedrock:
35 to 43 inches—weathered, partially consolidated argillite
43 inches—unweathered argillite

Soil Properties and Qualities

Depth class: Tatum—deep; Badin—moderately deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Moderate
Slope class: Strongly sloping
Surface runoff: Rapid
Hazard of water erosion: Tatum—very severe; Badin—severe
Soil reaction: Tatum—very strongly acid or strongly acid throughout the profile except where the surface layer has been limed; Badin—strongly acid to extremely acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Depth to bedrock: Tatum—40 to 60 inches to soft bedrock; Badin—20 to 40 inches to soft bedrock

Inclusions

Dissimilar inclusions:
- Random areas of Uwharrie soils that have soft bedrock at a depth of more than 60 inches
- Random areas of Tatum and Badin soils that have a surface layer of silty clay loam
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Tatum and Badin soils that have a surface layer of loam or very fine sandy loam

Use and Management

Major Uses: Woodland
Other Uses: Pasture and cropland

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Tatum—erodibility and soil fertility; Badin—erodibility, rooting depth, and soil fertility
Management measures and considerations:
- Resource management systems that include conservation tillage, crop residue

management, stripcropping, and sod-based rotations help to minimize erosion, control surface runoff, and maximize the infiltration of water.
- Incorporating plant residue into the soil helps to improve the water-holding capacity, and using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Badin soil.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Well suited
Suitability for hayland: Suited
Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Tatum—slight limitations; Badin—windthrow hazard
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Productivity may be increased in areas of the Badin soil by harvesting windthrown trees, which result from high winds and the limited rooting depth.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Tatum—slope and shrink-swell potential; Badin—slope, depth to bedrock, and shrink-swell potential
Management measures and considerations:
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Designing structures so that they conform to the natural slope helps to overcome the slope limitation.
- Special earthmoving equipment may be needed to grade areas of the Badin soil prior to building.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Tatum—suited; Badin—poorly suited
Management concerns: Tatum—depth to bedrock, restricted permeability, and slope; Badin—depth to bedrock and slope

Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Areas of the Tatum soil should be used for absorption fields.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Tatum—slope; Badin—slope and content of rock fragments
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Tatum—slope; Badin—slope and content of rock fragments
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Poorly suited
Management concerns: Slope and content of rock fragments
Management measures and considerations:
- Extensive grading, including cutting and filling, is needed.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: Tatum—IIIe; Badin—IVe
Woodland ordination symbol: Based on loblolly pine as the indicator species, 8A in areas of the Tatum soil and 8D in areas of the Badin soil

TbB2—Tatum-Badin complex, 2 to 8 percent slopes, eroded

Setting

Landform: Piedmont uplands in the southeastern corner of the county
Landscape position: Ridges
Shape of areas: Irregular
Size of areas: 5 to 150 acres

Composition

Tatum soil and similar inclusions: 55 percent
Badin soil and similar inclusions: 30 percent
Dissimilar inclusions: 15 percent

Typical Profile

Tatum
Surface layer:
0 to 6 inches—yellowish red silty clay loam

Subsoil:
6 to 14 inches—red silty clay
14 to 33 inches—red clay that has brownish yellow mottles
33 to 40 inches—red silty clay that has brownish yellow mottles
40 to 45 inches—silty clay loam that is multicolored in shades of red and yellow

Underlying material:
45 to 55 inches—multicolored silt loam saprolite

Bedrock:
55 to 60 inches—weathered, partially consolidated argillite

Badin
Surface layer:
0 to 6 inches—yellowish red silty clay loam

Subsoil:
6 to 26 inches—reddish yellow silty clay
26 to 34 inches—yellowish red channery silty clay loam

Bedrock:
34 to 41 inches—weathered, partially consolidated argillite
41 inches—unweathered argillite

Soil Properties and Qualities

Depth class: Tatum—deep; Badin—moderately deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Moderate
Slope class: Gently sloping
Surface runoff: Medium
Hazard of water erosion: Severe
Soil reaction: Tatum—very strongly acid or strongly acid throughout the profile except where the surface layer has been limed; Badin—strongly acid to extremely acid throughout the profile except where the surface layer has been limed

Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Depth to bedrock: Tatum—40 to 60 inches to soft bedrock; Badin—20 to 40 inches to soft bedrock

Inclusions

Dissimilar inclusions:
- Goldston soils that have soft bedrock at a depth of less than 20 inches and are on small knolls and along the outer edge of map unit delineations
- Random areas of Uwharrie soils that have soft bedrock at a depth of more than 60 inches
- Random areas of Tatum and Badin soils that have a surface layer of channery silty clay loam

Similar inclusions:
- Random areas of Tatum and Badin soils that have a surface layer of silt loam

Use and Management

Major Uses: Cropland and pasture
Other Uses: Woodland

Agricultural Development

Cropland
Suitability: Tatum—well suited; Badin—suited
Management concerns: Tatum—erodibility, tilth, and soil fertility; Badin—erodibility, tilth, soil fertility, and rooting depth
Management measures and considerations:
- Special care is needed to prevent further erosion; using resource management systems that include terraces and diversions, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops helps to stabilize the soil, control surface runoff, and maximize the infiltration of rainfall.
- Restricting tillage to dry periods and incorporating crop residue into the soil or leaving residue on the soil surface help to minimize clodding and crusting and maximize the infiltration of water.
- Incorporating plant residue into the soil helps to improve the water-holding capacity, and using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Badin soil.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Special care is needed to prevent further erosion when renovating pastures or establishing seedbeds.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Tatum—well suited; Badin—suited

Productivity class: Moderately high for loblolly pine
Management concerns: Tatum—equipment use and seedling survival; Badin—equipment use, seedling survival, and windthrow hazard
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting logging operations to dry periods helps to prevent rutting and possible root damage caused by compaction.
- Preparing the site by harrowing helps to establish seedlings, reduce seedling mortality rates, and increase early seedling growth.
- Productivity may be increased in areas of the Badin soil by harvesting windthrown trees, which result from high winds and the limited rooting depth.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Tatum—shrink-swell potential; Badin—depth to bedrock and shrink-swell potential
Management measures and considerations:
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Special earthmoving equipment may be needed to grade areas of the Badin soil prior to building.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and prevent sediments from leaving the site.

Septic tank absorption fields
Suitability: Tatum—suited; Badin—poorly suited
Management concerns: Tatum—depth to bedrock and restricted permeability; Badin—depth to bedrock
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Areas of the Tatum soil should be used for absorption fields.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting camp areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting picnic areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope and content of rock fragments
Management measures and considerations:
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Interpretive Groups

Land capability classification: Tatum—IIIe; Badin—IVe
Woodland ordination symbol: Based on loblolly pine as the indicator species, 6C in areas of the Tatum soil and 6D in areas of the Badin soil

Ud—Udorthents, loamy

Setting

Landform: Piedmont uplands, in areas throughout the county where natural soil has been excavated or built up by earthy fill material
Landscape position: Variable; commonly broad ridges and side slopes
Shape of areas: Rectangular or irregular
Size of areas: 4 to 190 acres

Composition

Udorthents and similar inclusions: 90 percent
Dissimilar inclusions: 10 percent

Typical Profile

A typical pedon is not given due to the variable nature of the soils.

Udorthents consist of miscellaneous areas where the natural soils have been altered by cutting, filling, and shaping. The surface layer is loamy soil material that is variable in composition, depth, slope, and ability to grow plants. Borrow areas, cut and fill areas, fly ash deposits, and sanitary landfills make up most of this map unit.

In borrow areas, all of the original soil has been excavated to saprolite or bedrock for use as construction material. The cuts are up to 25 feet deep and may have steep to vertical slopes on one or more sides. The more recent excavated areas are bare and subject to accelerated erosion. The older areas are eroded, but many have stabilized under pine or other vegetation.

In cut and fill areas, soil has been removed from one place and deposited at another to achieve a particular land conformation. Most of these areas are in school

yards that have athletic fields, in areas of major highway interchanges, and on industrial sites. Most of these areas are stabilized with grass, trees, or other landscaping plants.

Fly ash deposits consist of ponds where fly ash from coal-burning plants is deposited or allowed to settle out.

Sanitary landfills are excavated areas where deeply graded trenches, as much as 30 feet deep, have been backfilled with alternating layers of solid refuse and soil material. Most areas are seeded to grass or trees after the final cover is added.

Soil Properties and Qualities

Depth class: Shallow to very deep
Drainage class: Well drained or moderately well drained
Permeability: Moderate to very slow
Depth to high water table: Variable; commonly more than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Nearly level to strongly sloping
Surface runoff: Medium to very rapid
Hazard of water erosion: Moderate to very severe
Soil reaction: Very strongly acid to neutral
Parent material: Not applicable
Depth to bedrock: Variable; commonly 20 to more than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of undisturbed natural soils
- Small areas that are covered by buildings or pavement
- Random areas of Udorthents that have bedrock at a depth of less than 40 inches

Similar inclusions:
- Soils that are similar to Udorthents but that have clayey underlying material

Use and Management

Major Uses: Urban and recreational uses
Other Uses: Woodland

Recommendations for reclamation and use of this map unit require onsite examination.

Agricultural Development

Cropland
Suitability: Poorly suited
Management concerns: Highly variable soil properties, erodibility, and soil fertility
Management measures and considerations:
- Most of this map unit is not available for use as cropland.
- Managing this map unit for crop production is difficult because the soils are highly disturbed.

Pasture and hayland
Suitability: Suited
Management concerns: Highly variable soil properties, erodibility, and soil fertility
Management measures and considerations:
- Most of this map unit is not available for pasture and hayland.
- Managing this map unit for the production of pasture and hay crops is difficult because the soils have highly variable properties.

Woodland
Suitability: Poorly suited
Management concerns: Highly variable soil properties, erodibility, and soil fertility
Management measures and considerations:
- Managing this map unit for woodland is difficult because the soils have highly variable properties.
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.

Urban Development

Suitability: Poorly suited
Management concerns: Highly variable soil properties (including depth to bedrock, differential settling, highly disturbed soils, restricted permeability, and hazardous gas emission in areas of sanitary landfills)
Management measures and considerations:
- This map unit has severe limitations because of highly variable soil properties.
- A site on better suited soils should be selected.

Recreational Development

Suitability: Poorly suited
Management concerns: Depth to bedrock, differential settling, highly disturbed soils, and slope in some areas
Management measures and considerations:
- This map unit has severe limitations because of highly variable soil properties.
- A site on better suited soils should be selected.

Interpretive Groups

Land capability classification: VIIs
Woodland ordination symbol: None assigned

Uf—Urban land

Setting

Landform: Piedmont uplands, mainly in the business districts of Salisbury and Spencer
Landscape position: Broad ridges
Shape of areas: Rectangular or irregular
Size of areas: 5 to 300 acres

Composition

Urban land: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Urban land consists of areas mostly covered by commercial, industrial, or other urban buildings, paved streets and sidewalks, paved parking lots, closely spaced houses, or other impervious material so that identification of the natural soil is not feasible.

Soil Properties and Qualities

Soil properties and qualities are highly variable in the limited, undeveloped areas. The major problem is excessive runoff during rainstorms, which causes excessive flooding in low areas.

Inclusions

Dissimilar inclusions:
- Small areas of undisturbed soils located between urban facilities
- Small areas of Udorthents, consisting primarily of cut and fill land

Use and Management

Major Uses: Urban development
Other Uses: None

Agricultural Development

Suitability: Unsuited
Management concerns: Limited size of natural soil areas
Management measures and considerations:
- This map unit cannot be used for agricultural purposes because of urban development.

Urban Development

Suitability:
- The current land use is urban development, and changes in land use are not anticipated.

Recreational Development

Suitability:
- The current land use is urban development, and changes in land use are not anticipated.

Interpretive Groups

Land capability classification: VIIIs
Woodland ordination symbol: None assigned

UhC—Uwharrie loam, 2 to 15 percent slopes, very stony

Setting

Landform: Piedmont uplands, mainly in the southeastern corner of the county
Landscape position: Ridges and side slopes
Shape of areas: Irregular
Size of areas: 5 to 100 acres

Composition

Uwharrie soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 2 inches—dark brown loam

Subsurface layer:
2 to 10 inches—brown loam

Subsoil:
10 to 15 inches—yellowish red clay loam
15 to 45 inches—red clay
45 to 53 inches—red clay loam

Underlying material:
53 to 72 inches—red loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Moderate
Slope class: Gently sloping to strongly sloping
Surface runoff: Medium or rapid
Hazard of water erosion: Moderate or severe
Rock fragments on the surface: Stones averaging about 10 inches in diameter; boulders averaging about 5 feet in diameter and about 50 feet apart
Soil reaction: Very strongly acid to moderately acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of the nonstony Uwharrie soils
- Random areas of Tatum soils that have soft bedrock at a depth of 40 to 60 inches
- Random areas of Badin soils that have soft bedrock at a depth of 20 to 40 inches
- The slowly permeable Enon soils on the lower side slopes
- Few scattered areas of rock outcrops

Similar inclusions:
- Random areas of Uwharrie soils that have an extremely stony surface layer

Use and Management

Major Uses: Woodland
Other Uses: Recreation

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Equipment use
Management measures and considerations:
- This map unit has severe limitations affecting crop production because of stones.
- A site on better suited soils should be selected.

Pasture and hayland
Suitability for pasture: Suited
Suitability for hayland: Unsuited
Management concerns: Equipment use and soil fertility
Management measures and considerations:
- Managing this map unit for hay production is difficult because of the very stony surface.
- It is necessary to remove stones or limit equipment use to the less stony areas.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.

- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximizes productivity when establishing, maintaining, or renovating pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for yellow-poplar
Management concerns: Equipment use
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Planting trees by machine and mechanical site preparation may not be feasible.
- Logging roads and skid trails may not be feasible, and special designs and layouts are needed.
- Tracked equipment should be not be used, and sharp stones may cause damage to rubber-tired equipment.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Shrink-swell potential and slope
Management measures and considerations:
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Designing structures so that they conform to the natural slope helps to overcome the slope limitation.
- Clearing stones from the building site may be necessary.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Suited
Management concerns: Restricted permeability and slope
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Large stones and slope
Management measures and considerations:
- Large stones should be removed as necessary.

- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Large stones and slope
Management measures and considerations:
- Large stones should be removed as necessary.
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Unsuited
Management concerns: Large stones and slope
Management measures and considerations:
- This map unit has severe limitations affecting playgrounds.
- A site on better suited soils should be selected.

Interpretive Groups

Land capability classification: VIs
Woodland ordination symbol: 7X, based on yellow-poplar as the indicator species

UhE—Uwharrie loam, 15 to 45 percent slopes, very stony

Setting

Landform: Piedmont uplands, mainly in the southeastern corner of the county
Landscape position: Ridges and side slopes
Shape of areas: Oblong or long and narrow
Size of areas: 10 to 100 acres

Composition

Uwharrie soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 2 inches—brown very stony loam

Subsurface layer:
2 to 10 inches—dark brown very stony loam

Subsoil:
10 to 15 inches—yellowish red clay loam
15 to 45 inches—red clay
45 to 53 inches—red clay loam

Underlying material:
53 to 72 inches—red loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Moderate
Slope class: Moderately steep or steep
Surface runoff: Rapid
Hazard of water erosion: Very severe
Rock fragments on the surface: Stones averaging about 10 inches in diameter; boulders averaging about 5 feet in diameter and 50 feet apart
Soil reaction: Very strongly acid to moderately acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of the nonstony Uwharrie soils
- Random areas of soils that have soft bedrock at a depth of 40 to 60 inches
- Random areas of Badin soils that have soft bedrock at a depth of 20 to 40 inches
- The slowly permeable Enon soils on the lower side slopes
- Few scattered areas of rock outcrops

Similar inclusions:
- Random areas of Uwharrie soils that have an extremely stony surface layer

Use and Management

Major Uses: Woodland
Other Uses: Recreation

Agricultural Development

Cropland
Suitability: Unsuited
Management concerns: Equipment use and slope
Management measures and considerations:
- This map unit has severe limitations affecting crop production because of surface stones and the slope.
- A site on better suited soils should be selected.

Pasture and hayland
Suitability for pasture: Poorly suited
Suitability for hayland: Unsuited
Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- Because of the slope and surface stones, managing this map unit for pasture and hayland is difficult.
- A site on better suited soils should be selected.
- It is necessary to remove stones and limit equipment use to the less sloping and less stony areas.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.

- Constructing trails facilitates the grazing of livestock in areas where access is limited.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating pasture.

Woodland
Suitability: Suited
Productivity class: Moderately high for yellow-poplar
Management concerns: Erodibility and equipment use
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Planting trees by machine and mechanical site preparation may not be feasible.
- Logging roads and skid trails may not be feasible, and special designs and layouts are needed.
- In this map unit, the required distances for skidding and cabling are longer than usual.
- Tracked equipment should be not be used, and sharp stones may cause damage to rubber-tired equipment.
- Reforestation immediately after harvest using minimal site preparation and recommended tree species helps to control erosion and siltation of streams.

Urban Development

Dwellings
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Designing structures so that they conform to the natural slope on the less sloping parts of the map unit helps to improve soil performance.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength and slope
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Poorly suited
Management concerns: Large stones and slope

Management measures and considerations:
- Designing roads and trails on the contour and locating camping facilities in the less sloping areas help to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Large stones should be removed as necessary.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Poorly suited
Management concerns: Large stones and slope
Management measures and considerations:
- Designing roads and trails on the contour and locating picnic facilities in the less sloping areas help to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Large stones should be removed as necessary.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Unsuited
Management concerns: Large stones and slope
Management measures and considerations:
- This map unit has severe limitations affecting playgrounds.
- A site on better suited soils should be selected.

Interpretive Groups

Land capability classification: VIIs
Woodland ordination symbol: 7R, based on yellow-poplar as the indicator species

UrB—Uwharrie silt loam, 2 to 8 percent slopes

Setting

Landform: Piedmont uplands, mainly in the southeastern corner of the county
Landscape position: Broad ridges
Shape of areas: Irregular
Size of areas: 5 to 50 acres

Composition

Uwharrie soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 2 inches—very dark grayish brown silt loam

Subsurface layer:
2 to 9 inches—brownish yellow silt loam

Subsoil:
9 to 14 inches—red silty clay
14 to 27 inches—red clay
27 to 38 inches—red clay that has brownish yellow mottles
38 to 49 inches—red silty clay that has brownish yellow mottles

Underlying material:
49 to 60 inches—multicolored silt loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Moderate
Slope class: Gently sloping
Surface runoff: Medium
Hazard of water erosion: Severe
Soil reaction: Very strongly acid to moderately acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Tatum soils that have soft bedrock at a depth of 40 to 60 inches
- Random areas of Badin soils that have soft bedrock at a depth of 20 to 40 inches
- Random areas of Uwharrie soils that have a surface layer of silty clay loam and commonly occur in cultivated areas
- Random areas where stones and boulders are widely scattered on the surface
- Few scattered areas of rock outcrops

Similar inclusions:
- Random areas of Uwharrie soils that have a surface layer of loam

Use and Management

Major Uses: Woodland
Other Uses: Cropland and pasture

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns:
- This map unit has slight limitations affecting woodland management.

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Shrink-swell potential
Management measures and considerations:
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Suited
Management concerns: Restricted permeability
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting camp areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting picnic areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 8A, based on loblolly pine as the indicator species

UwB2—Uwharrie silty clay loam, 2 to 8 percent slopes, eroded

Setting

Landform: Piedmont uplands, mainly in the southeastern corner of the county
Landscape position: Broad ridges
Shape of areas: Irregular
Size of areas: 5 to 150 acres

Composition

Uwharrie soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 8 inches—yellowish brown silty clay loam

Subsoil:
8 to 14 inches—red silty clay
14 to 23 inches—red clay
23 to 36 inches—red clay that has brownish yellow mottles
36 to 47 inches—red silty clay that has brownish yellow mottles
47 to 56 inches—red silty clay loam

Underlying material:
56 to 60 inches—multicolored silt loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Moderate
Slope class: Gently sloping
Surface runoff: Medium
Hazard of water erosion: Severe

Soil reaction: Very strongly acid to moderately acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Tatum soils that have soft bedrock at a depth of 40 to 60 inches
- Random areas of Badin soils that have soft bedrock at a depth of 20 to 40 inches
- Random areas of Uwharrie soils that have a surface layer of silt loam or loam

Similar inclusions:
- Random areas of Uwharrie soils that have a surface layer of clay loam

Use and Management

Major Uses: Cropland and pasture
Other Uses: Urban development

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility, tilth, and soil fertility
Management measures and considerations:
- Special care is needed to prevent further erosion; using resource management systems that include terraces and diversions, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops helps to stabilize the soil, control surface runoff, and maximize the infiltration of rainfall.
- Restricting tillage to dry periods and incorporating crop residue into the soil or leaving residue on the soil surface help to minimize clodding and crusting and maximize the infiltration of water.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Special care is needed to prevent further erosion when renovating pastures or establishing seedbeds.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use and seedling survival
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.

- Restricting logging operations to dry periods helps to prevent rutting and possible root damage caused by compaction.
- Preparing the site by harrowing helps to establish seedlings, reduce seedling mortality rates, and increase early seedling growth.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Shrink-swell potential
Management measures and considerations:
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Suited
Management concerns: Restricted permeability
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting camp areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting picnic areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.

- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 6C, based on loblolly pine as the indicator species

UwC2—Uwharrie silty clay loam, 8 to 15 percent slopes, eroded

Setting

Landform: Piedmont uplands, mainly in the southeastern corner of the county
Landscape position: Narrow ridges and side slopes
Shape of areas: Oblong or irregular
Size of areas: 5 to 50 acres

Composition

Uwharrie soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 8 inches—yellowish brown silty clay loam

Subsoil:
8 to 14 inches—red silty clay
14 to 23 inches—red clay
23 to 36 inches—red clay that has brownish yellow mottles
36 to 47 inches—red silty clay that has brownish yellow mottles
47 to 56 inches—red silty clay loam

Underlying material:
56 to 60 inches—multicolored silt loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Moderate
Slope class: Strongly sloping
Surface runoff: Medium
Hazard of water erosion: Very severe
Soil reaction: Very strongly acid to moderately acid throughout the profile except where the surface layer has been limed
Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of Tatum soils that have soft bedrock at a depth of 40 to 60 inches
- Random areas of Badin soils that have soft bedrock at a depth of 20 to 40 inches
- Random areas of Uwharrie soils that have a surface layer of silt loam or loam

Similar inclusions:
- Random areas of Uwharrie soils that have a surface layer of clay loam

Use and Management

Major Uses: Pasture and cropland
Other Uses: Woodland

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Erodibility, tilth, and soil fertility
Management measures and considerations:
- Special care is needed to prevent further erosion; using resource management systems that include conservation tillage, crop residue management, stripcropping, and sod-based rotations helps to stabilize the soil, control surface runoff, and maximize the infiltration of rainfall.
- Restricting tillage to dry periods and incorporating crop residue into the soil or leaving residue on the soil surface help to minimize clodding and crusting and maximize the infiltration of water.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Well suited
Suitability for hayland: Suited
Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- Special care is needed to prevent further erosion when renovating pastures or establishing seedbeds.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Potential productivity: Moderately high for loblolly pine
Management concerns: Equipment use and seedling survival
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting logging operations to dry periods helps to prevent rutting and possible root damage caused by compaction.

- Preparing the site by harrowing helps to establish seedlings, reduce seedling mortality rates, and increase early seedling growth.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Slope and shrink-swell potential
Management measures and considerations:
- Designing structures so that they conform to the natural slope helps to overcome the slope limitation.
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Vegetating disturbed areas and using erosion-control structures, such as sediment fences and catch basins, help to keep sediments onsite.

Septic tank absorption fields
Suitability: Suited
Management concerns: Restricted permeability and slope
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- A level area with a graveled surface should be provided for tents and other facilities.
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Poorly suited

Management concerns: Slope
Management measures and considerations:
- Extensive grading, including cutting and filling, is needed.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 6C, based on loblolly pine as the indicator species

VaB—Vance sandy loam, 2 to 8 percent slopes

Setting

Landform: Piedmont uplands, in areas throughout the county except in the easternmost part; some of the larger areas are located south and east of Salisbury
Landscape position: Ridges
Shape of areas: Irregular
Size of areas: 4 to 100 acres

Composition

Vance soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 8 inches—brown sandy loam

Subsurface layer:
8 to 10 inches—brownish yellow sandy loam

Subsoil:
10 to 18 inches—brownish yellow clay
18 to 26 inches—brownish yellow clay that has red and very pale brown mottles
26 to 33 inches—yellowish brown clay that has brownish yellow, very pale brown, and red mottles
33 to 38 inches—brownish yellow clay that has red, very pale brown, and light brownish gray mottles

Underlying material:
38 to 50 inches—multicolored sandy clay loam saprolite
50 to 60 inches—multicolored loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Moderate
Slope class: Gently sloping
Surface runoff: Medium

Hazard of water erosion: Moderate
Soil reaction: Moderately acid to very strongly acid in the surface and subsurface layers except where the surface layer has been limed and strongly acid or very strongly acid in the subsoil and underlying material
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of the moderately permeable Appling soils that have a low shrink-swell potential
- The moderately well drained Helena soils along drainageways and in depressional areas
- The moderately permeable Cecil and Pacolet soils that have a subsoil that is redder than that of the Vance soil, have a low shrink-swell potential, and are on small knolls and on ridgetops
- Random areas of the moderately permeable Wedowee soils that have a low shrink-swell potential
- Random areas of Vance soils that have a surface layer of sandy clay loam or clay loam
- Random areas of Enon soils that are more basic in reaction than the Vance soil

Similar inclusions:
- Random areas of Vance soils that have a surface layer of coarse sandy loam

Use and Management

Major Uses: Woodland and cropland
Other Uses: Pasture

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine

Management concerns:
- This map unit has slight limitations affecting woodland management.

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Shrink-swell potential
Management measures and considerations:
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Restricted permeability
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Restricted permeability
Management measures and considerations:
- Providing a graveled area for tents and other facilities helps to overcome the restricted permeability.
- Locating camp sites on the higher parts of the landscape allows good surface drainage.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Restricted permeability
Management measures and considerations:
- Providing a graveled area for tables and other facilities helps to overcome the restricted permeability.
- Locating picnic sites on the higher parts of the landscape allows good surface drainage.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope and content of rock fragments
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Rock fragments should be removed by raking, and the surface should be covered with fill material.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: 7A, based on loblolly pine as the indicator species

VaC—Vance sandy loam, 8 to 15 percent slopes

Setting

Landform: Piedmont uplands, in areas throughout the county except in the easternmost part; some of the larger areas are located south and east of Salisbury
Landscape position: Narrow ridges and side slopes
Shape of areas: Oblong or irregular
Size of areas: 4 to 30 acres

Composition

Vance soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 8 inches—brown sandy loam

Subsurface layer:
8 to 10 inches—brownish yellow sandy loam

Subsoil:
10 to 18 inches—brownish yellow clay
18 to 26 inches—brownish yellow clay that has red and very pale brown mottles
26 to 33 inches—yellowish brown clay that has brownish yellow, very pale brown, and red mottles
33 to 38 inches—brownish yellow clay that has red, very pale brown, and light brownish gray mottles

Underlying material:
38 to 50 inches—multicolored sandy clay loam saprolite
50 to 60 inches—multicolored loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow

Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Moderate
Slope class: Strongly sloping
Surface runoff: Medium or rapid
Hazard of water erosion: Severe
Soil reaction: Moderately acid to very strongly acid in the surface and subsurface layers except where the surface layer has been limed and strongly acid or very strongly acid in the subsoil and underlying material
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of the moderately permeable Wedowee soils that have a low shrink-swell potential
- The moderately well drained Helena soils along drainageways and foot slopes
- The moderately permeable Pacolet soils that have a subsoil that is redder than that of the Vance soil, have a low shrink-swell potential, and are on ridgetops and the upper side slopes
- Random areas of Vance soils that have a surface layer of sandy clay loam or clay loam
- Random areas of Enon soils that are more basic in reaction than the Vance soil

Similar inclusions:
- Random areas of Vance soils that have a surface layer of coarse sandy loam

Use and Management

Major Uses: Woodland
Other Uses: Pasture and cropland

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Resource management systems that include conservation tillage, crop residue management, stripcropping, and sod-based rotations help to minimize erosion, control surface runoff, and maximize the infiltration of water.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Well suited
Suitability for hayland: Suited
Management concerns: Erodibility, equipment use, and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns:
- This map unit has slight limitations affecting woodland management.

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Shrink-swell potential and slope
Management measures and considerations:
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Designing structures so that they conform to the natural slope helps to overcome the slope limitation.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Restricted permeability
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.

- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Extensive grading, including cutting and filling, is needed.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 7A, based on loblolly pine as the indicator species

VnB2—Vance sandy clay loam, 2 to 8 percent slopes, eroded

Setting

Landform: Piedmont uplands, in areas throughout the county except in the easternmost part
Landscape position: Ridges
Shape of areas: Irregular
Size of areas: 4 to 100 acres

Composition

Vance soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 6 inches—brown sandy clay loam

Subsoil:
6 to 10 inches—yellowish brown sandy clay loam
10 to 17 inches—yellowish red clay
17 to 30 inches—brownish yellow clay that has red mottles
30 to 34 inches—mottled strong brown, yellowish red, and light gray clay
34 to 38 inches—brownish yellow clay that has red, very pale brown, and light brownish gray mottles

Underlying material:
38 to 60 inches—multicolored loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Moderate
Slope class: Gently sloping

Surface runoff: Medium or rapid
Hazard of water erosion: Severe
Soil reaction: Moderately acid to very strongly acid in the surface and subsurface layers except where the surface layer has been limed and strongly acid or very strongly acid in the subsoil and underlying material
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of the moderately permeable Appling soils that have a low shrink-swell potential
- The moderately well drained Helena soils along drainageways and in depressional areas
- The moderately permeable Cecil and Pacolet soils that have a subsoil that is redder than that of the Vance soil, have a low shrink-swell potential, and are on small knolls and on ridgetops
- Random areas of the moderately permeable Wedowee soils that have a low shrink-swell potential
- Random areas of Vance soils that have a surface layer of sandy loam
- Random areas of Enon soils that are more basic in reaction than the Vance soil

Similar inclusions:
- Random areas of Vance soils that have a surface layer of clay loam

Use and Management

Major Uses: Cropland and pasture
Other Uses: Woodland and urban development

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Erodibility, tilth, and soil fertility
Management measures and considerations:
- Special care is needed to prevent further erosion; using resource management systems that include terraces and diversions, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops helps to stabilize the soil, control surface runoff, and maximize the infiltration of rainfall.
- Restricting tillage to dry periods and incorporating crop residue into the soil or leaving residue on the soil surface help to minimize clodding and crusting and maximize the infiltration of water.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Special care is needed to prevent further erosion when renovating pastures or establishing seedbeds.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps

to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use and seedling survival
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting logging operations to dry periods helps to prevent rutting and possible root damage caused by compaction.
- Preparing the site by harrowing helps to establish seedlings, reduce seedling mortality rates, and increase early seedling growth.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Shrink-swell potential
Management measures and considerations:
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Restricted permeability
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Restricted permeability
Management measures and considerations:
- Providing a graveled area for tents and other facilities helps to overcome the restricted permeability.
- Locating camp sites on the higher parts of the landscape allows good surface drainage.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Restricted permeability

Management measures and considerations:
- Providing a graveled area for tables and other facilities helps to overcome the restricted permeability.
- Locating picnic sites on the higher parts of the landscape allows good surface drainage.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope and restricted permeability
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Using diversions helps to remove excess surface water and minimize the permeability limitation.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 6C, based on loblolly pine as the indicator species

VnC2—Vance sandy clay loam, 8 to 15 percent slopes, eroded

Setting

Landform: Piedmont uplands, in areas throughout the county except in the easternmost part
Landscape position: Narrow ridges and side slopes
Shape of areas: Oblong or irregular
Size of areas: 4 to 30 acres

Composition

Vance soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 6 inches—brown sandy clay loam

Subsoil:
6 to 10 inches—yellowish brown sandy clay loam
10 to 17 inches—yellowish red clay
17 to 30 inches—brownish yellow clay that has red mottles
30 to 34 inches—mottled strong brown, yellowish red, and light gray clay
34 to 38 inches—brownish yellow clay that has red, very pale brown, and light brownish gray mottles

Underlying material:
38 to 60 inches—multicolored loam saprolite

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: Moderate
Slope class: Strongly sloping
Surface runoff: Medium or rapid
Hazard of water erosion: Very severe
Soil reaction: Moderately acid to very strongly acid in the surface and subsurface layers except where the surface layer has been limed and strongly acid or very strongly acid in the subsoil and underlying material
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- Random areas of the moderately permeable Wedowee soils that have a low shrink-swell potential
- The moderately well drained Helena soils along drainageways and foot slopes
- The moderately permeable Pacolet soils that have a subsoil that is redder than that of the Vance soil, have a low shrink-swell potential, and are on ridgetops and the upper side slopes
- Random areas of Enon soils that are more basic in reaction than the Vance soil

Similar inclusions:
- Random areas of Vance soils that have a surface layer of sandy loam

Use and Management

Major Uses: Cropland and pasture
Other Uses: Woodland

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Erodibility, tilth, and soil fertility
Management measures and considerations:
- Special care is needed to prevent further erosion; using resource management systems that include conservation tillage, crop residue management, stripcropping, and sod-based rotations helps to stabilize the soil, control surface runoff, and maximize the infiltration of rainfall.
- Restricting tillage to dry periods and incorporating crop residue into the soil or leaving residue on the soil surface help to minimize clodding and crusting and maximize the infiltration of water.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability for pasture: Well suited
Suitability for hayland: Suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.

- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Special care is needed to prevent further erosion when renovating pastures or establishing seedbeds.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Equipment use and seedling survival
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting logging operations to dry periods helps to prevent rutting and possible root damage caused by compaction.
- Preparing the site by harrowing helps to establish seedlings, reduce seedling mortality rates, and increase early seedling growth.

Urban Development

Dwellings
Suitability: Suited
Management concerns: Shrink-swell potential and slope
Management measures and considerations:
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Designing structures so that they conform to the natural slope helps to overcome the slope limitation.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Restricted permeability
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Slope

Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: 6C, based on loblolly pine as the indicator species

WaA—Wahee loam, 0 to 2 percent slopes, occasionally flooded

Setting

Landform: River or stream valleys of the Piedmont, mainly along the South Yadkin River, the Yadkin River, and the larger creeks
Landscape position: Low stream terraces
Shape of areas: Irregular
Size of areas: 5 to 60 acres

Composition

Wahee soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 4 inches—brown loam

Subsurface layer:
4 to 7 inches—light brownish gray loam

Subsoil:
7 to 12 inches—light yellowish brown clay loam that has light brownish gray and brown mottles
12 to 19 inches—light yellowish brown clay that has light brownish gray and yellowish red mottles
19 to 26 inches—yellowish brown clay that has light brownish gray and red mottles
26 to 40 inches—light gray clay that has strong brown, brownish yellow, and yellowish red mottles
40 to 48 inches—gray clay that has brownish yellow and strong brown mottles
48 to 60 inches—gray clay loam that has brownish yellow and strong brown mottles

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Slow
High water table: At a depth of 0.5 foot to 1.5 feet from December through March; apparent
Hazard of flooding: Occasional for brief periods from December through April
Shrink-swell potential: Moderate
Slope class: Nearly level
Surface runoff: Slow
Hazard of water erosion: None or slight
Rock fragments on the surface: None
Soil reaction: Very strongly acid to moderately acid in the surface and subsurface layers except where the surface layer has been limed and extremely acid to strongly acid in the subsoil
Parent material: Old alluvium
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- The somewhat poorly drained, frequently flooded Chewacla soils that have a loamy subsoil and are on flood plains along drainageways
- The moderately well drained Dogue soils in the slightly higher landscape positions
- Random areas of poorly drained soils in low, depressional areas
- Random areas of soils that are similar to the Wahee soil but have a loamy subsoil

Similar inclusions:
- Random areas of Wahee soils that have a surface layer of fine sandy loam or silt loam

Use and Management

Major Uses: Woodland
Other Uses: Pasture and cropland

Agricultural Development

Cropland
Suitability: Suited
Management concerns: Flooding, wetness, and soil fertility
Management measures and considerations:
- Because of the potential for flooding during the growing season, managing this map unit for cropland is difficult.
- Installing a drainage system that includes open ditches or land shaping helps to increase productivity.

- Performing tillage and harvesting operations when the soil is not wet helps to prevent clodding and rutting caused by equipment.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Suited
Management concerns: Flooding, wetness, and soil fertility
Management measures and considerations:
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Preventing overgrazing or preventing grazing when the soil is too wet helps to prevent compaction, decreased productivity, and a rough soil surface.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: High for loblolly pine
Management concerns: Equipment use and seedling survival
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Restricting the use of standard wheeled and tracked equipment to dry periods helps to prevent rutting and compaction, which occur when the soil is saturated.
- Bedding prior to planting and maintaining drainageways help to establish seedlings and increase seedling survival rates.

Urban Development

Dwellings
Suitability: Unsuited
Management concerns: Flooding and wetness
Management measures and considerations:
- This map unit has severe limitations affecting dwellings because of flooding.
- A site on better suited soils should be selected.

Septic tank absorption fields
Suitability: Unsuited
Management concerns: Flooding, wetness, and restricted permeability
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Low strength, wetness, and flooding
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- Constructing roads on raised, well compacted fill material helps to overcome the wetness limitation.
- Constructing bridges or using culverts is necessary to cross drainageways.
- Intercepting and diverting underground water from seeps and springs help to reduce the wetness limitation.

Recreational Development

Camp areas
Suitability: Unsuited
Management concerns: Flooding and wetness
Management measures and considerations:
- This map unit has severe limitations affecting camp areas.
- A site on better suited soils should be selected.

Picnic areas
Suitability: Poorly suited
Management concerns: Wetness
Management measures and considerations:
- Providing raised surfaces of gravel fill material for tables and other facilities helps to minimize the wetness limitation.
- This map unit should not be used for picnic areas after heavy rains when flooding is a hazard.

Playgrounds
Suitability: Poorly suited
Management concerns: Wetness
Management measures and considerations:
- An artificial drainage system should be used, the better drained parts of the map unit should be developed, or a site on better suited soils should be selected.
- Locating facilities on raised surfaces of gravel fill material helps to minimize the wetness limitation.

Interpretive Groups

Land capability classification: IIw
Woodland ordination symbol: 9W, based on loblolly pine as the indicator species

WkB—Wickham fine sandy loam, 2 to 8 percent slopes

Setting

Landform: River or stream valleys of the Piedmont
Landscape position: High stream terraces
Shape of areas: Oblong or irregular
Size of areas: 5 to 100 acres

Composition

Wickham soil and similar inclusions: 85 percent
Dissimilar inclusions: 15 percent

Typical Profile

Surface layer:
0 to 8 inches—reddish brown fine sandy loam

Subsoil:
8 to 24 inches—yellowish red sandy clay loam
24 to 34 inches—yellowish red clay loam that has brownish yellow mottles
34 to 42 inches—strong brown sandy clay loam that has brownish yellow and red mottles
42 to 50 inches—yellowish red sandy clay loam that has brownish yellow and red mottles

Underlying material:
50 to 70 inches—multicolored sandy loam

Soil Properties and Qualities

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Depth to high water table: More than 60 inches
Hazard of flooding: None
Shrink-swell potential: Low
Slope class: Gently sloping
Surface runoff: Medium
Hazard of water erosion: Moderate
Soil reaction: Very strongly acid to moderately acid throughout the profile except where the surface layer has been limed
Parent material: Old alluvium
Depth to bedrock: More than 60 inches

Inclusions

Dissimilar inclusions:
- The moderately well drained Dogue soils that have a clayey subsoil and are in the slightly lower positions and on foot slopes
- The somewhat poorly drained Wahee soils that have a clayey subsoil and are in low, depressional areas
- Well drained soils that have a clayey subsoil and are in landscape positions similar to those of the Wickham soil

Similar inclusions:
- Random areas of Wickham soils that have a surface layer of loam or sandy loam

Use and Management

Major Uses: Cropland and pasture
Other Uses: Woodland

Agricultural Development

Cropland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Erodibility and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.

- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: High for loblolly pine
Management concerns:
- This map unit has slight limitations affecting woodland management.

Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.

Urban Development

Dwellings
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting dwellings.

Management measures and considerations:
- Vegetating disturbed areas and using erosion-control structures, such as sediment fences and catch basins, help to keep sediments onsite.

Septic tank absorption fields
Suitability: Suited
Management concerns: Restricted permeability
Management measures and considerations:
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.
- Installing septic system distribution lines during dry periods helps to minimize smearing and sealing of trench walls.

Local roads and streets
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting local roads and streets.

Management measures and considerations:
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting camp areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Well suited
Management concerns:
- This map unit has few limitations affecting picnic areas.

Management measures and considerations:
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.

Interpretive Groups

Land capability classification: IIe
Woodland ordination symbol: 9A, based on loblolly pine as the indicator species

ZeB—Zion-Enon complex, 2 to 8 percent slopes

Setting

Landform: Piedmont uplands, mainly in the central and northwestern parts of the county
Landscape position: Broad ridges
Shape of areas: Irregular
Size of areas: 5 to 100 acres

Composition

Zion soil and similar inclusions: 60 percent
Enon soil and similar inclusions: 25 percent
Dissimilar inclusions: 15 percent

Typical Profile

Zion
Surface layer:
0 to 6 inches—brown sandy loam

Subsoil:
6 to 9 inches—yellowish brown silty clay loam
9 to 15 inches—brown clay
15 to 19 inches—yellowish brown clay
19 to 23 inches—dark yellowish brown clay

Underlying material:
23 to 31 inches—multicolored loam saprolite

Bedrock:
31 to 38 inches—weathered, partially consolidated mafic rock
38 inches—unweathered mafic rock

Enon
Surface layer:
0 to 7 inches—brown fine sandy loam

Subsoil:
7 to 10 inches—brownish yellow sandy clay loam
10 to 17 inches—strong brown clay

17 to 27 inches—yellowish brown clay
27 to 33 inches—mottled yellowish brown, light olive brown, and white clay loam

Underlying material:
33 to 72 inches—multicolored loam saprolite

Soil Properties and Qualities

Depth class: Zion—moderately deep; Enon—very deep
Drainage class: Well drained
Permeability: Zion—slow or moderately slow; Enon—slow
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: High
Slope class: Gently sloping
Surface runoff: Medium
Hazard of water erosion: Moderate
Soil reaction: Zion—very strongly acid to moderately acid in the surface layer and the upper part of the subsoil except where the surface layer has been limed and strongly acid to neutral in the lower part of the subsoil and in the underlying material; Enon—strongly acid to slightly acid in the surface layer except where it has been limed and slightly acid to slightly alkaline in the subsoil and underlying material
Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock
Depth to bedrock: Zion—20 to 40 inches to hard bedrock; Enon—more than 60 inches

Inclusions

Dissimilar inclusions:
- The moderately well drained Sedgefield soils along drainageways and in depressional areas
- Mecklenburg soils that have a subsoil that is redder than that of the Zion or Enon soil, have a moderate shrink-swell potential, and are on small knolls
- Random areas of Mocksville and Poindexter soils that have a loamy subsoil
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:
- Random areas of Zion and Enon soils that have a surface layer of loam or sandy loam
- Random areas of Vance soils that are more acid than the Zion and Enon soils

Use and Management

Major Uses: Woodland
Other Uses: Cropland and pasture

Agricultural Development

Cropland
Suitability: Zion—suited; Enon—well suited
Management concerns: Zion—erodibility, rooting depth, and soil fertility; Enon—erodibility and soil fertility
Management measures and considerations:
- Resource management systems that include terraces and diversions, conservation tillage, stripcropping, contour farming, crop residue management, and rotations of soil-conserving crops help to minimize erosion, control surface runoff, and maximize the infiltration of rainfall.

- Incorporating plant residue into the soil helps to improve the water-holding capacity, and using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Zion soil.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland
Suitability: Well suited
Management concerns: Zion—erodibility, rooting depth, and soil fertility; Enon—erodibility and soil fertility
Management measures and considerations:
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Incorporating plant residue into the soil helps to improve the water-holding capacity, and using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Zion soil.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Zion—windthrow hazard; Enon—slight limitations
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Productivity may be increased in areas of the Zion soil by harvesting windthrown trees, which result from high winds and the limited rooting depth.

Urban Development

Dwellings
Suitability: Poorly suited
Management concerns: Zion—shrink-swell potential and depth to bedrock; Enon—shrink-swell potential
Management measures and considerations:
- Only dwellings without basements should be built on the Zion soil.
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Drilling and blasting of rock or special earthmoving equipment may be needed to grade areas of the Zion soil.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Zion—restricted permeability and depth to bedrock; Enon—restricted permeability
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Shrink-swell potential and low strength
Management measures and considerations:
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- As much of the shrink-swell clay as possible should be removed and the thickness of the base aggravate increased.
- Installing geotextile fabric between the base aggravate and final surface of the road helps to overcome the limitations.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Restricted permeability
Management measures and considerations:
- Locating camp sites on the higher parts of the landscape allows good surface drainage.
- Providing a graveled area for tents and other facilities helps to overcome the restricted permeability.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Restricted permeability
Management measures and considerations:
- Locating picnic sites on the higher parts of the landscape allows good surface drainage.
- Providing a graveled area for tables and other facilities helps to overcome the restricted permeability.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Suited
Management concerns: Slope, restricted permeability, and small stones
Management measures and considerations:
- Cutting, filling, and grading should be limited to only those areas that need to be shaped.
- Using diversions helps to remove excess surface water and minimize the permeability limitation.
- Small stones should be removed.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Interpretive Groups

Land capability classification: IIIe
Woodland ordination symbol: Based on loblolly pine as the indicator species, 6D in areas of the Zion soil and 7A in areas of the Enon soil

ZeC—Zion-Enon complex, 8 to 15 percent slopes

Setting

Landform: Piedmont uplands, mainly in the central and northwestern parts of the county
Landscape position: Narrow ridges and side slopes
Shape of areas: Oblong or irregular
Size of areas: 5 to 50 acres

Composition

Zion soil and similar inclusions: 65 percent
Enon soil and similar inclusions: 20 percent
Dissimilar inclusions: 15 percent

Typical Profile

Zion
Surface layer:
0 to 6 inches—brown sandy loam

Subsoil:
6 to 9 inches—yellowish brown silty clay loam
9 to 15 inches—brown clay
15 to 19 inches—yellowish brown clay
19 to 23 inches—dark yellowish brown clay

Underlying material:
23 to 31 inches—multicolored loam saprolite

Bedrock:
31 to 38 inches—weathered, partially consolidated mafic rock
38 inches—unweathered mafic rock

Enon
Surface layer:
0 to 7 inches—brown fine sandy loam

Subsoil:
7 to 10 inches—brownish yellow sandy clay loam
10 to 17 inches—strong brown clay
17 to 27 inches—yellowish brown clay
27 to 33 inches—mottled yellowish brown, light olive brown, and white clay loam

Underlying material:
33 to 72 inches—multicolored loam saprolite

Soil Properties and Qualities

Depth class: Zion—moderately deep; Enon—very deep
Drainage class: Well drained
Permeability: Zion—slow or moderately slow; Enon—slow
Depth to high water table: More than 6.0 feet
Hazard of flooding: None
Shrink-swell potential: High
Slope class: Strongly sloping
Surface runoff: Medium
Hazard of water erosion: Severe

Soil reaction: Zion—very strongly acid to moderately acid in the surface layer and the upper part of the subsoil except where the surface layer has been limed and strongly acid to neutral in the lower part of the subsoil and in the underlying material; Enon—strongly acid to slightly acid in the surface layer except where the surface layer has been limed and slightly acid to slightly alkaline in the subsoil and underlying material

Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock

Depth to bedrock: Zion—20 to 40 inches to hard bedrock; Enon—more than 60 inches

Inclusions

Dissimilar inclusions:

- The moderately well drained Sedgefield soils on foot slopes and along drainageways
- Random areas of Mecklenburg soils that have a subsoil that is redder than that of the Zion or Enon soil and have a moderate shrink-swell potential
- Random areas of Mocksville and Poindexter soils that have a loamy subsoil
- Random areas where stones and boulders are widely scattered on the surface

Similar inclusions:

- Random areas of Zion and Enon soils that have a surface layer of loam or sandy loam
- Random areas of Vance soils that are more acid than the Zion and Enon soils

Use and Management

Major Uses: Woodland

Other Uses: Cropland and pasture

Agricultural Development

Cropland

Suitability: Suited

Management concerns: Zion—erodibility, rooting depth, and soil fertility; Enon—erodibility and soil fertility

Management measures and considerations:

- Resource management systems that include conservation tillage, crop residue management, stripcropping, and sod-based rotations help to minimize erosion, control surface runoff, and maximize the infiltration of water.
- Incorporating plant residue into the soil helps to improve the water-holding capacity, and using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Zion soil.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize crop productivity.

Pasture and hayland

Suitability: Zion—suited; Enon—well suited

Management concerns: Zion—erodibility, rooting depth, equipment use, and soil fertility; Enon—erodibility, equipment use, and soil fertility

Management measures and considerations:

- Preparing seedbeds on the contour or across the slope helps to reduce the hazard of erosion and increase germination.
- Planting adapted species helps to ensure the production of high-quality forage and reduce the hazard of erosion.
- Incorporating plant residue into the soil helps to improve the water-holding capacity, and using shallow-rooted crops helps to overcome the moderately deep rooting depth of the Zion soil.

- The slope may limit equipment use in the steeper areas when harvesting hay crops.
- Using a rotational grazing system and implementing a well planned clipping and harvesting schedule help to maintain pastures and increase forage production.
- Applying lime and fertilizer according to recommendations based on soil tests helps to increase the availability of plant nutrients and maximize productivity when establishing, maintaining, or renovating hayland and pasture.

Woodland
Suitability: Well suited
Productivity class: Moderately high for loblolly pine
Management concerns: Zion—windthrow hazard; Enon—slight limitations
Management measures and considerations:
- Planting the appropriate species, as recommended by a forester, helps to achieve maximum productivity and ensure planting success.
- Productivity may be increased in areas of the Zion soil by harvesting windthrown trees, which result from high winds and the limited rooting depth.

Urban Development

Dwellings
Suitability: Poorly suited
Management concerns: Zion—shrink-swell potential, depth to bedrock, and slope; Enon—shrink-swell potential and slope
Management measures and considerations:
- Only dwellings without basements should be built on the Zion soil.
- Designing structures so that they conform to the natural slope helps to overcome the slope limitation.
- Reinforcing foundations and basements or backfilling with coarse material helps to strengthen buildings and prevent damage caused by shrinking and swelling.
- Drilling and blasting of rock or special earthmoving equipment may be needed to grade areas of the Zion soil.
- Vegetating cleared and graded areas as soon as possible or constructing silt fences helps to maintain soil stability and keep sediments onsite.

Septic tank absorption fields
Suitability: Poorly suited
Management concerns: Zion—restricted permeability and depth to bedrock; Enon—restricted permeability
Management measures and considerations:
- This map unit has severe limitations affecting septic tank absorption fields.
- The Rowan County Health Department should be contacted for guidance in developing sanitary facilities.

Local roads and streets
Suitability: Poorly suited
Management concerns: Shrink-swell potential and low strength
Management measures and considerations:
- Designing roads on the contour and providing adequate water-control structures, such as culverts, help to maintain road stability.
- Providing sand and gravel and compacting roadbeds help to improve soil strength.
- As much of the shrink-swell clay as possible should be removed and the thickness of the base aggravate increased.
- Installing geotextile fabric between the base aggravate and final surface of the road helps to overcome the limitations.
- Vegetating cut and fill slopes as soon as possible after construction helps to stabilize the soil and prevent excessive erosion.

Recreational Development

Camp areas
Suitability: Suited
Management concerns: Slope and restricted permeability
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for tents and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Picnic areas
Suitability: Suited
Management concerns: Slope and restricted permeability
Management measures and considerations:
- Locating facilities in the less sloping areas helps to overcome the slope limitation.
- A level area with a graveled surface should be provided for picnic tables and other facilities.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Playgrounds
Suitability: Poorly suited
Management concerns: Slope
Management measures and considerations:
- Extensive grading, including cutting and filling, is needed.
- The depth to bedrock should be determined before grading for playgrounds.
- Leaving a buffer zone of grass, trees, and shrubs adjacent to streams and drainageways helps to minimize siltation and provides shade.
- Vegetating cleared and graded areas as soon as possible helps to maintain soil stability and prevent erosion.

Interpretive Groups

Land capability classification: IVe
Woodland ordination symbol: Based on loblolly pine as the indicator species, 6D in areas of the Zion soil and 7A in areas of the Enon soil

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 (fig. 11). They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis for predicting soil behavior.

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

Generally, the soils in Rowan 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

R. Bruce Rider, district conservationist, Natural Resources Conservation Service, helped prepare this section.

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

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 Natural Resources Conservation Service or the North Carolina Cooperative Extension Service.

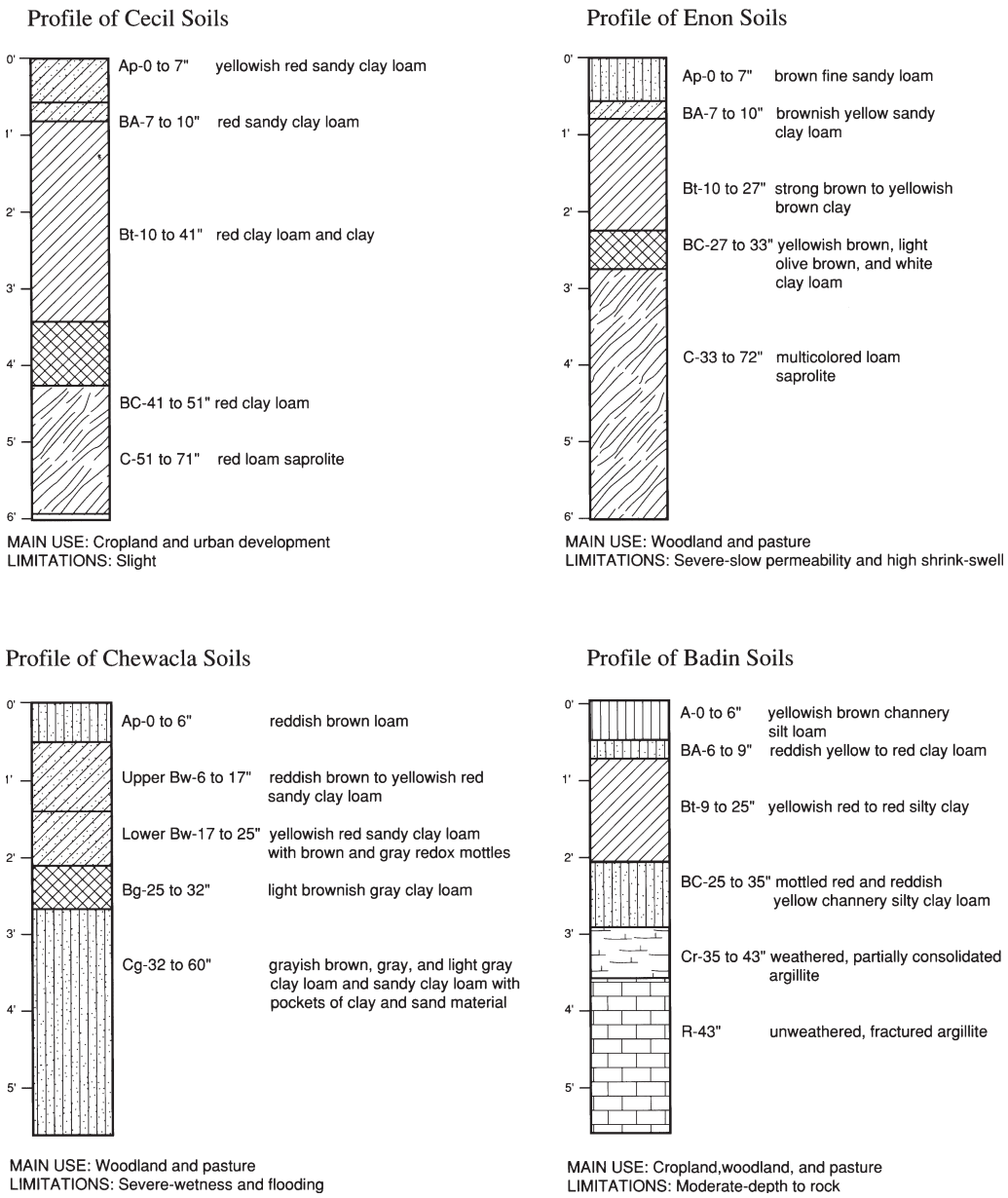

Figure 11.—The soil profiles, main uses, and limitations of four contrasting soils in Rowan County.

Federal and State regulations require that any area designated as wetlands cannot be altered without prior approval. Contact the local office of the Natural Resources Conservation Service for identification of hydric soils and potential wetlands.

The acreage of cropland in Rowan County has slightly decreased during the past 10 years. Cropland has been converted to pasture or hayland due to lack of profit in farming row crops.

In 1993, more than 38,600 acres in Rowan County were used for harvested crops *(6)*. About 15,000 acres were used for hay and 25,000 acres for pasture. Corn for grain and silage and soybeans are the dominant row crops. Wheat and barley are other row crops. Wheat is the most common close-growing crop, and barley is the second most common. A small acreage of oats is also grown. Because of the suitable soils and a

favorable climate, many field crops that are not commonly grown in Rowan County could be produced. Grass seed could be produced from fescue and orchardgrass. According to the North Carolina Cooperative Extension Service, the average farm size in 1994 was 141 acres.

Specialty crops include vegetables, flowers, and many nursery plants. Some areas are used for melons, strawberries (fig. 12), sweet corn, tomatoes, peppers, or other vegetables.

Very deep soils that have slopes of less than 8 percent, that are characterized by good natural drainage, and that warm up early in spring are especially well suited to many vegetables. These soils include Appling, Cecil, Enon, Hiwassee, Mecklenburg, Pacolet, Rion, Wedowee, Uwharrie, Vance, and Wickham soils.

The latest information about specialty crops can be obtained at the local office of the North Carolina Cooperative Extension Service or the Natural Resources Conservation Service.

Most of the row crops and small grains are grown on the well drained or moderately well drained, nearly level or gently sloping, very deep to moderately deep soils on uplands and stream terraces. These soils include Appling, Badin, Cecil, Dogue, Enon, Helena, Hiwassee, Mecklenburg, Pacolet, Rion, Sedgefield, Wedowee, Uwharrie, Vance, and Wickham soils. Strongly sloping to moderately steep areas of Badin, Hiwassee, Mecklenburg, Mocksville, Pacolet, Poindexter, Rion, Tatum, Uwharrie, Vance, and Wedowee soils are commonly used for hay and pasture. Nearly level soils on flood plains, such as Riverview and Chewacla soils, are occasionally used for row crops but are mainly used for pasture.

Figure 12.—Strawberries in an area of Appling sandy loam, 1 to 6 percent slopes. A plastic cover helps to control weeds, conserve moisture, and prevent erosion.

Some areas that are idle, wooded, or pastured have good potential for use as cropland. Food production could be increased considerably by applying the latest technology to all of the cropland in the survey area. The information in this soil survey can facilitate the application of such technology.

Cropland

Management considerations on cropland in the county include controlling erosion, installing a drainage system, improving soil fertility, applying a system of chemical weed control, and improving tilth.

Erosion control.—Water erosion is a major hazard on most of the soils used for crops or pasture in Rowan County. Nearly level soils that are not subject to accelerated erosion and that are considered agriculturally productive are Chewacla, Oakboro, Riverview, and Wahee soils on flood plains; Dogue soils on stream terraces; and Lignum soils on uplands. Erosion is a hazard on all of the soils that have slopes of more than 2 percent. As the slope increases, the hazard of erosion and the difficulty in controlling erosion also increase.

Loss of the surface layer through erosion is damaging. Soil productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on soils that have a clayey subsoil (such as Appling, Cecil, Dogue, Enon, Helena, Hiwassee, Iredell, Mecklenburg, Pacolet, Sedgefield, Tatum, Uwharrie, Vance, and Wedowee soils) and on soils that have a limited root zone because they are moderately deep or shallow to bedrock (such as Ashlar, Badin, Goldston, Poindexter, Saw, and Zion soils). Erosion on farmland results in the sedimentation of streams. Controlling erosion minimizes the pollution of water by runoff carrying plant nutrients, soil particles, and plant residue. It improves the quality of water for municipal use, for recreation, and for fish and wildlife.

In many sloping areas of clayey soils, preparing a good seedbed is difficult because much or all of the original friable surface layer has been lost through erosion. This degree of erosion is common in areas of Badin, Cecil, Hiwassee, Mecklenburg, Pacolet, Saw, Tatum, Uwharrie, and Vance soils.

Erosion-control practices provide a protective surface cover, reduce runoff, and increase the rate of water infiltration. A cropping system that keeps a vegetative cover on the surface for extended periods helps to minimize soil loss and maintain the productive capacity of the soil. In sloping areas, including forage crops of grasses and legumes in the cropping system helps to control erosion. The forage crops also add nitrogen to the soil and improve tilth. Improved cropping systems, conservation tillage, crop residue management, terraces, stripcropping, grassed waterways, contour farming, and field borders are some of the practices that can reduce the hazard of erosion on cropland.

Minimizing tillage and leaving crop residue on the surface increase the rate of water infiltration, reduce runoff, and help to control erosion. These practices can be effective on most of the soils in the survey area. In the more sloping areas that are used for corn or double cropped with soybeans (fig. 13), no-till farming is effective in controlling erosion.

Terraces and diversions shorten the length of slopes and thus minimize erosion caused by runoff. They are most effective on very deep, well drained soils that have smooth slopes of less than 8 percent. Cecil, Enon, Hiwassee, Mecklenburg, Pacolet, and Uwharrie soils are examples. These measures are less effective on soils that have irregular slopes because these soils would be excessively wet in terrace channels, would have a clayey subsoil exposed in the terrace channels, or would have bedrock within a depth of 40 inches.

Contour farming and contour stripcropping help to control erosion on many of the soils in the survey area. They are best suited to soils that have smooth, uniform slopes.

Figure 13.—An area of Hiwassee clay loam, 2 to 8 percent slopes, eroded, that is double cropped with soybeans. Planting soybeans in wheat stubble is a popular conservation practice used to reduce runoff and control erosion on soils that are subject to erosion.

Information about erosion-control measures for each kind of soil is available at the local office of the Natural Resources Conservation Service.

Drainage.—Wetness is a management concern on a very small percentage of the cropland in Rowan County. Some nearly level soils are so wet that production of the crops commonly grown in the survey area is difficult unless a drainage system is installed. A clayey subsoil and poor drainage outlets, however, can limit the effectiveness of artificial drainage. Because of this, few areas of Armenia, Chewacla, Cid, Lignum, Oakboro, and Wahee soils have been drained in order to produce row crops and small grains.

Managing drainage in conformance with regulations concerning wetlands may require special permits and extra planning. The local office of the Natural Resources Conservation Service should be contacted for identification of hydric soils and potential wetlands.

Soils along the flood plains in Rowan County are frequently or occasionally flooded for brief periods, generally between November and April. Flash flooding as a result of intensive rainfall can occur on the upper reaches of stream bottoms at any time of the year and can damage or destroy crops.

Soil fertility.—The soils in Rowan County generally are low in natural fertility and 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. Lime 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. Phosphorus and potassium tend to build up in the soil.

Chemical weed control.—The use of herbicides for weed control is a common practice on the cropland in Rowan County. It decreases the need for tillage and is an integral part of modern farming. Selected soil properties, such as organic matter content and texture of the surface layer, affect the rate of herbicide application. Estimates of both of these properties were determined for the soils in this survey area. 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 organic matter content projected for a soil may be outside the range shown in the table. The content can be higher in soils that have received large 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.

Tilth.—Soil tilth is an important factor in the germination of seeds and the infiltration of water into the soil. Soils that have good tilth have a granular and porous surface layer.

Most of the soils used for crops in Rowan County have a surface layer that has a low content of organic matter (less than 1 percent). Intense rainfall results in the formation of a crust on the surface of some of these soils. The crust is hard when dry and almost impervious to water. It reduces the rate of water infiltration and increases the runoff rate. Regular additions of crop residue, manure, and other organic matter help to improve soil structure and prevent crusting, thereby increasing the infiltration rate. A good content of organic matter ranges from 1.5 to 2 percent. Soils that have a greater clay content in the surface layer, such as Badin, Cecil, Hiwassee, Mecklenburg, Pacolet, Saw, Tatum, Uwharrie, and Vance soils, become cloddy if they are cultivated under wet conditions.

Stones and boulders are common on the surface in some areas of Enon and Uwharrie soils. In these areas, the rock fragments prevent tillage and the land is used mainly for woodland.

Pasture and Hayland

In 1994, Rowan County had more than 30,100 beef and dairy cattle *(6)*. Most of the pasture and hayland supports a mixture of grasses and legumes. Most of the hay is grown in rotation with pasture. The harvested hay commonly is rolled into large, round bales or is used as grass silage.

Selection of forage species.—The soils in the survey area vary widely in their ability to produce grasses and legumes because of differences in depth to bedrock, internal drainage, and available water capacity. The forage species selected for planting should be appropriate for the soil. A successful livestock enterprise depends on a forage program that provides large quantities of good-quality feed. In most areas of hayland

and pasture in Rowan County, renovation, brush control, and measures that prevent overgrazing are needed.

The nearly level and gently sloping, deep and very deep, well drained soils should be planted to the highest producing crops, such as corn silage, alfalfa, and mixtures of alfalfa and orchardgrass. Sod-forming grasses, such as tall fescue and orchardgrass, minimize erosion in the steeper areas. Alfalfa should be seeded with cool-season grasses in areas where the soil is at least 2 feet deep and is well drained. The more poorly drained soils and the soils that are less than 2 feet deep are suited to clover-grass mixtures or to pure stands of clover or grasses. Legumes can be established through renovation in areas that support sod-forming grasses.

The intended use should be considered when forage species are selected. Selected species should provide maximum quality and versatility in the forage program. Legumes generally produce higher quality feed than grasses. They should be grown to the maximum extent possible. The taller legumes, such as alfalfa and red clover, are more versatile than legumes that are used primarily for grazing, such as white clover. Orchardgrass and tall fescue are best suited to use as hay and silage.

Tall fescue is an important cool-season grass. It is suited to a wide range of soil conditions and is grown for both pasture and hay. The growth that occurs from August through November commonly accumulates in the field and is used for grazing in late fall and in winter. For maximum production, nitrogen fertilizer should be applied during the period when the grass is accumulating. The rate of application should be based on the desired level of production.

Warm-season grasses that are planted during the period from early April through late May help to supplement cool-season grasses, such as tall fescue. They grow well during warm periods, especially from mid-June through September, when the growth of cool-season grasses is slow. Examples of warm-season grasses are switchgrass, big bluestem, indiangrass, Caucasian bluestem, and coastal bermudagrass.

Maintenance of pasture and hayland.—Applications of fertilizer and lime are needed for the production of pasture and hay on most soils in the county because the soils are low in fertility, particularly calcium and phosphorus. Fertilizer and lime requirements should be based on the results of soil tests, on the kind of forage, and the desired yield. Fertilizer and lime should be incorporated into a well prepared seedbed prior to planting. Fertility levels should be maintained by using annual topdress applications after the sod has been established. For maximum yields, fertilizer should be applied to cool-season plants (fescue, orchardgrass, and clover) in spring and fall, just prior to the growing season.

Rotational grazing that uses crossfencing is needed to prevent overgrazing or undergrazing pastures. Grazing closer than 3 inches on most species of pasture and hay plants greatly reduces forage production. Undergrazing reduces feeding value, wastes forage, and increases the hazard of diseases and insects. Mowing helps to control uneven growth and weeds and keep plants at their most nutritious stage.

Access roads to and through pastureland should be installed on the contour to prevent erosion and to facilitate fertilization and pasture management.

Renovation can increase forage yields in areas that have a good stand of grass. It includes partially destroying the sod, applying lime and fertilizer, and seeding desirable forage species. Adding legumes to the stand of grass provides high-quality feed. Legumes increase summer production and transfer nitrogen from the air into the soil. Under growing conditions, alfalfa can fix 200 to 300 pounds of nitrogen per acre per year, red clover can fix 100 to 200 pounds, and ladino clover can fix 100 to 150 pounds. An acre of annual forage legumes, such as Korean lespedeza or vetch, can fix 75 to 100 pounds of nitrogen per year.

Additional information about managing pasture and hayland can be obtained from the local office of the Natural Resources Conservation Service or the North Carolina Cooperative Extension Service.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification is also shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

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 the 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.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

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

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources 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 *(11)*. 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.

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

The capability classification of each map unit component is given in the section "Detailed Soil Map Units" and in table 5.

Prime Farmland

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

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forest land, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. The slope ranges mainly from 0 to 8 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 157,000 acres in the survey area, or nearly 47 percent of the total acreage, meets the soil requirements for prime farmland. Scattered areas of this land are throughout the county, but most are in the western part.

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in table 6. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding or wetness are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps at the back of this publication. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

Woodland Management and Productivity

Albert Coffey, forester, Natural Resources Conservation Service, and Wayne Alexander, county forest technician, North Carolina Department of Environment, Health, and Natural Resources, Division of Forest Resources, helped prepare this section.

Owners of woodland in Rowan County have many objectives. These objectives include producing timber; conserving wildlife, soil, and water; preserving esthetic values; and providing opportunities for recreational activities, such as commercial hunting. Public demand for clean water and recreational areas creates pressures and opportunities for owners of woodland.

For purposes of forest inventory, the predominant forest types identified in Rowan County are as described in the following paragraphs *(8)*.

Loblolly-shortleaf. This forest type covers 33,760 acres. It is predominantly loblolly pine, shortleaf pine, or other kinds of southern yellow pine (excluding longleaf pine and slash pine) or a combination of these species. Commonly included trees are oak, hickory, and gum.

Oak-pine. This forest type covers 24,856 acres. It is predominantly hardwoods, usually upland oaks. Pine species make up 25 to 50 percent of the stand. Commonly included trees are gum, hickory, and yellow-poplar.

Oak-hickory. This forest type covers 79,354 acres. It is predominantly upland oaks or hickory, or both. Commonly included trees are yellow-poplar, elm, maple, and black walnut.

Oak-gum. This forest type covers 8,385 acres. It is bottom-land forest consisting predominantly of blackgum, sweetgum, oaks, or a combination of these species. Commonly included trees are willow, ash, elm, hackberry, and maple.

Elm-ash. This forest type covers 4,143 acres. It is predominantly elm and ash. Commonly included trees are willow, sycamore, beech, and maple.

The landowner interested in timber production is 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; and controlling insects, diseases, and weeds. 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 about 150,500 acres, or about 45 percent of the land area of Rowan County *(8)*. 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 (fig. 14).

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.

This soil survey can be used by woodland managers planning ways to increase the productivity of forest land. Some soils respond better to applications of fertilizer than others, and some are more susceptible to landslides and erosion after roads are built and timber is harvested. Some soils require special reforestation efforts. In the section "Detailed Soil Map Units," the description of each map unit in the survey area suitable for timber includes information about productivity, limitations in harvesting timber, and management concerns in producing timber. Table 7 summarizes this forestry

Figure 14.—A well managed stand of loblolly pine on Cecil sandy clay loam, 2 to 8 percent slopes, eroded.

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 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 high content 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 soil compaction. Ratings of moderate or severe indicate a need to choose the best suited equipment and to carefully plan the timing of harvesting and other management activities.

Ratings of *seedling mortality* refer to the probability of the death of 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 high water table and the length of the period when the water table is high, rock fragments in the surface layer,

rooting depth, and the aspect of the slope. The mortality rate generally is highest on soils that have a sandy or clayey surface layer. The risk is *slight* if, after site preparation, expected mortality is less than 25 percent; *moderate* if expected mortality is between 25 and 50 percent; and *severe* if expected mortality exceeds 50 percent. Ratings of moderate or severe indicate that it may be necessary to use containerized or larger than usual planting stock or to make special site preparations, such as bedding, furrowing, installing a surface drainage system, and providing artificial shade for seedlings. Reinforcement planting is often needed if the risk is moderate or severe.

Ratings of *windthrow hazard* indicate the likelihood that trees will be uprooted by the wind. A restricted rooting depth is the main reason for windthrow. The rooting depth can be restricted by a high water table, a fragipan, or bedrock or by a combination of such factors as 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. 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 estimates of the productivity of the soils in this survey are based mainly on loblolly pine, shortleaf pine, and yellow-poplar *(3, 5)*.

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, practicing water management, 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.

Recreation

Recreational opportunities in Rowan County are numerous and diverse. The county provides four parks. The largest, Dan Nicholas Park, is located 8 miles southeast of Salisbury. It is open year-round. It includes a 10-acre lake which is available for fishing and paddle boating, miniature golf, live animal exhibits and a petting zoo, tennis courts, an 80-site family campground, picnic shelters, playgrounds, and sports fields. Ellis Park is located 2 miles north of Salisbury and is 11 acres in size. It offers volleyball courts, tennis courts, and ball fields. Sloan Park is located 8 miles west of Salisbury. It provides picnic shelters, playgrounds, and a ball field and includes the

historic Kerr Mill, a restored grist mill that is open for tours. Bakers Creek Park is located at the southwestern edge of the county. It offers picnic shelters, playgrounds, tennis courts, a lighted ball field, and a
1-mile-long nature trail.

Other recreational facilities in the county are numerous municipal and private parks and sports fields, five golf courses, and facilities at public schools, Catawba College, Livingstone College, and the Salisbury YMCA.

High Rock Lake is a 15,000-acre lake on the southeastern border of the county and a major recreational site in the region. Opportunities for boating, fishing, and water sports are available at this lake and in the Tuckertown Reservoir, located south of High Rock Lake.

Hunting is popular in the county. Deer hunting is a major outdoor activity. Rabbit, squirrel, raccoon, quail, mourning dove, and other small game species are also hunted.

As the county population continues to increase, new public and private facilities will need to be developed. Information about soils and soil properties is essential for planning and developing new recreational facilities in addition to maintaining or improving existing facilities.

The soils of the survey area are rated in table 8 according to the limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 8 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have gentle slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

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

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the period 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

Kenneth B. Knight, wildlife biologist, North Carolina Wildlife Resources Commission, and Albert C. Henry, Jr., biologist, Natural Resources Conservation Service, helped prepare this section.

The soils and land use patterns in Rowan County provide habitat for a large variety of game and nongame wildlife. Cropland that is interspersed with pine woods, hardwood stands, old fields, and numerous ponds and lakes create habitat that is suitable for many native, introduced, and migratory species. The soils are generally well suited to the production of plants that provide the food and cover needed by wildlife.

Deer inhabit all areas of the county. The largest population occurs in the eastern part where there are large areas of land that are more remote and less developed. In 1987 and 1988, wild turkey, the only other big game species in the county, was stocked in the eastern part of the county and in other more remote areas of the county. Populations of wild turkey are becoming established. The turkeys are currently protected from hunting.

Other game species in the county include cottontail rabbit, gray squirrel, bobwhite quail, mourning dove, and several species of migratory waterfowl.

Populations of game and nongame species in Rowan County are good and should remain good if old fields and other habitat essentials are maintained. Because nearly all of Rowan County is privately owned, the maintenance and improvement of wildlife habitat depend on private landowners. Information and assistance relating to the development and management of areas for wildlife habitat are available from the local office of the Natural Resources Conservation Service or the North Carolina Wildlife Resources Commission.

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 (fig. 15), 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

Figure 15.—A nature trail in an area of Armenia loam, 0 to 2 percent slopes, frequently flooded, that is used in studying wetland habitat.

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, yellow-poplar, black 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, spruce, red cedar, and juniper.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, 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 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, meadowlark, mourning dove, 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, woodcock, thrushes, woodpeckers, gray squirrel, gray fox, raccoon, bobcat, and white-tailed deer.

Habitat for wetland wildlife consists of open or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, Canadian geese, herons, muskrat, mink, river otter, and beaver.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the “Soil Properties” section.

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

scale, small areas of different soils may be included within the mapped areas of a specific soil.

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

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

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a 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 high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family

dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. Depth to a high water table, depth to bedrock, 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, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, depth to a high water table, depth to bedrock, 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 Rowan County 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 landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 11 also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and 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 Rowan County Health Department can provide detailed information on and guidance in developing sanitary facilities.

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.

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, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, and soil reaction affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

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

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of 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. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 12, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as slate, mudstone, and weathered granite are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, and bedrock.

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 high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas and for embankments, dikes, and levees. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives 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 shown on the maps with a special symbol 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.

Drainage may be a major management consideration in some areas. Management of drainage in conformance with regulations concerning wetlands may require special permits and extra planning. The local office of the Natural Resources Conservation Service should be contacted for identification of hydric soils and potential wetlands.

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 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 *(9)*. 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.

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.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 15 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

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

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

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^1/_3$-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of movement of water through the soil when the soil is saturated. They

are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

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

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to soil blowing in cultivated areas. The groups indicate the susceptibility to soil blowing. The soils assigned to group 1 are the most susceptible to soil blowing, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, and sapric soil material.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.

5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.

6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.

7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.

8. Soils that are not subject to soil blowing because of coarse fragments on the surface or because of surface wetness.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 15, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 16 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils 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.

If a soil is assigned to two hydrologic groups in table 16, the first letter is for drained areas and the second is for undrained areas.

Flooding, the temporary covering of the soil surface by flowing water, is caused by overflowing streams, by runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in swamps and marshes or in a closed depression is considered ponding.

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* that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year);

occasional that it occurs, on the average, once or less in 2 years (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of flooding is more than 50 percent in any year). Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information 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 (redoximorphic features) in the soil. Indicated in table 16 are the depth to the high water table; the kind of water table—that is, *perched* or *apparent;* and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 16.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. “More than 6.0” indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is 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 results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low, moderate,* or *high*. It is based on soil texture, acidity, and the amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(12)*. 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 17 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. Other orders in this survey area are Alfisol, Entisol, Inceptisol, and Mollisol.

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 Hapludults (*Hapl,* meaning minimal horizon development, plus *udult,* the suborder of the Ultisols that occurs in humid climates).

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 Hapludults.

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, mixed, thermic Typic Hapludults.

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. The Badin series is an example of clayey, mixed, thermic, Typic Hapludults.

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 coordinates generally are identified by the State plane grid system or by longitude and latitude. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" *(13)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(12)* and in "Keys to Soil Taxonomy" *(14)*. 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."

Appling Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Landform: Piedmont uplands
Landscape position: Broad ridges
Slope range: 1 to 6 percent
Taxonomic class: Clayey, kaolinitic, thermic Typic Kanhapludults (fig. 16)

Typical Pedon

Appling sandy loam, 1 to 6 percent slopes; 2.6 miles west of China Grove on North Carolina Highway 152, about 1.6 miles northwest on Secondary Road 1211, about 0.3 mile north on Secondary Road 1539, about 0.3 mile west on a farm road, about 100 feet south in a field; Enochville USGS topographic quadrangle; lat. 35 degrees 35 minutes 43 seconds N. and long. 80 degrees 38 minutes 10 seconds W.

Ap—0 to 8 inches; yellowish brown (10YR 5/4) sandy loam; weak fine granular structure; friable; common fine and medium roots; strongly acid; clear smooth boundary.

E—8 to 12 inches; brownish yellow (10YR 6/6) sandy loam; weak fine granular structure; friable; few fine roots; strongly acid; gradual wavy boundary.

BE—12 to 16 inches; strong brown (7.5YR 5/8) sandy clay loam; common fine distinct brownish yellow (10YR 6/6) mottles; weak fine subangular blocky structure; friable; few fine flakes of mica; strongly acid; gradual wavy boundary.

Bt1—16 to 27 inches; yellowish red (5YR 5/8) sandy clay; common fine distinct brownish yellow (10YR 6/6) and few fine distinct red (2.5YR 5/8) mottles; moderate medium subangular blocky structure; firm; slightly sticky and slightly plastic; few fine roots; few faint clay films on faces of peds; few fine flakes of mica; strongly acid; gradual wavy boundary.

Bt2—27 to 38 inches; strong brown (7.5YR 5/6) clay; common medium distinct red (2.5YR 5/8) and common fine distinct brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; firm; slightly sticky and slightly plastic; few fine roots; few fine pores; few faint clay films on faces of peds; few fine flakes of mica; strongly acid; gradual wavy boundary.

Figure 16.—Profile of the very deep, well drained Appling soil.

BC—38 to 47 inches; mottled brownish yellow (10YR 6/6), strong brown (7.5YR 5/6), and yellow (2.5Y 7/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; few fine flakes of mica; common pockets of saprolite material; strongly acid; gradual wavy boundary.

C—47 to 60 inches; multicolored sandy loam saprolite; massive; friable; few fine flakes of mica; strongly acid.

Range in Characteristics

Thickness of solum: 40 to more than 60 inches

Depth to bedrock: More than 60 inches

Mica flakes: In most pedons, few or common in the A and Bt horizons and few to many in the BC and C horizons

Rock fragments: Less than 35 percent, by volume, in the A horizon and less than 10 percent in the Bt horizon; mostly gravel

Reaction: Very strongly acid or strongly acid throughout the profile except where the surface layer has been limed

Ap or A horizon:
Color—hue of 7.5YR to 2.5Y, value of 3 to 6, and chroma of 2 to 6
Texture (fine-earth fraction)—sandy loam

E horizon:
Color—hue of 5YR to 2.5Y and value and chroma of 4 to 6
Texture—sandy loam, fine sandy loam, coarse sandy loam, loamy sand, or loamy coarse sand

BA or BE horizon:
Color—hue of 5YR to 10YR, value of 5 or 6, and chroma of 3 to 8
Texture—sandy clay loam or sandy loam

Bt horizon:
Color—hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8
Mottles—shades of red, brown, or yellow; throughout the horizon in most pedons
Texture—sandy clay, clay, or clay loam that has thin layers of sandy clay loam

BC horizon:
Color—horizon has hue of 5YR to 2.5Y, value of 4 to 7, and chroma of 4 to 8 or is mottled in these colors
Texture—clay loam, sandy clay, or sandy clay loam

C horizon:
Color—horizon has hue of 5YR to 2.5Y, value of 4 to 7, and chroma of 4 to 8 or is mottled in these colors
Texture—variable; commonly loamy saprolite

Armenia Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Slow
Parent material: Residuum weathered from mafic metamorphic or igneous rock
Landform: Piedmont uplands and small river and stream valleys
Landscape position: Broad upland flats, head of drainageways, depressional areas, areas along drainageways, and flood plains
Slope range: 0 to 2 percent
Taxonomic class: Fine, montmorillonitic, thermic Typic Argiaquolls

Typical Pedon

Armenia loam, 0 to 2 percent slopes, frequently flooded; 0.5 mile north of Rowan Prison Unit on U.S. Highway 29-601, about 0.25 mile east on Secondary Road 2545, about 200 feet south in second-growth trees; China Grove USGS topographic quadrangle; lat. 35 degrees 37 minutes 23 seconds N. and long. 80 degrees 31 minutes 28 seconds W.

Ap—0 to 5 inches; very dark grayish brown (2.5Y 3/2) loam; moderate medium granular structure; friable; many fine roots; few fine manganese concretions; slightly acid; clear smooth boundary.

Btg1—5 to 14 inches; gray (N 5/0) clay; moderate medium subangular blocky structure; firm; moderately sticky and moderately plastic; common fine roots; many fine prominent yellowish brown (10YR 5/8) irregularly shaped masses of iron accumulation; common distinct clay films on faces of peds; common fine manganese concretions; neutral; gradual wavy boundary.

Btg2—14 to 23 inches; gray (5Y 5/1) clay; moderate medium subangular blocky structure; very firm; very sticky and very plastic; few fine roots; common medium

prominent yellowish brown (10YR 5/6) irregularly shaped masses of iron accumulation; few fine distinct greenish gray (5GY 5/1) irregularly shaped iron depletions; common distinct clay films on faces of peds; common fine manganese concretions; 2 percent, by volume, quartz gravel; neutral; gradual wavy boundary.

Btg3—23 to 31 inches; light brownish gray (2.5Y 6/2) clay; weak medium subangular blocky structure; very firm; very sticky and very plastic; few fine roots; common medium prominent yellowish brown (10YR 5/8) irregularly shaped masses of iron accumulation; common fine distinct greenish gray (5GY 5/1) irregularly shaped iron depletions; common distinct clay films on faces of peds; common fine manganese concretions; 2 percent, by volume, quartz gravel; slightly alkaline; gradual wavy boundary.

Btg4—31 to 40 inches; light olive gray (5Y 6/2) clay; weak medium subangular blocky structure; very firm; very sticky and very plastic; few fine roots; few fine distinct light olive brown (2.5Y 5/6) irregularly shaped masses of iron accumulation; common distinct clay films on faces of peds; few fine manganese concretions; 1 percent, by volume, quartz gravel; slightly alkaline; gradual wavy boundary.

Btg5—40 to 50 inches; light olive gray (5Y 6/2) clay; weak medium subangular blocky structure; very firm; very sticky and very plastic; few fine roots; common medium distinct dark greenish gray (5G 4/1) and few fine distinct greenish gray (5BG 5/1) irregularly shaped iron depletions; common fine distinct reddish brown (5YR 5/4) irregularly shaped masses of iron accumulation; common distinct clay films on faces of peds; few fine manganese concretions; 1 percent, by volume, quartz gravel; slightly alkaline; gradual wavy boundary.

BCg—50 to 61 inches; olive gray (5Y 5/2) clay loam; weak fine subangular blocky structure; very firm; moderately sticky and very plastic; many medium distinct olive (5Y 5/3) and light olive brown (2.5Y 5/4) irregularly shaped masses of iron accumulation; many medium distinct dark greenish gray (5G 4/1) irregularly shaped iron depletions; slightly alkaline; gradual wavy boundary.

C—61 to 65 inches; multicolored clay loam saprolite; massive; friable; slightly alkaline.

Range in Characteristics

Thickness of solum: 30 to more than 60 inches
Depth to bedrock: More than 60 inches
Concretions: Few or common dark concretions
Rock fragments: 0 to 6 percent, by volume, throughout the profile; mostly gravel
Reaction: Moderately acid to neutral in the A horizon except where limed; slightly acid to slightly alkaline in the B and C horizons

A or Ap horizon:
Color—hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 1 to 3
Texture—loam

Btg horizon:
Color—horizon has hue of 10YR to 5Y or is neutral in hue and has value of 3 to 6 and chroma of 0 to 2
Redoximorphic features—iron accumulations in shades of brown or yellow
Texture—clay, sandy clay, clay loam, or silty clay

Btgc horizon (if it occurs):
Color—horizon has hue of 10YR to 5Y or is neutral in hue and has value of 3 to 6 and chroma of 0 to 2
Redoximorphic features—iron depletions in shades of gray or green; iron accumulations in shades of brown or yellow
Texture—clay, sandy clay, clay loam, or silty clay

BCg horizon:
Color—horizon has hue of 7.5YR to 5Y or is neutral in hue and has value of 3 to 8 and chroma of 0 or 2 or it is multicolored
Redoximorphic features—iron depletions in shades of gray or green; iron accumulations in shades of brown or yellow
Texture—clay loam or sandy clay loam

BC horizon (if it occurs):
Color—horizon has hue of 7.5YR to 5Y and value and chroma of 3 to 8 or is mottled in these colors
Redoximorphic features—iron depletions in shades of gray or green; iron accumulations in shades of brown or yellow
Texture—clay loam or sandy clay loam

C horizon:
Color—horizon is multicolored or has hue of 7.5YR to 5Y and value and chroma of 3 to 8
Redoximorphic features—iron depletions in shades of gray
Texture—loam, sandy loam, sandy clay loam, or clay loam saprolite

Cg horizon (if it occurs):
Color—horizon has hue of 7.5YR to 5Y or is neutral in hue and has value of 3 to 8 and chroma of 1 or 2
Redoximorphic features—iron depletions in shades of gray or green; iron accumulations in shades of brown or yellow
Texture—loam, sandy clay loam, or clay loam saprolite

The Armenia soils in Rowan County are considered taxadjuncts to the series because they do not have a mollic epipedon and have mixed clay mineralogy. These differences, however, do not significantly affect the use and management of the soils.

Ashlar Series

Depth class: Moderately deep
Drainage class: Excessively drained
Permeability: Moderately rapid
Parent material: Residuum weathered from coarse grained felsic igneous rock
Landform: Piedmont uplands
Landscape position: Ridges and side slopes
Slope range: 2 to 25 percent
Taxonomic class: Coarse-loamy, mixed, thermic Typic Dystrochrepts

Typical Pedon

Ashlar sandy loam in an area of Ashlar-Rock outcrop complex, 2 to 8 percent slopes; 4.2 miles south of Faith on Secondary Road 1006, about 1.6 miles west on Secondary Road 2564, about 0.25 mile south on a farm road, 180 feet west in a field; Rockwell USGS topographic quadrangle; lat. 35 degrees 31 minutes 49 seconds N. and long. 80 degrees 28 minutes 40 seconds W.

A—0 to 9 inches; brown (10YR 4/3) sandy loam; weak fine granular structure; very friable; many fine roots; few fine flakes of mica; strongly acid; clear smooth boundary.
Bw1—9 to 17 inches; brownish yellow (10YR 6/6) sandy loam; weak medium subangular blocky structure; very friable; common fine roots; few fine flakes of mica; 3 percent, by volume, gravel; strongly acid; gradual smooth boundary.

Bw2—17 to 24 inches; light yellowish brown (10YR 6/4) sandy loam; few fine distinct reddish yellow (7.5YR 6/8) mottles; weak medium subangular blocky structure; friable; common fine roots; few fine flakes of mica; 2 percent, by volume, gravel; strongly acid; gradual wavy boundary.

Bw3—24 to 30 inches; light yellowish brown (10YR 6/4) sandy loam; common fine distinct reddish yellow (7.5YR 6/8) mottles; weak fine granular structure; friable; few fine roots; few fine flakes of mica; 10 percent, by volume, gravel; strongly acid; gradual wavy boundary.

C—30 to 37 inches; mottled reddish yellow (7.5YR 6/8) and light yellowish brown (10YR 6/4) gravelly sandy loam saprolite; few fine flakes of mica; 20 percent, by volume, gravel; strongly acid; gradual wavy boundary.

R—37 inches; unweathered granite.

Range in Characteristics

Thickness of solum: 10 to 38 inches

Depth to bedrock: 20 to 40 inches to hard bedrock

Mica flakes: Few or common throughout the profile

Rock fragments: 0 to 35 percent, by volume, throughout the profile; ranging from gravel to stones

Reaction: Very strongly acid to moderately acid in the A and E horizons except where the surface layer has been limed; strongly acid or very strongly acid in the B and C horizons

A or Ap horizon:

Color—hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 2 to 4

Texture (fine-earth fraction)—sandy loam

E horizon (if it occurs):

Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4

Texture (fine-earth fraction)—sandy loam, coarse sandy loam, loamy coarse sand, or fine sandy loam

Bw horizon:

Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 4 to 8

Texture (fine-earth fraction)—fine sandy loam or sandy loam

C horizon:

Color—horizon is multicolored, is mottled, or commonly has hue of 5YR to 2.5Y, value of 3 to 8, and chroma of 1 to 8

Texture (fine-earth fraction)—fine sandy loam, sandy loam, or coarse sandy loam saprolite

Cr layer:

Type of bedrock—weathered, fractured, coarse grained felsic igneous rock that can be dug with difficulty with hand tools

R layer:

Type of bedrock—unweathered, coarse grained felsic igneous rock

Badin Series

Depth class: Moderately deep

Drainage class: Well drained

Permeability: Moderate

Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt

Landform: Piedmont uplands

Landscape position: Ridges and side slopes
Slope range: 2 to 30 percent
Taxonomic class: Clayey, mixed, thermic Typic Hapludults

Typical Pedon

Badin channery silt loam, 2 to 8 slopes; 1.7 miles northwest of the intersection of North Carolina Highway 49 and Secondary Road 1004 (Stokes Ferry Road) on Secondary Road 1004, about 1.5 miles north on Secondary Road 2152, about 0.5 mile east on Secondary Road 2148, about 60 feet north in a wooded area, 60 feet west of a logging road; High Rock USGS topographic quadrangle; lat. 35 degrees 31 minutes 37 seconds N. and long. 80 degrees 12 minutes 47 seconds W.

A—0 to 6 inches; yellowish brown (10YR 5/4) channery silt loam; moderate fine granular structure; very friable; many fine and medium roots; 20 percent, by volume, channers; strongly acid; clear smooth boundary.
BA—6 to 9 inches; reddish yellow (7.5YR 6/6) silty clay loam; weak fine subangular blocky structure; friable; many fine and medium roots; 5 percent, by volume, channers; very strongly acid; gradual wavy boundary.
Bt1—9 to 16 inches; yellowish red (5YR 5/8) silty clay; moderate medium subangular blocky structure; firm; slightly sticky and slightly plastic; few fine roots; few distinct clay films on faces of peds; 5 percent, by volume, channers; very strongly acid; gradual wavy boundary.
Bt2—16 to 25 inches; red (2.5YR 4/8) silty clay; moderate medium subangular blocky structure; firm; slightly sticky and slightly plastic; few fine roots; few distinct clay films on faces of peds; 5 percent, by volume, channers; very strongly acid; gradual wavy boundary.
BC—25 to 35 inches; mottled red (2.5YR 4/8), reddish yellow (7.5YR 6/6), and brownish yellow (10YR 6/6) channery silty clay loam; weak medium subangular blocky structure; firm; 15 percent, by volume, channers; very strongly acid; gradual wavy boundary.
Cr—35 to 43 inches; weathered, partially consolidated argillite that can be dug with difficulty with a spade; silt loam in fractures; diffuse wavy boundary.
R—43 inches; unweathered, fractured argillite.

Range in Characteristics

Thickness of solum: 20 to 40 inches
Depth to bedrock: 20 to 40 inches to soft bedrock; more than 40 inches to hard bedrock
Rock fragments: 5 to 35 percent, by volume, in the A, E, and B horizons and 15 to 40 percent in the BC and C horizons; mostly channers
Reaction: Strongly acid to extremely acid throughout the profile except where the surface layer has been limed

A or Ap horizon:
Color—hue of 5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 8
Texture (fine-earth fraction)—silt loam or silty clay loam

E horizon (if it occurs):
Color—hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 3 or 4
Texture (fine-earth fraction)—silt loam, loam, or very fine sandy loam

BA horizon:
Color—hue of 5YR or 7.5YR and value and chroma of 4 to 6
Texture (fine-earth fraction)—silt loam, loam, or silty clay loam

BE horizon (if it occurs):
Color—hue of 5YR or 7.5YR, value of 4 to 6, and chroma of 4 to 8
Texture (fine-earth fraction)—silt loam, loam, or silty clay loam

Bt horizon:
Color—hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 4 to 8
Texture (fine-earth fraction)—clay, silty clay, or silty clay loam

BC horizon:
Color—horizon has hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 4 to 8 or is mottled in these colors
Mottles—shades of red, brown, or yellow
Texture (fine-earth fraction)—silty clay loam, clay loam, or silt loam

C horizon (if it occurs):
Color—horizon has hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 3 to 8, is mottled, or is multicolored
Texture (fine-earth fraction)—silt loam or silty clay loam saprolite

Cr layer:
Type of bedrock—weathered, partially consolidated fine grained rock of the Carolina Slate Belt that can be dug with difficulty with hand tools

R layer:
Type of bedrock—unweathered fine grained rock of the Carolina Slate Belt

Cecil Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Landform: Piedmont uplands
Landscape position: Broad ridges and side slopes
Slope range: 2 to 15 percent
Taxonomic class: Clayey, kaolinitic, thermic Typic Kanhapludults (fig. 17)

Typical Pedon

Cecil sandy clay loam, 2 to 8 percent slopes, eroded; 4.8 miles west of China Grove on North Carolina Highway 152, about 1.0 mile north on Secondary Road 1350, about 2.75 miles west on Secondary Road 1554, about 0.35 mile northeast on a farm road, 200 feet southeast of the road, in a field; Enochville USGS topographic quadrangle; lat. 35 degrees 36 minutes 02 seconds N. and long. 80 degrees 40 minutes 56 seconds W.

Ap—0 to 7 inches; yellowish red (5YR 4/6) sandy clay loam; moderate fine granular structure; friable; common fine roots; slightly acid; clear smooth boundary.
BA—7 to 10 inches; red (2.5YR 4/8) sandy clay loam; weak medium subangular blocky structure; friable; common fine roots; few fine flakes of mica; moderately acid; gradual smooth boundary.
Bt1—10 to 16 inches; red (2.5YR 4/6) clay loam; moderate fine subangular blocky structure; firm; slightly sticky and slightly plastic; common fine roots; few distinct clay films on faces of peds; few fine flakes of mica; strongly acid; gradual wavy boundary.
Bt2—16 to 33 inches; red (2.5YR 4/6) clay; moderate medium subangular blocky structure; firm; slightly sticky and slightly plastic; few fine roots; common distinct clay films on faces of peds; few fine flakes of mica; strongly acid; gradual wavy boundary.

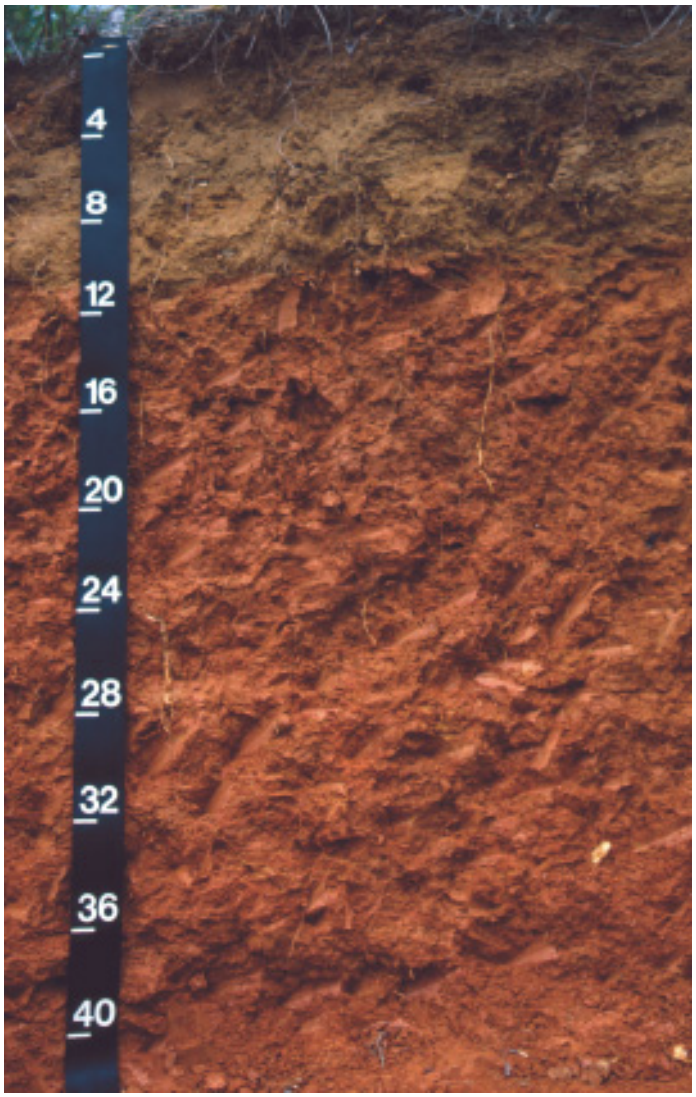

Figure 17.—Profile of the very deep, well drained Cecil soil.

Bt3—33 to 41 inches; red (2.5YR 4/6) clay; few fine distinct brownish yellow (10YR 6/6) mottles; moderate fine subangular blocky structure; firm; slightly sticky and slightly plastic; common fine flakes of mica; few distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

BC—41 to 51 inches; red (2.5YR 4/6) clay loam; common medium distinct brownish yellow (10YR 6/6) mottles; weak fine subangular blocky structure; friable; common fine flakes of mica; strongly acid; gradual wavy boundary.

C—51 to 71 inches; red (2.5YR 4/6) loam saprolite; few medium distinct brownish yellow (10YR 6/6) mottles; many flakes of mica; strongly acid.

Range in Characteristic

Thickness of solum: 40 to more than 60 inches
Depth to bedrock: More than 60 inches
Mica flakes: Few or common in the B horizon; few to many in the C horizon
Rock fragments: 0 to 5 percent throughout the profile; mostly gravel

Reaction: Very strongly acid or strongly acid throughout the profile except where the surface layer has been limed

A or Ap horizon:
Color—hue of 2.5YR to 10YR, value of 3 to 5, and chroma of 2 to 8
Texture—sandy clay loam or sandy loam

E horizon (if it occurs):
Color—hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 8
Texture—sandy loam, fine sandy loam, or loam

BA horizon:
Color—hue of 2.5YR or 5YR, value of 4 to 6, and chroma of 3 to 8
Texture—sandy clay loam, loam, or clay loam

Bt horizon:
Color—hue of 10R or 2.5YR, value of 4 or 5, and chroma of 6 or 8
Mottles (if they occur)—shades of yellow; in the lower part of horizon
Texture—clay, sandy clay, or clay loam

BC horizon:
Color—hue of 10R or 5YR, value of 4 to 6, and chroma of 4 to 8
Mottles—shades of yellow or brown
Texture—clay loam, sandy clay loam, or loam

C horizon:
Color—horizon is multicolored or has hue of 10R or 5YR, value of 4 to 6, and chroma of 4 to 8
Texture—loamy saprolite

Chewacla Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Recent alluvium
Landform: River and stream valleys and drainageways of the Piedmont
Landscape position: Flood plains
Slope range: 0 to 2 percent
Taxonomic class: Fine-loamy, mixed, thermic Fluvaquentic Dystrochrepts

Typical Pedon

Chewacla loam, 0 to 2 percent slopes, frequently flooded; 1.4 miles west of Rowan County Airport on Secondary Road 1516 (Airport Road), 0.35 mile south on a farm road, 100 yards south of the last culvert, 100 feet west of the wood line on the west side of Grants Creek; Rockwell USGS topographic quadrangle; lat. 35 degrees 38 minutes 06 seconds N. and long. 80 degrees 33 minutes 03 seconds W.

Ap—0 to 6 inches; reddish brown (5YR 4/4) loam; moderate medium granular structure; friable; many fine roots; few fine flakes of mica; strongly acid; clear smooth boundary.

Bw1—6 to 11 inches; reddish brown (5YR 4/4) sandy clay loam; moderate coarse subangular blocky structure; friable; common fine roots; common fine pores; many fine krotovinas; few fine flakes of mica; moderately acid; gradual wavy boundary.

Bw2—11 to 17 inches; yellowish red (5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; common fine roots; many fine pores; many fine krotovinas; few fine flakes of mica; moderately acid; gradual smooth boundary.

Bw3—17 to 25 inches; yellowish red (5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; common fine roots; many fine pores; common medium distinct strong brown (7.5YR 5/6) irregularly shaped masses of iron accumulation; few medium distinct light brownish gray (2.5Y 6/2) irregularly shaped iron depletions; many fine krotovinas; few fine flakes of mica; moderately acid; clear smooth boundary.

Bg—25 to 32 inches; light brownish gray (2.5Y 6/2) clay loam; weak fine subangular blocky structure; friable; few fine roots; common medium distinct brown (7.5YR 4/4) and strong brown (7.5YR 5/8) irregularly shaped masses of iron accumulation; few fine flakes of mica; few fine dark organic stains; moderately acid; gradual smooth boundary.

Cg1—32 to 38 inches; grayish brown (2.5Y 5/2) clay loam; massive; friable; common fine flakes of mica; common fine organic stains; moderately acid; gradual wavy boundary.

Cg2—38 to 47 inches; gray (10YR 5/1) clay loam; massive; few fine roots; common medium prominent yellowish red (5YR 4/6) and strong brown (7.5YR 5/6) irregularly shaped masses of iron accumulation; few fine flakes of mica; moderately acid; gradual smooth boundary.

Cg3—47 to 60 inches; light gray (2.5Y 7/1) sandy clay loam that has pockets of clay and sand; few fine roots; few fine flakes of mica; strongly acid.

Range in Characteristics

Thickness of solum: 15 to 70 inches

Depth to bedrock: More than 60 inches

Mica flakes: Few to many throughout the profile

Rock fragments: 0 to 5 percent in the A horizon and the upper part of the B horizon and 0 to 15 percent in the lower part of the B horizon; mostly gravel

Reaction: Very strongly acid to slightly acid to a depth of 40 inches except where the surface layer has been limed; very strongly acid to slightly alkaline below a depth of 40 inches

A or Ap horizon:

Color—hue of 5YR to 10YR, value of 3 to 5, and chroma of 1 to 6

Texture—loam

Ab horizon (if it occurs):

Color—hue of 10YR or 2.5Y, value of 2 to 5, and chroma of 1 to 6

Texture—fine sandy loam, sandy loam, loam, silt loam, clay loam, sandy clay loam, loamy fine sand, or loamy sand

BA horizon (if it occurs):

Color—hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 3 to 8

Texture—loam, silt loam, sandy clay loam, clay loam, or silty clay loam

Bw horizon:

Color—hue of 5YR to 2.5Y, value of 4 to 7, and chroma of 3 to 8

Redoximorphic features—iron depletions in shades of gray in the upper part of horizon; iron accumulations in shades of red, brown, or yellow in most pedons

Texture—sandy clay loam, silty clay loam, clay loam, sandy loam, loam, silt loam, or fine sandy loam

Bg horizon:

Color—horizon is neutral in hue or has hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2

Redoximorphic features—iron accumulations in shades of red, brown, or yellow

Texture—sandy clay loam, silty clay loam, clay loam, sandy loam, loam, silt loam, or fine sandy loam

BC horizon (if it occurs):
Color—hue of 5YR to 2.5Y, value of 4 to 7, and chroma of 3 to 8
Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow in most pedons
Texture—sandy clay loam, silty clay loam, clay loam, sandy loam, loam, silt loam, or fine sandy loam

BCg horizon (if it occurs):
Color—hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2
Redoximorphic features—iron accumulations in shades of red, brown, or yellow
Texture—sandy clay loam, silty clay loam, clay loam, sandy loam, loam, silt loam, or fine sandy loam

C horizon (if it occurs):
Color—hue of 5YR to 2.5Y, value of 4 to 7, and chroma of 3 to 8
Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow
Texture—loamy within a depth of 40 inches; variable below a depth of 40 inches

Cg horizon:
Color—hue of 10YR to 2.5Y, value of 4 to 7, and chroma of 0 to 2
Redoximorphic features—iron accumulations in shades of red, brown, or yellow
Texture—loamy within a depth of 40 inches; variable below a depth of 40 inches

Cid Series

Depth class: Moderately deep
Drainage class: Moderately well drained or somewhat poorly drained
Permeability: Slow
Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Landform: Piedmont uplands
Landscape position: Broad upland flats and broad ridges
Slope range: 1 to 6 percent
Taxonomic class: Clayey, mixed, thermic Aquic Hapludults (fig. 18)

Typical Pedon

Cid silt loam in an area of Cid-Lignum complex, 1 to 6 percent slopes; 0.4 mile southeast of Gold Hill on U.S. Highway 52, about 200 feet north on a logging road, 240 feet west in a wooded area; Gold Hill USGS topographic quadrangle; lat. 35 degrees 41 minutes 37 seconds N. and long. 80 degrees 20 minutes 01 second W.

A—0 to 2 inches; light brownish gray (2.5Y 6/2) silt loam; moderate medium granular structure; very friable; many fine roots; very strongly acid; clear smooth boundary.
E—2 to 6 inches; light yellowish brown (10YR 6/4) silt loam; moderate medium granular structure; very friable; many fine roots; very strongly acid; clear smooth boundary.
BE—6 to 10 inches; brownish yellow (10YR 6/8) silty clay loam; moderate medium subangular blocky structure; friable; common fine roots; common fine faint pale brown (10YR 6/3) irregularly shaped iron depletions; very strongly acid; gradual wavy boundary.

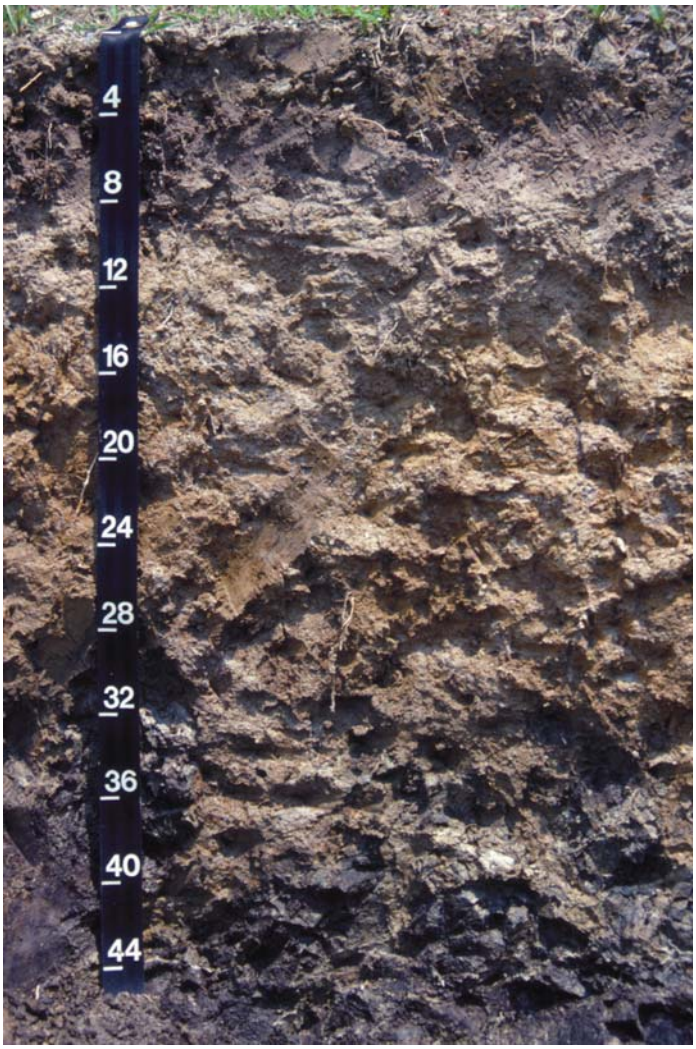

Figure 18.—Profile of the moderately deep, moderately well drained or somewhat poorly drained Cid soil.

Bt1—10 to 19 inches; brownish yellow (10YR 6/8) silty clay; moderate medium subangular blocky structure; firm; moderately sticky and moderately plastic; common fine roots; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—19 to 27 inches; brownish yellow (10YR 6/8) silty clay; weak fine subangular blocky structure; firm; moderately sticky and moderately plastic; common fine roots; common fine distinct grayish brown (10YR 5/2) irregularly shaped iron depletions; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

BC—27 to 35 inches; yellowish brown (10YR 5/8) channery silty clay; weak fine subangular blocky structure; firm; many coarse prominent light gray (10YR 7/2) iron depletions; 15 percent, by volume, channers; very strongly acid; gradual wavy boundary.

Cr—35 to 39 inches; weathered, partially consolidated argillite that can be dug with difficulty with a spade; diffuse wavy boundary.

R—39 inches; unweathered argillite.

Range in Characteristics

Thickness of solum: 20 to 40 inches
Depth to bedrock: 20 to 40 inches to hard bedrock
Rock fragments: 0 to 15 percent, by volume, in the A and B horizons and 5 to 25 percent in the BC horizon; mostly channers
Reaction: Very strongly acid or strongly acid throughout the profile except where the surface layer has been limed

A or Ap horizon:
Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 to 4
Texture—silt loam

E horizon:
Color—hue of 10YR to 5Y, value of 6 or 7, and chroma of 2 to 4
Texture—silt loam, loam, or very fine sandy loam

BE horizon (if it occurs):
Color—hue of 10YR to 5Y, value of 5 to 7, and chroma of 3 to 8
Texture—silt loam, loam, or silty clay loam

Bt horizon:
Color—hue of 10YR to 5Y, value of 5 to 7, and chroma of 3 to 8
Redoximorphic features—iron depletions in shades of gray within 24 inches of the upper boundary of horizon; iron accumulations in shades of red, brown, or yellow
Texture—silty clay loam, silty clay, clay loam, or clay

BC horizon:
Color—horizon has hue of 10YR to 5Y, value of 5 to 7, and chroma of 3 to 8 or is a mixture of these colors
Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow in some pedons
Texture (fine-earth fraction)—silty clay, silty clay loam, or clay

BCg horizon (if it occurs):
Color—hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2
Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow
Texture (fine-earth fraction)—silty clay, silty clay loam, or clay

Cr layer:
Type of bedrock—weathered, partially consolidated fine grained rock of the Carolina Slate Belt; can be dug with difficulty with hand tools

R layer:
Type of bedrock—unweathered fine grained rock of the Carolina Slate Belt

Dogue Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow
Parent material: Old alluvium
Landform: River and stream valleys and drainageways of the Piedmont
Landscape position: Low stream terraces
Slope range: 0 to 6 percent
Taxonomic class: Clayey, mixed, thermic Aquic Hapludults

Typical Pedon

Dogue fine sandy loam, 2 to 6 percent slopes, rarely flooded; in north Salisbury, 0.3 mile north of Grant's Creek on Secondary Road 1910 (Old Mocksville Road), 0.2 mile on Secondary Road 1912 (Hawkinston Road), 1,100 feet south of a brick house, in a field; Salisbury USGS topographic quadrangle; lat. 35 degrees 41 minutes 37 seconds N. and long. 80 degrees 27 minutes 57 seconds W.

Ap—0 to 6 inches; brown (10YR 5/3) fine sandy loam; weak fine granular structure; very friable; many fine roots; slightly acid; clear smooth boundary.

E—6 to 10 inches; pale brown (10YR 6/3) fine sandy loam; moderate fine granular structure; very friable; common fine roots; moderately acid; gradual wavy boundary.

BE—10 to 18 inches; olive yellow (2.5Y 6/6) clay loam; moderate fine granular structure; friable; common fine roots; few fine distinct very pale brown (10YR 7/3) irregularly shaped iron depletions; few fine flakes of mica; strongly acid; gradual wavy boundary.

Bt1—18 to 23 inches; olive yellow (2.5Y 6/6) clay loam; weak fine subangular blocky structure; firm; slightly sticky and slightly plastic; common fine roots; common fine distinct pale yellow (2.5Y 7/4) irregularly shaped iron depletions; few fine prominent reddish yellow (7.5YR 7/8) irregularly shaped masses of iron accumulation; few fine flakes of mica; very strongly acid; gradual wavy boundary.

Bt2—23 to 31 inches; yellowish brown (10YR 5/6) clay; moderate medium subangular blocky structure; firm; moderately sticky and moderately plastic; common fine roots; common medium distinct light gray (10YR 6/1) and olive yellow (2.5Y 6/6) irregularly shaped iron depletions; common distinct clay films on faces of peds; few fine crystals of feldspar; few fine flakes of mica; very strongly acid; gradual wavy boundary.

Bt3—31 to 38 inches; mottled olive yellow (2.5Y 6/6), light gray (10YR 6/1), and strong brown (7.5YR 5/8) clay; moderate medium subangular blocky structure; firm; moderately sticky and moderately plastic; common fine roots; light gray areas are iron depletions and strong brown areas are iron accumulations; common distinct clay films on faces of peds; few fine crystals of feldspar; few fine flakes of mica; very strongly acid; gradual wavy boundary.

Bt4—38 to 50 inches; mottled gray (N 5/0), strong brown (7.5YR 5/8), and yellowish brown (10YR 5/6) clay; moderate medium subangular blocky structure; firm; moderately sticky and moderately plastic; few fine roots; gray areas are iron depletions and strong brown areas are iron accumulations; few distinct clay films on faces of peds; few fine crystals of feldspar; few fine flakes of mica; strongly acid; gradual wavy boundary.

C—50 to 60 inches; pale yellow (2.5Y 7/4) sandy clay loam; massive; friable; many coarse distinct light gray (10YR 6/1) irregularly shaped iron depletions; few fine flakes of mica; strongly acid.

Range in Characteristics

Thickness of solum: 40 to more than 60 inches
Depth to bedrock: More than 72 inches
Mica flakes: Few or common in the B and C horizons
Rock fragments: 0 to 15 percent, by volume, in the A and B horizons and 0 to 25 percent in the C horizon; mostly gravel
Reaction: Extremely acid to strongly acid throughout the profile except where the surface layer has been limed

A or Ap horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4
Texture—fine sandy loam

E horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 3 to 6
Texture—fine sandy loam, sandy loam, loam, or very fine sandy loam

BE horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 4 to 8
Redoximorphic features—iron accumulations in shades of brown in some pedons
Texture—clay loam, sandy clay loam, or loam

Bt horizon:
Color—horizon has hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 4 to 8 or is a mixture of these colors
Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow
Texture—clay, clay loam, sandy clay loam, or sandy clay

Btg horizon (if it occurs):
Color—horizon has hue of 7.5YR to 2.5Y or is neutral in hue and has value of 4 to 7 and chroma of 0 or 2
Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow
Texture—clay, clay loam, sandy clay loam, or sandy clay

BC horizon (if it occurs):
Color—horizon has hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 3 to 8 or is a mixture of these colors
Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow
Texture—sandy clay, sandy clay loam, clay loam, or sandy loam

BCg horizon (if it occurs):
Color—horizon has hue of 7.5YR to 2.5Y or is neutral in hue and has value of 4 to 7 and chroma of 1 or 2
Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow
Texture—sandy clay, clay loam, sandy clay loam, or sandy loam

C horizon:
Color—horizon has hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 3 to 8 or is a mixture of these colors
Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow
Texture (fine-earth fraction)—typically stratified; ranging from sand to sandy clay loam

Cg horizon (if it occurs):
Color—horizon has hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 1 or 2 or is neutral in hue and has value of 4 to 8
Redoximorphic features—iron accumulations in shades of red, brown, or yellow
Texture (fine-earth fraction)—typically stratified; ranging from sand to sandy clay loam

Enon Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow

Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock
Landform: Piedmont uplands
Landscape position: Ridges and side slopes
Slope range: 2 to 25 percent
Taxonomic class: Fine, mixed, thermic Ultic Hapludalfs

Typical Pedon

Enon fine sandy loam, 2 to 8 percent slopes; 2.3 miles south of Rowan Mills on U.S. Highway 29-601, about 1.0 mile east on Secondary Road 2538, about 400 feet west on an unmarked road, 140 feet north at the eastern edge of a power line right-of-way; China Grove USGS topographic quadrangle; lat. 35 degrees 36 minutes 32 seconds N. and long. 80 degrees 31 minutes 57 seconds W.

Ap—0 to 7 inches; brown (10YR 4/3) fine sandy loam; moderate fine granular structure; friable; many fine roots; few fine manganese concretions; moderately acid; gradual smooth boundary.
BA—7 to 10 inches; brownish yellow (10YR 6/6) sandy clay loam; weak medium subangular blocky structure; friable; common fine roots; few fine manganese concretions; moderately acid; clear smooth boundary.
Bt1—10 to 17 inches; strong brown (7.5YR 5/6) clay; moderate fine subangular blocky structure; very firm; moderately sticky and very plastic; few fine roots; common distinct clay films on faces of peds; few fine manganese concretions; slightly acid; gradual smooth boundary.
Bt2—17 to 22 inches; yellowish brown (10YR 5/6) clay; moderate medium subangular blocky structure; very firm; moderately sticky and very plastic; few fine roots; common distinct clay films on faces of peds; few fine manganese concretions; few fine feldspar crystals; moderately acid; gradual wavy boundary.
Bt3—22 to 27 inches; yellowish brown (10YR 5/6) clay; weak medium subangular blocky structure; very firm; moderately sticky and moderately plastic; few fine roots; common distinct clay films on faces of peds; slightly acid; gradual wavy boundary.
BC—27 to 33 inches; mottled yellowish brown (10YR 5/6), light olive brown (2.5Y 5/4), and pale yellow (2.5Y 8/4) clay loam; weak fine subangular blocky structure and massive; firm; few fine roots; common fine streaks of black and green minerals; neutral; gradual wavy boundary.
C—33 to 72 inches; multicolored loam saprolite; massive; friable; moderately alkaline.

Range in Characteristics

Thickness of solum: 20 to 50 inches
Depth to bedrock: More than 60 inches
Concretions: Few or common in some horizons of most pedons; mostly manganese
Rock fragments (fine sandy loam phase): Less than 15 percent, by volume, throughout the profile; mostly gravel
Rock fragments (very cobbly loam, very stony phase): 40 to less than 60 percent, by volume, in the A horizon and 0 to 15 percent in the B and C horizons; mostly gravel, cobbles, and stones
Reaction: Strongly acid to slightly acid in the A and E horizons except where the surface layer has been limed; strongly acid to slightly alkaline in the B and C horizons

A or Ap horizon:
Color—hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4
Texture (fine-earth fraction)—fine sandy loam or loam

E horizon (if it occurs):
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4
Texture (fine-earth fraction)—fine sandy loam, sandy loam, or loam

BA or BE horizon (if it occurs):
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8
Texture (fine-earth fraction)—clay loam, sandy clay loam, or loam

Bt horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8
Mottles (if they occur)—shades of yellow, brown, white, or gray; in the lower part of horizon
Texture—clay or clay loam

BC horizon:
Color—hue of 7.5YR to 5Y, value of 4 to 6, and chroma of 4 to 8
Mottles (if they occur)—shades of yellow or brown
Texture—clay loam, sandy clay loam, or loam

C horizon:
Color—multicolored
Texture—variable; typically loamy saprolite

Goldston Series

Depth class: Shallow
Drainage class: Well drained to excessively drained
Permeability: Moderately rapid
Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Landform: Piedmont uplands
Landscape position: Ridges and side slopes
Slope range: 2 to 15 percent
Taxonomic class: Loamy-skeletal, siliceous, thermic, shallow Typic Dystrochrepts

Typical Pedon

Goldston channery silt loam in an area of Badin-Goldston complex, 2 to 8 percent slopes; 7.0 miles east of Liberty on Secondary Road 1004 (Stokes Ferry Road), 1.1 miles north on Secondary Road 1005, about 40 feet east of the road, in a cleared field; High Rock USGS topographic quadrangle; lat. 35 degrees 31 minutes 55 seconds N. and long. 80 degrees 14 minutes 39 seconds W.

Ap—0 to 4 inches; yellowish brown (10YR 5/4) channery silt loam; moderate fine granular structure; friable; common fine and coarse roots; 20 percent, by volume, slate channers; moderately acid; clear smooth boundary.
Bw—4 to 17 inches; light yellowish brown (2.5Y 6/4) very channery silt loam; weak fine subangular blocky structure; common fine roots; common fine pores; 55 percent, by volume, slate channers; strongly acid; gradual wavy boundary.
Cr—17 to 27 inches; weathered, fractured argillite that can be dug with difficulty with a spade; silt loam in fractures; strongly acid; gradual irregular boundary.
R—27 inches; unweathered, fractured argillite.

Range in Characteristics

Thickness of solum: 10 to 20 inches
Depth to bedrock: 10 to 20 inches to soft bedrock; 20 to 40 inches or more to hard bedrock

Rock fragments: 15 to 60 percent, by volume, in the A and E horizons and 35 to 60 percent in the B horizon; mostly channers
Reaction: Extremely acid to moderately acid throughout the profile except where the surface layer has been limed

A or Ap horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 4
Texture (fine-earth fraction)—silt loam or very fine sandy loam

E horizon (if it occurs):
Color—hue of 10YR to 2.5Y, value of 4 to 7, and chroma of 2 to 6
Texture (fine-earth fraction)—silt loam

Bw horizon:
Color—hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 3 to 8
Mottles (if they occur)—shades of brown, yellow, or red
Texture (fine-earth fraction)—silt loam or very fine sandy loam

Cr layer:
Type of bedrock—weathered, partially consolidated fine grained rock of the Carolina Slate Belt; can be dug with difficulty with hand tools

R layer:
Type of bedrock—unweathered fine grained rock of the Carolina Slate Belt

Helena Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Landform: Piedmont uplands
Landscape position: Broad ridges, toe slopes, areas along drainageways, head of drainageways, and depressional areas
Slope range: 1 to 6 percent
Taxonomic class: Clayey, mixed, thermic Aquic Hapludults

Typical Pedon

Helena sandy loam, 1 to 6 percent slopes; 0.6 mile south of the interchange bridge of North Carolina Highway 152 and U.S. Highway 29 at China Grove on U.S. Highway 29, about 3.5 miles southeast on Secondary Road 1337, about 200 feet west on Secondary Road 1343, about 80 feet south in an old field; China Grove USGS topographic quadrangle; lat. 35 degrees 32 minutes 12 seconds N. and long. 80 degrees 33 minutes 05 seconds W.

Ap—0 to 8 inches; olive brown (2.5Y 4/4) sandy loam; weak fine granular structure; very friable; many fine roots; very strongly acid; clear smooth boundary.
BA—8 to 11 inches; brownish yellow (10YR 6/8) sandy clay loam; weak fine subangular blocky structure; friable; common fine roots; very strongly acid; clear smooth boundary.
Bt1—11 to 19 inches; brownish yellow (10YR 6/8) sandy clay; strong coarse prismatic structure parting to moderate medium subangular blocky; firm; moderately sticky and moderately plastic; common fine roots; common fine pores; common fine faint reddish yellow (7.5YR 6/6) irregularly shaped masses of iron accumulation; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—19 to 25 inches; brownish yellow (10YR 6/6) sandy clay; moderate fine subangular blocky structure; firm; moderately sticky and moderately plastic; few fine roots; few fine pores; common fine faint yellowish brown (10YR 5/8) and few fine prominent red (2.5YR 4/8) irregularly shaped masses of iron accumulation; few fine distinct light gray (10YR 7/1) irregularly shaped iron depletions; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt3—25 to 30 inches; brownish yellow (10YR 6/6) clay; weak medium subangular blocky structure; firm; moderately sticky and moderately plastic; few fine roots; few fine pores; common medium distinct light gray (10YR 7/1) irregularly shaped iron depletions; few medium prominent dark yellowish brown (10YR 4/6) and common medium faint brownish yellow (10YR 6/8) irregularly shaped masses of iron accumulation; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt4—30 to 35 inches; yellow (10YR 7/6) clay; weak fine subangular blocky structure; very firm; moderately sticky and moderately plastic; few fine roots; common medium distinct light gray (10YR 7/1) irregularly shaped iron depletions; common medium distinct brownish yellow (10YR 6/8) and few fine prominent dark yellowish brown (10YR 4/6) irregularly shaped masses of iron accumulation; few faint clay films on faces of peds; extremely acid; gradual wavy boundary.

BCg—35 to 42 inches; light gray (2.5Y 7/2) clay loam; massive; firm; moderately sticky and moderately plastic; few fine roots; many coarse prominent brownish yellow (10YR 6/8) irregularly shaped masses of iron accumulation; very strongly acid; gradual wavy boundary.

Cg—42 to 60 inches; light gray (10YR 7/1) loam saprolite; massive; firm; many coarse distinct strong brown (7.5YR 5/6) irregularly shaped masses of iron accumulation; very strongly acid.

Range in Characteristics

Thickness of solum: 40 to 60 inches
Depth to bedrock: More than 60 inches
Rock fragments: 0 to 35 percent, by volume, throughout the profile; mostly gravel
Reaction: Strongly acid or very strongly acid throughout the profile except where the surface layer has been limed

A or Ap horizon:
Color—hue of 10YR to 2.5Y, value of 3 to 6, and chroma of 1 to 4
Texture (fine-earth fraction)—sandy loam

E horizon (if it occurs):
Color—hue of 10YR to 5Y, value of 5 to 8, and chroma of 2 to 4
Texture (fine-earth fraction)—sandy loam, loamy sand, loamy coarse sand, coarse sandy loam, fine sandy loam, or loam

BA horizon:
Color—hue of 7.5YR to 5Y, value of 5 to 8, and chroma of 3 to 8
Texture (fine-earth fraction)—sandy clay loam or clay loam

Bt horizon:
Color—horizon has hue of 7.5YR to 5Y, value of 5 to 8, and chroma of 3 to 8 or is a mixture of these colors
Redoximorphic features—iron depletions in shades of gray within 24 inches of the upper boundary of horizon; iron accumulations in shades of red, brown, or yellow
Texture (fine-earth fraction)—dominantly clay, sandy clay, or clay loam; thin subhorizons of sandy clay loam in some pedons

Btg horizon (if it occurs):
Color—hue of 10YR to 2.5Y, value of 4 to 7, and chroma of 1 or 2
Redoximorphic features—iron accumulations in shades of red, brown, or yellow
Texture (fine-earth fraction)—clay, sandy clay, or clay loam

BC horizon (if it occurs):
Color—hue of 7.5YR to 5Y, value of 5 to 8, and chroma of 3 to 8
Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow
Texture (fine-earth fraction)—sandy loam, sandy clay loam, clay loam, fine sandy loam, or loam

BCg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2
Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow
Texture (fine-earth fraction)—sandy loam, sandy clay loam, clay loam, fine sandy loam, or loam

C horizon (if it occurs):
Color—horizon is multicolored or has hue of 5YR to 2.5Y, value of 5 to 8, and chroma of 3 to 8
Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow
Texture (fine-earth fraction)—sandy loam, sandy clay loam, fine sandy loam, or loam saprolite

Cg horizon:
Color—hue of 10YR to 5Y, value of 5 to 7, and chroma of 1 or 2
Redoximorphic features—iron accumulations in shades of red, brown, or yellow
Texture (fine-earth fraction)—sandy loam, sandy clay loam, fine sandy loam, or loam saprolite

Hiwassee Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic and mafic metamorphic or igneous rock or old alluvium
Landform: Piedmont uplands and old high stream terraces
Landscape position: Broad ridges and side slopes
Slope range: 2 to 25 percent
Taxonomic class: Clayey, kaolinitic, thermic Typic Kanhapludults

Typical Pedon

Hiwassee clay loam, 2 to 8 percent slopes, eroded; 800 feet east of the headquarters of the Piedmont Research Station on Secondary Road 1526 (Sherrills Ford Road), 95 feet south on a farm road, 100 feet east in a cultivated field; Rowan Mills USGS topographic quadrangle; lat. 35 degrees 41 minutes 48 seconds N. and long. 80 degrees 37 minutes 12 seconds W.

Ap1—0 to 4 inches; dark reddish brown (2.5YR 3/4) clay loam; moderate medium granular structure; friable; few fine flakes of mica; common fine roots; slightly acid; clear smooth boundary.

Ap2—4 to 11 inches; dark reddish brown (2.5YR 3/4) clay loam; weak medium subangular blocky structure; firm; few fine flakes of mica; common fine roots; few fine black concretions; neutral; clear wavy boundary.

Bt1—11 to 32 inches; dark red (2.5YR 3/6) clay; moderate medium angular blocky structure; firm; moderately sticky and moderately plastic; few fine flakes of mica; few very fine roots; many distinct clay films on faces of peds; few fine black concretions; slightly acid; gradual wavy boundary.

Bt2—32 to 57 inches; red (2.5YR 4/6) clay; few medium distinct strong brown (7.5YR 5/8) mottles; moderate fine subangular blocky structure; firm; moderately sticky and moderately plastic; few very fine roots; many distinct clay films on faces of peds; common fine flakes of mica; few fine black concretions; moderately acid; gradual wavy boundary.

BC—57 to 67 inches; red (2.5YR 4/8) clay loam; common fine distinct strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable; common fine flakes of mica; strongly acid.

Range in Characteristics

Thickness of solum: 40 to more than 60 inches
Depth to bedrock: More than 60 inches
Mica flakes: None to common throughout the profile
Concretions: Few or common throughout the profile in most pedons
Rock fragments: As much as 35 percent, by volume, in some pedons; mostly gravel and cobbles
Reaction: Slightly acid to very strongly acid throughout the profile except where the surface layer has been limed

A or Ap horizon:
Color—hue of 10R to 5YR, value of 2 or 3, and chroma of 2 to 6
Texture (fine-earth fraction)—clay loam or loam

Bt horizon:
Color—hue of 10R or 2.5YR, value of 3 or 4, and chroma of 4 to 8; each pedon must have at least one subhorizon with moist value of 3 and at least one subhorizon with moist value of 4
Mottles—shades of brown or yellow
Texture (fine-earth fraction)—clay, sandy clay, clay loam, or silty clay

BC horizon:
Color—hue of 10R or 2.5YR, value of 4 or 5, and chroma of 4 to 8
Mottles—shades of yellow or brown
Texture (fine-earth fraction)—clay loam, silty clay loam, or sandy clay loam

C horizon (if it occurs):
Color—horizon has hue of 10R to 10YR, value of 3 to 5, and chroma of 4 to 8 or is mottled in shades of these colors
Texture (fine-earth fraction)—sandy loam, sandy clay loam, clay loam, silt loam, or loam saprolite

Iredell Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Parent material: Residuum weathered from mafic metamorphic or igneous rock
Landform: Piedmont uplands
Landscape position: Broad ridges and broad upland flats

Slope range: 1 to 8 percent
Taxonomic class: Fine, montmorillonitic, thermic Typic Hapludalfs

Typical Pedon

Iredell loam, 1 to 8 percent slopes; 0.9 mile west of Needmore on Secondary Road 1984, about 450 feet north on a farm road, 120 feet west in a field; Cool Springs USGS topographic quadrangle; lat. 35 degrees 48 minutes 57 seconds N. and long. 80 degrees 38 minutes 57 seconds W.

Ap—0 to 6 inches; light olive brown (2.5Y 5/4) loam; moderate fine granular structure; friable; common fine roots; common fine manganese concretions; slightly acid; clear smooth boundary.

Bt1—6 to 13 inches; yellowish brown (10YR 5/6) clay; moderate fine angular blocky structure; very firm; very sticky and very plastic; common fine roots; many distinct clay films on faces of peds; few fine feldspar crystals; few fine manganese concretions; slightly acid; gradual smooth boundary.

Bt2—13 to 21 inches; yellowish brown (10YR 5/4) clay; moderate fine subangular blocky structure; very firm; very sticky and very plastic; common fine roots; few medium distinct pale olive (5Y 6/3) irregularly shaped iron depletions; common distinct clay films on faces of peds; common fine feldspar crystals; few fine manganese concretions; slightly acid; gradual wavy boundary.

Bt3—21 to 25 inches; yellowish brown (10YR 5/4) clay; weak fine subangular blocky structure; firm; common fine roots; common medium prominent light olive brown (2.5Y 5/6) and few fine prominent olive gray (5Y 5/2) irregularly shaped iron depletions; few fine feldspar crystals; few fine manganese concretions; neutral; diffuse wavy boundary.

BC—25 to 32 inches; multicolored sandy clay loam; weak medium subangular blocky structure; friable; many medium streaks of black, yellow, and brown minerals; neutral; diffuse wavy boundary.

C—32 to 60 inches; multicolored sandy loam saprolite; massive; friable; neutral.

Range in Characteristics

Thickness of solum: 20 to 40 inches
Depth to bedrock: More than 60 inches
Mica flakes: None to common throughout the profile
Concretions: Few to many in the A, B, and BC horizons; mostly manganese
Rock fragments: 0 to 15 percent, by volume, throughout the profile; mostly gravel
Reaction: Strongly acid to neutral in the A horizon; moderately acid to moderately alkaline in the B horizon; neutral to moderately alkaline in the C horizon

A or Ap horizon:
Color—hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 to 4
Texture—loam

E horizon (if it occurs):
Color—hue of 10YR or 2.5Y, value of 6 or 7, and chroma of 1 to 3
Texture—loam, fine sandy loam, sandy loam, silt loam, or clay loam

Bt horizon:
Color—hue of 10YR to 5Y, value of 4 to 6, and chroma of 3 to 6
Redoximorphic features—iron depletions in shades of gray in the lower part of horizon; iron accumulations in shades of red, brown, or yellow
Texture—clay

BC horizon:
Color—multicolored with hue of 10YR to 5Y, value of 4 to 8, and chroma of 3 to 6

Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow
Texture—loam, silty clay loam, sandy clay loam, or clay loam

C horizon:
Color—multicolored in shades of white, gray, brown, yellow, or black
Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow
Texture—sandy loam, loam, sandy clay loam, or silt loam saprolite

The Iredell soils in Rowan County are considered taxadjuncts to the series because they have mixed clay mineralogy and have an average of more than 60 percent clay in the Bt horizon. These differences, however, do not significantly affect the use and management of the soils.

Kirksey Series

Depth class: Deep
Drainage class: Moderately well drained
Permeability: Moderately slow
Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Landform: Piedmont uplands
Landscape position: Broad ridges and upland flats
Slope range: 2 to 6 percent
Taxonomic class: Fine-silty, siliceous, thermic Aquic Hapludults

Typical Pedon

Kirksey silt loam in an area of Kirksey-Cid complex, 2 to 6 percent slopes; 1.3 miles west of the Yadkin River on Secondary Road 1002 (Bringle Ferry Road), 0.6 mile south on Secondary Road 2143, about 25 feet west of the road, in a field; Gold Hill USGS topographic quadrangle; lat. 35 degrees 34 minutes 42 seconds N. and long. 80 degrees 15 minutes 18 seconds W.

Ap—0 to 8 inches; light yellowish brown (2.5Y 6/4) silt loam; moderate fine granular structure; very friable; common fine roots; moderately acid; gradual smooth boundary.
Bt1—8 to 14 inches; olive yellow (2.5Y 6/8) silty clay loam; weak fine subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.
Bt2—14 to 24 inches; olive yellow (2.5Y 6/6) silty clay loam; moderate fine subangular blocky structure; friable; common medium distinct light gray (10YR 6/1) irregularly shaped iron depletions; few fine distinct yellowish brown (10YR 5/8) irregularly shaped masses of iron accumulation; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.
Bt3—24 to 36 inches; mottled olive yellow (2.5Y 6/6) and light gray (10YR 6/1) silty clay loam; weak fine subangular blocky structure; friable; light gray areas are iron depletions; few faint clay films on faces of peds; 5 percent, by volume, channers; very strongly acid; gradual wavy boundary.
BC—36 to 42 inches; mottled olive yellow (2.5Y 6/6), yellowish brown (10YR 5/8), and light brownish gray (10YR 6/2) silty clay loam; weak fine subangular blocky structure; firm; light brownish gray areas are iron depletions and yellowish brown areas are iron accumulations; 10 percent, by volume, channers; strongly acid; gradual wavy boundary.

Cr—42 to 45 inches; weathered, partially consolidated argillite that can be dug with difficulty with a spade; silty clay loam in the cracks and seams; diffuse wavy boundary.
R—45 inches; unweathered argillite.

Range in Characteristics

Thickness of solum: 20 to 40 inches
Depth to bedrock: 40 to 60 inches to hard bedrock
Rock fragments: 0 to 10 percent, by volume, in the A and B horizons and less than 30 percent in the C horizon; mostly channers
Reaction: Very strongly acid or strongly acid in the A and B horizons except where the surface layer has been limed; extremely acid to strongly acid in the C horizon

A or Ap horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 2 to 4
Texture—silt loam

AB or BA horizon (if it occurs):
Color—hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 4 to 8
Texture—silt loam, silty clay loam, loam, or very fine sandy loam

Bt horizon:
Color—hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 3 to 8
Redoximorphic features—iron depletions in shades of gray within 24 inches of the upper boundary of horizon; iron accumulations in shades of red, brown, or yellow
Texture—silty clay loam, silt loam, or clay loam

BC horizon:
Color—horizon has hue of 5YR to 2.5Y, value of 5 to 8, and chroma of 2 to 8 or is a mixture of these colors
Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow
Texture—loam, silt loam, silty clay loam, or clay loam

C horizon (if it occurs):
Color—horizon has hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 3 to 8 or is mottled in these colors
Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow
Texture (fine-earth fraction)—silt loam, loam, fine sandy loam, or sandy loam saprolite

Cr layer:
Type of bedrock—weathered, partially consolidated fine grained rock of the Carolina Slate Belt; can be dug with difficulty with hand tools

R layer:
Type of bedrock—unweathered fine grained rock of the Carolina Slate Belt

Lignum Series

Depth class: Deep
Drainage class: Moderately well drained or somewhat poorly drained
Permeability: Very slow
Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt

Landform: Piedmont uplands
Landscape position: Broad upland flats and broad ridges
Slope range: 0 to 6 percent
Taxonomic class: Clayey, mixed, thermic Aquic Hapludults

Typical Pedon

Lignum silt loam in an area of Cid-Lignum complex, 1 to 6 percent slopes; 0.5 mile south of Gold Hill on North Carolina Highway 52, about 150 feet north on a logging road opposite the Perlite Plant, 80 feet south in a wooded area; Gold Hill USGS topographic quadrangle; lat. 35 degrees 31 minutes 00 seconds N. and long. 80 degrees 19 minutes 50 seconds W.

Ap—0 to 4 inches; light olive brown (2.5Y 5/4) silt loam; moderate medium granular structure; very friable; many fine roots; strongly acid; clear smooth boundary.

E—4 to 9 inches; light yellowish brown (10YR 6/4) silt loam; weak fine subangular blocky structure; friable; common fine roots; very strongly acid; gradual smooth boundary.

Bt1—9 to 18 inches; brownish yellow (10YR 6/6) silty clay loam; moderate medium subangular blocky structure; friable; slightly sticky and slightly plastic; common fine roots; common fine faint reddish yellow (7.5YR 6/8) irregularly shaped masses of iron accumulation; common faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—18 to 23 inches; brownish yellow (10YR 6/8) silty clay loam; moderate medium subangular blocky structure; friable; slightly sticky and slightly plastic; few fine roots; common fine distinct reddish yellow (7.5YR 6/8) and olive yellow (2.5Y 6/6) irregularly shaped masses of iron accumulation; few fine distinct light brownish gray (10YR 6/2) irregularly shaped iron depletions; common faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt3—23 to 29 inches; brownish yellow (10YR 6/8) silty clay; moderate medium subangular blocky structure; firm; slightly sticky and slightly plastic; few fine roots; common fine distinct light gray (10YR 7/2) irregularly shaped iron depletions; common faint clay films on faces of peds; 5 percent, by volume, channers; very strongly acid; gradual wavy boundary.

BC—29 to 36 inches; mottled brownish yellow (10YR 6/8) and light gray (2.5Y 7/2) silty clay loam; weak medium subangular blocky structure; firm; few fine roots; light gray areas are iron depletions; 10 percent, by volume, channers; very strongly acid; gradual wavy boundary.

C—36 to 54 inches; multicolored channery silt loam saprolite; massive; 25 percent, by volume, channers; very strongly acid; gradual wavy boundary.

Cr—54 to 60 inches; weathered, partially consolidated argillite that can be dug with difficulty with a spade.

Range in Characteristics

Thickness of solum: 20 to 40 inches
Depth to bedrock: 40 to 60 inches to soft bedrock
Rock fragments: Less than 25 percent, by volume, in the A and E horizons, less than 15 percent in the B and BC horizons, and 10 to 50 percent in the C horizon; mostly channers
Reaction: Very strongly acid or strongly acid throughout the profile except where the surface layer has been limed

A or Ap horizon:
Color—hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 1 to 4
Texture (fine-earth fraction)—silt loam

E horizon:
Color—hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 1 to 6
Texture (fine-earth fraction)—silt loam, loam, or very fine sandy loam

BA or BE horizon (if it occurs):
Color—hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 3 to 8
Texture—loam, silt loam, clay loam, or silty clay loam

Bt horizon:
Color—hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 3 to 8
Redoximorphic features—iron depletions in shades of gray in the upper part of horizon; iron accumulations in shades of red, brown, or yellow
Texture—silty clay, clay, silty clay loam, or clay loam

Btg horizon (if it occurs):
Color—hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 1 or 2
Redoximorphic features—iron accumulations in shades of red, brown, or yellow
Texture—silty clay, clay, silty clay loam, or clay loam

BC horizon:
Color—horizon has hue of 7.5YR to 5Y, value of 5 to 7, and chroma of 3 to 8 or is a mixture of these colors
Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow
Texture (fine-earth fraction)—loam, silt loam, silty clay loam, or clay loam

BCg horizon (if it occurs):
Color—hue of 7.5YR to 5Y, value of 5 to 7, and chroma of 1 or 2
Redoximorphic features—iron accumulations in shades of red, brown, or yellow
Texture (fine-earth fraction)—loam, silt loam, silty clay loam, or clay loam

C horizon:
Color—variable
Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow
Texture (fine-earth fraction)—silt loam, silty clay loam, silt, or sandy clay loam saprolite

Cr layer:
Type of bedrock—weathered, partially consolidated fine grained rock of the Carolina Slate Belt; can be dug with difficulty with hand tools

Mecklenburg Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock
Landform: Piedmont uplands
Landscape position: Broad ridges and side slopes
Slope range: 2 to 15 percent
Taxonomic class: Fine, mixed, thermic Ultic Hapludalfs

Typical Pedon

Mecklenburg clay loam, 2 to 8 percent slopes, eroded; 0.9 mile west of Barber on U.S. Highway 70, about 600 feet west of the intersection of Secondary Road 1741 on U.S.

Highway 70, about 180 feet south in a field; Cleveland USGS topographic quadrangle; lat. 35 degrees 43 minutes 15 seconds N. and long. 80 degrees 39 minutes 37 seconds W.

Ap—0 to 7 inches; reddish brown (5YR 4/4) clay loam; weak medium subangular blocky structure; friable; common fine roots; common fine manganese concretions; slightly acid; clear smooth boundary.

Bt1—7 to 14 inches; reddish brown (2.5YR 4/4) clay; weak medium subangular blocky structure; firm; moderately sticky and moderately plastic; common fine roots; common distinct clay films on faces of peds; common fine manganese concretions; slightly acid; clear smooth boundary.

Bt2—14 to 24 inches; red (2.5YR 5/6) clay; moderate medium subangular blocky structure; firm; moderately sticky and moderately plastic; few fine roots; common distinct clay films on faces of peds; few fine manganese concretions; neutral; gradual wavy boundary.

Bt3—24 to 30 inches; red (2.5YR 4/6) clay; common medium distinct reddish yellow (7.5YR 6/8) mottles; moderate medium subangular blocky structure; firm; moderately sticky and moderately plastic; few fine roots; few distinct clay films on faces of peds; few fine manganese concretions; neutral; gradual wavy boundary.

BC—30 to 38 inches; yellowish red (5YR 5/8) clay loam; weak fine subangular blocky structure; firm; few fine streaks of black minerals; few fine manganese concretions; neutral; gradual wavy boundary.

C1—38 to 50 inches; multicolored silty clay loam saprolite; massive; friable; neutral; diffuse wavy boundary.

C2—50 to 60 inches; multicolored loam saprolite; massive; friable; neutral.

Range in Characteristics

Thickness of solum: 20 to 58 inches

Depth to bedrock: More than 60 inches

Mica flakes: None or few throughout the profile

Concretions: Few to many in the A and B horizons; mostly manganese

Rock fragments: 0 to 20 percent, by volume, in the A horizon and 0 to 10 percent in the B horizon; mostly gravel

Reaction: Strongly acid to slightly acid in the A horizon except where the surface layer has been limed; moderately acid to neutral in the B and C horizons

A or Ap horizon:

Color—hue of 2.5YR to 7.5YR, value of 3 to 6, and chroma of 2 to 6; where it has value of less than 4, horizon is less than 6 inches thick

Texture (fine-earth fraction)—clay loam or loam

BA or BE horizon (if it occurs):

Color—hue of 2.5YR or 5YR, value of 3 to 6, and chroma of 4 to 8

Texture—clay loam, sandy clay loam, or loam

Bt horizon:

Color—hue of 2.5YR or 5YR, value of 3 to 6, and chroma of 4 to 6 in the upper part of horizon; hue of 2.5YR or 5YR, value of 4 to 6, and chroma of 4 to 8 in the lower part

Mottles—shades of brown, yellow, or red; in the lower part of horizon in most pedons

Texture—clay

BC horizon:

Color—horizon has hue of 2.5YR to 7.5YR, value of 4 to 7, and chroma of 4 to 8 or is mottled in these colors

Mottles—shades of brown, yellow, or red
Texture—loam, sandy clay loam, or clay loam

C horizon:
Color—multicolored
Texture—variable; typically loamy saprolite

Misenheimer Series

Depth class: Shallow
Drainage class: Moderately well drained or somewhat poorly drained
Permeability: Moderate or moderately rapid
Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Landform: Piedmont uplands
Landscape position: Broad ridges and broad upland flats
Slope range: 0 to 5 percent
Taxonomic class: Loamy, siliceous, thermic, shallow Aquic Dystrochrepts (fig. 19)

Typical Pedon

Misenheimer channery silt loam in an area of Misenheimer-Kirksey complex, 0 to 5 percent slopes; 1.6 miles south of Pooletown on Secondary Road 1005, about 0.1 mile south of the junction of Secondary Road 2155 on Secondary Road 1005, about 40 feet east in a wooded area; High Rock USGS topographic quadrangle; lat. 35 degrees 34 minutes 06 seconds N. and long. 80 degrees 14 minutes 29 seconds W.

A—0 to 6 inches; dark grayish brown (10YR 4/2) channery silt loam; moderate fine granular structure; friable; many fine and medium roots; 25 percent, by volume, slate channers; very strongly acid; abrupt smooth boundary.
Bw1—6 to 12 inches; light yellowish brown (2.5Y 6/4) channery silt loam; weak fine subangular blocky structure; friable; many fine and medium roots; 20 percent, by volume, slate channers; common fine distinct light gray (2.5Y 7/2) irregularly shaped iron depletions; very strongly acid; gradual smooth boundary.
Bw2—12 to 18 inches; light yellowish brown (2.5Y 6/4) channery silt loam; weak fine subangular blocky structure; friable; few fine roots; many medium distinct gray (5Y 6/1) irregularly shaped iron depletions; common fine pores; 30 percent, by volume, slate channers; very strongly acid; clear wavy boundary.
Cr—18 to 22 inches; weathered, partially consolidated argillite that can be dug with difficulty with a spade; silt loam in fractures; strongly acid; gradual irregular boundary.
R—22 inches; unweathered, fractured argillite.

Range in Characteristics

Thickness of solum: 10 to 20 inches
Depth to bedrock: 10 to 20 inches to soft bedrock; 20 to 40 inches to hard bedrock
Rock fragments: 15 to 35 percent, by volume, throughout the profile; mostly channers
Reaction: Extremely acid to strongly acid throughout the profile except where the surface layer has been limed

A or Ap horizon:
Color—hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 to 4
Texture (fine-earth fraction)—silt loam

E horizon (if it occurs):
Color—hue of 10YR to 5Y, value of 5 to 7, and chroma of 2 to 4
Texture (fine-earth fraction)—silt loam or loam

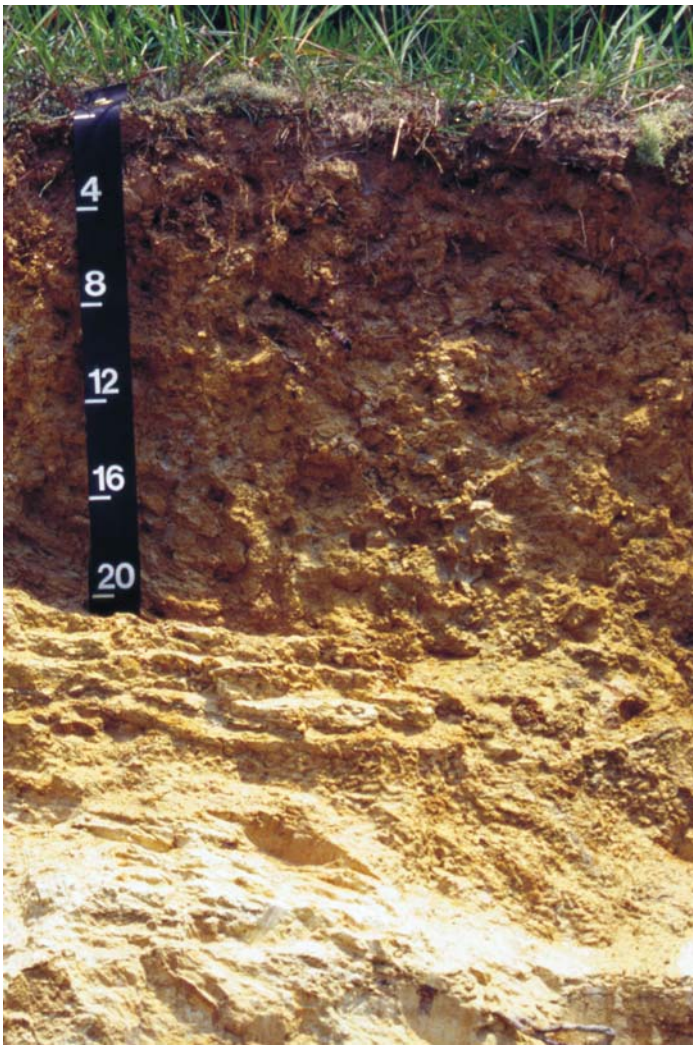

Figure 19.—Profile of the shallow, moderately well drained or somewhat poorly drained Misenheimer soil.

Bw horizon:

Color—hue of 10YR to 5Y, value of 5 to 7, and chroma of 3 to 6

Redoximorphic features—iron depletions in shades of gray and iron accumulations in shades of red, brown, or yellow in some pedons

Texture (fine-earth fraction)—silt loam, loam, or silty clay loam

C horizon (if it occurs):

Color—multicolored with hue of 10YR to 5Y

Texture (fine-earth fraction)—silt loam saprolite

Cr layer:

Type of bedrock—weathered, partially consolidated fine grained rock of the Carolina Slate Belt; can be dug with difficulty with hand tools

R layer:

Type of bedrock—unweathered fine grained rock of the Carolina Slate Belt

Mocksville Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock
Landform: Piedmont uplands
Landscape position: Ridges and side slopes
Slope range: 2 to 45 percent
Taxonomic class: Fine-loamy, mixed, thermic Typic Hapludalfs

Typical Pedon

Mocksville loam in an area of Poindexter-Mocksville complex, 15 to 25 percent slopes; 0.8 mile north on Academy Street in Cleveland, 500 feet south across a creek, in a wooded area; Cleveland USGS topographic quadrangle; lat. 35 degrees 44 minutes 24 seconds N. and long. 80 degrees 40 minutes 04 seconds W.

A—0 to 2 inches; very dark grayish brown (10YR 3/2) loam; moderate medium granular structure; friable; many fine and medium roots; strongly acid; clear smooth boundary.
E—2 to 9 inches; yellowish brown (10YR 5/4) loam; moderate fine granular structure; friable; common fine and medium roots; strongly acid; gradual smooth boundary.
Bt1—9 to 15 inches; brownish yellow (10YR 6/6) sandy clay loam; weak fine subangular blocky structure; friable; common fine roots; moderately acid; gradual wavy boundary.
Bt2—15 to 21 inches; brownish yellow (10YR 6/6) sandy clay loam; common fine distinct very pale brown (10YR 7/3) and common fine faint strong brown (7.5YR 5/6) mottles; weak fine subangular blocky structure; friable; few fine roots; few fine flakes of mica; moderately acid; gradual wavy boundary.
BC—21 to 29 inches; mottled strong brown (7.5YR 5/6), yellowish brown (10YR 5/4), and brownish yellow (10YR 6/6) sandy clay loam; weak fine subangular blocky structure; few fine flakes of mica; slightly acid; gradual wavy boundary.
C1—29 to 42 inches; multicolored fine sandy loam saprolite; massive; very friable; neutral; gradual wavy boundary.
C2—42 to 60 inches; multicolored loam saprolite; massive; friable; slightly alkaline.

Range in Characteristics

Thickness of solum: 18 to 40 inches
Depth to bedrock: More than 60 inches
Mica flakes: None to common throughout the profile
Rock fragments: 0 to 15 percent, by volume, throughout the profile; mostly gravel
Reaction: Strongly acid to neutral in the A and E horizons; moderately acid to neutral in the B horizon; slightly acid to slightly alkaline in the C horizon

A or Ap horizon:
Color—hue of 10YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4
Texture—fine sandy loam

E horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 2 to 8
Texture—fine sandy loam, loam, or sandy loam

Bt horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8
Mottles—shades of brown or yellow

Texture—dominantly sandy clay loam, clay loam, or loam; thin lenses or pockets of clay in some pedons

BC horizon:
Color—horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8 or is mottled in these colors
Texture—fine sandy loam, sandy loam, or loam

C horizon:
Color—horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8 or is mottled in these colors in the upper part; horizon typically becomes multicolored at greater depths
Texture—loam, fine sandy loam, sandy loam, loamy fine sand, or loamy sand saprolite

Oakboro Series

Depth class: Deep
Drainage class: Moderately well drained or somewhat poorly drained
Permeability: Moderate
Parent material: Recent alluvium derived from argillite and other fine grained rocks of the Carolina Slate Belt
Landform: River and stream valleys of the Piedmont
Landscape position: Flood plains
Slope range: 0 to 2 percent
Taxonomic class: Fine-loamy, mixed, thermic Fluvaquentic Dystrochrepts

Typical Pedon

Oakboro silt loam, 0 to 2 percent slopes, frequently flooded; 6.0 miles east of Liberty on Secondary Road 1004, about 0.8 mile east on Secondary Road 2148, about 1.2 miles north on Secondary Road 1005, about 120 feet west in a wooded area; High Rock USGS topographic quadrangle; lat. 35 degrees 32 minutes 41 seconds N. and long. 80 degrees 14 minutes 25 seconds W.

A—0 to 4 inches; light olive brown (2.5Y 5/4) silt loam; moderate fine granular structure; friable; many fine and coarse roots; strongly acid; clear smooth boundary.
Bw1—4 to 13 inches; light yellowish brown (10YR 6/4) silt loam; weak fine subangular blocky structure; friable; many fine and coarse roots; strongly acid; gradual wavy boundary.
Bw2—13 to 19 inches; olive yellow (2.5Y 6/6) silt loam; weak fine subangular blocky structure; friable; common coarse roots; few fine distinct light gray (2.5Y 7/2) irregularly shaped iron depletions; strongly acid; gradual wavy boundary.
Bw3—19 to 28 inches; pale yellow (2.5Y 7/4) silty clay loam; weak fine subangular blocky structure; friable; few fine roots; common fine distinct light gray (2.5Y 7/2) irregularly shaped iron depletions; common fine distinct strong brown (7.5YR 5/6) irregularly shaped masses of iron accumulation; strongly acid; gradual wavy boundary.
Bw4—28 to 40 inches; olive yellow (2.5Y 6/6) silty clay loam; weak fine subangular blocky structure; friable; few fine roots; common medium distinct light gray (2.5Y 7/2) irregularly shaped iron depletions; few fine distinct brownish yellow (10YR 6/6) irregularly shaped masses of iron accumulation; strongly acid; gradual wavy boundary.
Bw5—40 to 50 inches; mottled olive yellow (2.5Y 6/6), brownish yellow (10YR 6/6), light gray (2.5Y 7/2), and gray (5Y 6/1) silty clay loam; weak fine subangular blocky

structure; friable; brownish yellow areas are iron accumulations and gray areas are iron depletions; slightly acid; abrupt smooth boundary.

R—50 inches; unweathered, fractured argillite.

Range in Characteristics

Thickness of solum: 20 to 50 inches
Depth to bedrock: 40 to 60 inches to hard bedrock
Rock fragments: 0 to 15 percent, by volume, throughout the profile; mostly channers
Reaction: Very strongly acid to slightly acid throughout the profile except where the surface layer has been limed

A or Ap horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 4
Texture—silt loam

E horizon (if it occurs):
Color—hue of 7.5YR to 2.5Y, value of 5 to 8, and chroma of 3 to 6
Texture—silt loam or loam

BE horizon (if it occurs):
Color—hue of 10YR to 2.5Y, value of 5 or 6, and chroma of 4 to 8
Texture—silt loam or loam

Bw horizon:
Color—horizon has hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 3 to 8, or it is mottled in these colors in the lower part
Redoximorphic features—iron depletions in shades of gray within a depth of 24 inches; iron accumulations in shades of red, brown, or yellow
Texture—silt loam, loam, or silty clay loam

Bg horizon (if it occurs):
Color—horizon has hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 0 to 2, is neutral in hue and has value of 4 to 8, or is mottled in these colors
Redoximorphic features—iron accumulations in shades of red, brown, or yellow
Texture—silt loam, loam, or silty clay loam

C horizon (if it occurs):
Color—variable
Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow
Texture—variable

Cr layer (if it occurs):
Type of bedrock—weathered, partially consolidated fine grained rock of the Carolina Slate Belt; can be dug with difficulty with hand tools

R layer:
Type of bedrock—unweathered, fractured fine grained rock of the Carolina Slate Belt

Pacolet Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Landform: Piedmont uplands
Landscape position: Ridges and side slopes

Slope range: 2 to 45 percent
Taxonomic class: Clayey, kaolinitic, thermic Typic Kanhapludults

Typical Pedon

Pacolet sandy clay loam, 8 to 15 percent slopes, eroded; 1.2 miles south of the South Yadkin River on U.S. Highway 601, about 1.5 miles west on Secondary Road 1948, about 125 feet north in a field on the east-facing slope; Cooleemee USGS topographic quadrangle; lat. 35 degrees 46 minutes 24 seconds N. and long. 80 degrees 31 minutes 52 seconds W.

Ap—0 to 7 inches; reddish brown (2.5YR 4/4) sandy clay loam; weak fine granular structure; friable; many fine roots; few fine flakes of mica; strongly acid; clear smooth boundary.

Bt1—7 to 18 inches; red (2.5YR 4/6) clay; moderate fine subangular blocky structure; firm; slightly sticky and slightly plastic; common fine roots; common faint clay films on faces of peds; few fine grains of feldspar; common fine flakes of mica; moderately acid; gradual wavy boundary.

Bt2—18 to 24 inches; red (2.5YR 4/6) sandy clay; few fine distinct reddish yellow (7.5YR 6/8) mottles; moderate fine subangular blocky structure; firm; slightly sticky and slightly plastic; few fine roots; common faint clay films on faces of peds; common fine grains of feldspar; common fine flakes of mica; moderately acid; gradual wavy boundary.

BC—24 to 33 inches; red (2.5YR 4/8) sandy clay loam; weak fine subangular blocky structure; friable; few fine roots; common fine grains of feldspar; common fine flakes of mica; moderately acid; gradual wavy boundary.

C1—33 to 44 inches; red (2.5YR 5/8) loam saprolite; massive; common medium distinct reddish yellow (7.5YR 6/8), yellowish red (5YR 5/8), and yellowish brown (10YR 5/6) mottles; common fine grains of feldspar; common fine flakes of mica; strongly acid; gradual wavy boundary.

C2—44 to 60 inches; yellowish red (5YR 5/8) loam saprolite; massive; many fine flakes of mica; strongly acid; diffuse wavy boundary.

C3—60 to 72 inches; multicolored loam saprolite; massive; many fine grains of feldspar; many fine flakes of mica; strongly acid.

Range in Characteristics

Thickness of solum: 20 to 40 inches
Depth to bedrock: More than 60 inches
Mica flakes: In most pedons, few or common in the A and B horizons and few to many in the C horizon
Rock fragments: 0 to 15 percent, by volume, throughout the profile; mostly gravel
Reaction: Very strongly acid to slightly acid in the A horizon except where limed; very strongly acid to moderately acid in the B and C horizons

A or Ap horizon:
Color—hue of 2.5YR to 10YR, value of 3 to 5, and chroma of 1 to 4
Texture—sandy clay loam or sandy loam

E horizon (if it occurs):
Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 3 to 8
Texture—sandy loam, fine sandy loam, loam, loamy sand, or loamy coarse sand

BA or BE horizon (if it occurs):
Color—hue of 2.5YR or 10YR, value of 4 or 5, and chroma of 3 to 8
Texture—sandy clay loam, loam, or clay loam

Bt horizon:
Color—hue of 10R or 2.5YR, value of 4 or 5, and chroma of 6 or 8
Mottles—shades of yellow or brown; in the upper part of horizon in some pedons and in the lower part in most pedons
Texture—clay, sandy clay, or clay loam

BC horizon:
Color—hue of 10YR to 5YR, value of 4 or 5, and chroma of 6 or 8
Mottles—shades of red, yellow, or brown
Texture—clay loam, sandy clay loam, loam, or sandy loam

C horizon:
Color—horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8 or is multicolored
Mottles—shades of red, yellow, or brown
Texture—loamy saprolite

Poindexter Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock
Landform: Piedmont uplands
Landscape position: Ridges and side slopes
Slope range: 2 to 45 percent
Taxonomic class: Fine-loamy, mixed, thermic Typic Hapludalfs (fig. 20)

Typical Pedon

Poindexter loam in an area of Poindexter-Mocksville complex, 15 to 25 percent slopes; 1.5 miles east of Barber on Old U.S. Highway 70, about 1.1 miles north on North Carolina Highway 801, about 0.65 mile east on Secondary Road 1952, about 0.2 mile north on a private drive, 450 feet north of the farm gate on a farm road, 20 feet east of the road; Rowan Mills USGS topographic quadrangle; lat. 35 degrees 44 minutes 22 seconds N. and long. 80 degrees 35 minutes 47 seconds W.

Ap—0 to 3 inches; very dark grayish brown (2.5Y 3/2) loam; moderate fine granular structure; very friable; many fine roots; neutral; clear smooth boundary.
E—3 to 7 inches; dark yellowish brown (10YR 4/4) and strong brown (7.5YR 4/6) loam; weak fine subangular blocky structure; friable; common fine roots; slightly acid; clear smooth boundary.
Bt1—7 to 15 inches; brown (7.5YR 4/4) sandy clay loam; weak medium subangular blocky structure; friable; common fine roots; few fine manganese concretions; slightly acid; gradual wavy boundary.
Bt2—15 to 26 inches; strong brown (7.5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; many fine green and black minerals; moderately acid; gradual wavy boundary.
C—26 to 39 inches; loam saprolite that is multicolored in shades of green, black, and yellow; massive; friable; moderately acid; gradual wavy boundary.
Cr—39 to 43 inches; weathered, partially consolidated mafic igneous rock that can be dug with difficulty with a spade; diffuse irregular boundary.
R—43 inches; unweathered mafic igneous rock.

Figure 20.—Profile of the moderately deep, well drained Poindexter soil.

Range in Characteristics

Thickness of solum: 14 to 36 inches
Depth to bedrock: 20 to 40 inches to soft bedrock; 40 to 60 inches to hard bedrock
Mica flakes: Few to many throughout the profile
Rock fragments: 0 to 35 percent, by volume, throughout the profile; mostly gravel
Reaction: Strongly acid to neutral throughout the profile except where the surface layer has been limed

A or Ap horizon:
Color—hue of 7.5YR to 2.5Y, value of 3 to 6, and chroma of 2 to 4
Texture (fine-earth fraction)—loam

E horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6
Texture (fine-earth fraction)—fine sandy loam, sandy loam, loam, or silt loam

BA or BE (if it occurs):
Color—hue of 5YR to 2.5Y and value and chroma of 4 to 8
Texture (fine-earth fraction)—fine sandy loam, sandy loam, loam, or silt loam

Bt horizon:
Color—hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8
Mottles (if they occur)—shades of brown or yellow
Texture (fine-earth fraction)—dominantly sandy clay loam, clay loam, silt loam, or loam; thin lenses or bodies of clay in some pedons

BC horizon (if it occurs):
Color—hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8
Mottles (if they occur)—shades of brown or yellow
Texture (fine-earth fraction)—fine sandy loam, sandy loam, or loam

C horizon:
Color—horizon is multicolored and commonly is in shades of brown, yellow, black, green, olive, and gray
Texture (fine-earth fraction)—loam, fine sandy loam, sandy loam, silt loam, sandy clay loam, or silty clay loam saprolite

Cr layer:
Type of bedrock—weathered, partially consolidated mafic high-grade metamorphic or igneous rock that can be dug with difficulty with hand tools

R layer:
Type of bedrock—unweathered mafic high-grade metamorphic or igneous rock

Rion Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Landform: Piedmont uplands
Landscape position: Ridges and side slopes
Slope range: 2 to 15 percent
Taxonomic class: Fine-loamy, mixed, thermic Typic Hapludults

Typical Pedon

Rion sandy loam in an area of Rion-Wedowee complex, 2 to 8 percent slopes; 4.6 miles west of China Grove on North Carolina Highway 152, about 0.6 mile south on Secondary Road 1350, about 0.4 mile east of Goodnight's on a farm road, 90 feet east of a right-angle turn, 225 feet south in a field; Enochville USGS topographic quadrangle; lat. 35 degrees 33 minutes 42 seconds N. and long. 80 degrees 39 minutes 12 seconds W.

Ap—0 to 8 inches; brown (10YR 4/3) sandy loam; moderate medium granular structure; very friable; many fine roots; strongly acid; clear smooth boundary.
Bt1—8 to 11 inches; light yellowish brown (10YR 6/4) sandy clay loam; weak fine subangular blocky structure; friable; common fine roots; few fine flakes of mica; moderately acid; clear smooth boundary.
Bt2—11 to 21 inches; brown (7.5YR 5/4) sandy clay loam; friable; few fine roots; common fine quartz and feldspar crystals; few fine flakes of mica; moderately acid; gradual wavy boundary.

Bt3—21 to 26 inches; strong brown (7.5YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; few fine quartz and feldspar crystals; common fine flakes of mica; moderately acid; gradual wavy boundary.

BC—26 to 38 inches; mottled brown (7.5YR 5/4) and strong brown (7.5YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; few fine quartz and feldspar crystals; common fine flakes of mica; moderately acid; gradual wavy boundary.

C1—38 to 46 inches; multicolored sandy loam saprolite; massive; friable; common fine quartz and feldspar crystals; common fine flakes of mica; moderately acid; gradual wavy boundary.

C2—46 to 60 inches; multicolored fine sandy loam saprolite; massive; very friable; many medium feldspar crystals; common fine flakes of mica; moderately acid.

Range in Characteristics

Thickness of solum: 20 to 40 inches
Depth to bedrock: More than 60 inches
Mica flakes: None to common throughout the profile
Rock fragments: 0 to 35 percent, by volume, throughout the profile; mostly gravel
Reaction: Very strongly acid to slightly acid throughout the profile except where the surface layer has been limed

Ap or A horizon:
Color—hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 6
Texture (fine-earth fraction)—sandy loam

E horizon (if it occurs):
Color—hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 8
Texture (fine-earth fraction)—sandy loam, fine sandy loam, loamy sand, or loam

Bt horizon:
Color—hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 4 to 8
Mottles (if they occur)—shades of red, brown, yellow, or gray; gray mottles are not indicative of wetness
Texture (fine-earth fraction)—dominantly sandy clay loam, clay loam, sandy loam, or fine sandy loam; thin layers of sandy clay in some pedons

BC horizon:
Color—horizon has hue of 2.5YR to 10YR, value of 4 or 6, and chroma of 4 to 8 or is mottled in these colors
Mottles—shades of red, brown, yellow, or gray; gray mottles are not indicative of wetness
Texture (fine-earth fraction)—sandy clay loam, sandy loam, loam, or clay loam

C horizon:
Color—horizon is multicolored or has hue of 2.5YR to 10YR, value of 4 or 6, and chroma of 4 to 8
Mottles—shades of red, brown, yellow, white, or gray; gray mottles are not indicative of wetness
Texture (fine-earth fraction)—fine sandy loam, sandy loam, sandy clay loam, loamy sand, or coarse loamy sand saprolite

Riverview Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate

Parent material: Recent alluvium
Landform: River and stream valleys of the Piedmont
Landscape position: Flood plains
Slope range: 0 to 2 percent
Taxonomic class: Fine-loamy, mixed, thermic Fluventic Dystrochrepts

Typical Pedon

Riverview loam, 0 to 2 percent slopes, occasionally flooded; 4.0 miles west of Mount Vernon on Secondary Road 1003, about 2.5 miles north on Secondary Road 1979, about 200 feet northeast of a house on the flood plain, in a pasture; Cool Springs USGS topographic quadrangle; lat. 35 degrees 51 minutes 20 seconds N. and long. 80 degrees 40 minutes 13 seconds W.

Ap—0 to 10 inches; brown (7.5YR 5/4) loam; weak medium granular structure; friable; many fine roots; few fine flakes of mica; slightly acid; gradual smooth boundary.
Bw1—10 to 18 inches; brown (7.5YR 5/4) loam; weak medium subangular blocky structure; friable; common fine roots; common fine flakes of mica; strongly acid; gradual smooth boundary.
Bw2—18 to 29 inches; yellowish brown (10YR 5/6) loam; weak medium subangular blocky structure; friable; few fine roots; common fine flakes of mica; strongly acid; diffuse wavy boundary.
Bw3—29 to 36 inches; strong brown (7.5YR 5/6) loam; few medium faint very pale brown (10YR 7/3) mottles; weak medium subangular blocky structure; friable; few fine roots; common fine flakes of mica; strongly acid; gradual smooth boundary.
Bw4—36 to 49 inches; brown (7.5YR 5/4) loam; weak medium subangular blocky structure; friable; common fine distinct light gray (10YR 7/2) irregularly shaped iron depletions; few fine distinct yellowish red (5YR 5/8) irregularly shaped masses of iron accumulation; common fine flakes of mica; strongly acid; gradual smooth boundary.
Bw5—49 to 59 inches; mottled brown (7.5YR 4/4) and light gray (10YR 7/2) loam; weak fine subangular blocky structure; friable; light gray areas are iron depletions; common fine flakes of mica; strongly acid; clear smooth boundary.
C—59 to 72 inches; brown (7.5YR 4/4) sandy loam; massive; very friable; common medium distinct light gray (10YR 7/2) and common fine distinct brownish yellow (10YR 6/6) irregularly shaped iron depletions; common fine flakes of mica; strongly acid.

Range in Characteristics

Thickness of solum: 24 to 60 inches
Depth to bedrock: More than 60 inches
Mica flakes: None to common throughout the profile
Reaction: Very strongly acid to slightly acid in the A horizon except where limed; very strongly acid to moderately acid in the Bw, BC, and C horizons
Other characteristics: Buried A and B horizons below a depth of 25 inches in some pedons; these horizons have the same colors and textures as the A and B horizons

A or Ap horizon:
Color—hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 6; where it has value of 3 and chroma of 2, horizon is less than 7 inches thick
Texture—loam

Bw horizon:
Color—hue of 7.5YR or 10YR, value of 3 to 6, and chroma of 3 to 8
Redoximorphic features—iron depletions in shades of gray and iron accumulations in shades of red, brown, or yellow in the lower part of horizon

Texture—loam, fine sandy loam, silt loam, sandy clay loam, clay loam, or silty clay loam

BC horizon (if it occurs):
Color—hue of 7.5YR or 10YR, value of 3 to 6, and chroma of 3 to 8
Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow
Texture—loam, sandy clay loam, fine sandy loam, or sandy loam

C horizon:
Color—hue of 7.5YR or 10YR and value and chroma of 4 to 8
Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow
Texture—dominantly loam, fine sandy loam, sandy loam, loamy fine sand, loamy sand, or sand; strata of finer or coarser textured material in most pedons

Saw Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Landform: Piedmont uplands
Landscape position: Ridges and side slopes
Slope range: 2 to 15 percent
Taxonomic class: Clayey, kaolinitic, thermic Typic Kanhapludults

Typical Pedon

Saw sandy loam in an area of Saw-Pacolet complex, 2 to 8 percent slopes; 4.3 miles west of China Grove on North Carolina Highway 152, about 550 feet north on a private road, 600 feet west on a farm road, 35 feet south of the road, in a field; Enochville USGS topographic quadrangle; lat. 35 degrees 34 minutes 34 seconds N. and long. 80 degrees 39 minutes 54 seconds W.

Ap—0 to 8 inches; brown (7.5YR 4/4) sandy loam; weak medium granular structure; friable; common fine roots; 1 percent, by volume, porphyritic granite gravel and feldspar crystals that are 1/16 to 1/4 inch in diameter; moderately acid; clear smooth boundary.

Bt—8 to 20 inches; red (2.5YR 4/8) clay; few fine prominent brownish yellow (10YR 6/6) mottles; moderate fine subangular blocky structure; firm; sticky and plastic; few fine roots; common distinct clay films on faces of peds; 3 percent, by volume, porphyritic granite gravel and feldspar crystals that are 1/16 to 1/4 inch in diameter; common fine flakes of mica; moderately acid; gradual wavy boundary.

BC1—20 to 23 inches; red (2.5YR 4/6) sandy clay loam; weak fine subangular blocky structure; firm; slightly sticky and slightly plastic; 5 percent, by volume, porphyritic granite gravel and feldspar crystals that are 1/16 to 1/4 inch in diameter; common fine flakes of mica; moderately acid; gradual wavy boundary.

BC2—23 to 26 inches; red (2.5YR 4/6) sandy loam; weak medium subangular blocky structure; friable; 5 percent, by volume, porphyritic granite gravel and feldspar crystals that are 1/16 to 1/2 inch in diameter; many fine flakes of mica; moderately acid; gradual wavy boundary.

C—26 to 29 inches; multicolored gravelly sandy loam saprolite; massive; very friable; 20 percent, by volume, porphyritic granite gravel and feldspar crystals that are 1/16

to 1/2 inch in diameter; many fine flakes of mica; moderately acid; abrupt irregular boundary.

R—29 inches; unweathered porphyritic granite.

Range in Characteristics

Thickness of solum: 19 to 33 inches
Depth to bedrock: 20 to 40 inches to hard bedrock
Mica flakes: Few or common in the A, E, and B horizons; few to many in the BC and C horizons
Rock fragments: Less than 35 percent, by volume, in the A and C horizons and less than 15 percent in the E, B, and BC horizons; mostly gravel
Reaction: Very strongly acid to moderately acid throughout the profile except where the surface layer has been limed

A or Ap horizon:
Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 2 to 6
Texture (fine-earth fraction)—sandy loam or sandy clay loam

E horizon (if it occurs):
Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 3 to 8
Texture—sandy loam

BE or BA horizon (if it occurs):
Color—hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 4 to 8
Texture—sandy clay loam or clay loam

Bt horizon:
Color—dominantly hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 6 or 8; hue of 10YR, value of 5 or 6, and chroma of 6 or 8 in part of horizon in some pedons
Mottles (if they occur)—shades of yellow or brown
Texture—clay, sandy clay, or clay loam

BC horizon:
Color—hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 6 or 8
Mottles (if they occur)—shades of yellow or brown
Texture—sandy clay loam, clay loam, or sandy loam

C horizon:
Color—horizon is multicolored or has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 6 or 8
Mottles (if they occur)—shades of yellow or brown
Texture (fine-earth fraction)—sandy loam saprolite

Cr layer (if it occurs):
Type of bedrock—weathered, partially consolidated felsic metamorphic or igneous rock that can be dug with difficulty with hand tools

R layer:
Type of bedrock—unweathered felsic metamorphic igneous rock

Sedgefield Series

Depth class: Very deep
Drainage class: Moderately well drained or somewhat poorly drained
Permeability: Slow

Parent material: Residuum weathered from intermediate and mafic metamorphic or igneous rock
Landform: Piedmont uplands and drainageways
Landscape position: Broad ridges, toe slopes, head of drainageways, and depressional areas
Slope range: 1 to 6 percent
Taxonomic class: Fine, mixed, thermic Aquultic Hapludalfs

Typical Pedon

Sedgefield fine sandy loam, 1 to 6 percent slopes; 4.6 miles south of Faith on Secondary Road 1006, about 1.4 miles west on Secondary Road 1221, about 1.0 mile south on Secondary Road 2567, about 180 feet west of the road, in a wooded area; Rockwell USGS topographic quadrangle; lat. 35 degrees 30 minutes 36 seconds N. and long. 80 degrees 28 minutes 45 seconds W.

Ap—0 to 3 inches; dark grayish brown (2.5Y 4/2) fine sandy loam; moderate fine granular structure; very friable; many fine roots; slightly acid; clear smooth boundary.
E—3 to 8 inches; pale yellow (2.5Y 7/4) fine sandy loam; moderate fine granular structure; friable; many fine roots; strongly acid; gradual smooth boundary.
Bt1—8 to 13 inches; yellowish brown (10YR 5/8) clay loam; moderate fine subangular blocky structure; very firm; very sticky and very plastic; common fine roots; common medium distinct light olive gray (5Y 6/2) irregularly shaped iron depletions; many distinct clay films on faces of peds; common fine black minerals; slightly acid; gradual wavy boundary.
Bt2—13 to 24 inches; yellowish brown (10YR 5/8) clay; moderate fine subangular blocky structure; firm; moderately sticky and moderately plastic; few fine roots; few fine distinct light brownish gray (10YR 6/2) irregularly shaped iron depletions; many distinct clay films on faces of peds; few fine soft black concretions; slightly acid; gradual wavy boundary.
Bt3—24 to 31 inches; yellowish brown (10YR 5/8) clay; moderate medium subangular blocky structure; very firm; very sticky and very plastic; few fine roots; common fine distinct light olive brown (2.5Y 5/4) and light brownish gray (2.5Y 6/2) irregularly shaped iron depletions; many distinct clay films on faces of peds; few fine manganese concretions; slightly acid; gradual wavy boundary.
Bt4—31 to 35 inches; yellowish brown (10YR 5/8) clay; moderate medium subangular blocky structure; very firm; very sticky and very plastic; few fine roots; common medium distinct gray (5Y 6/1) irregularly shaped iron depletions; common fine manganese concretions; slightly acid; gradual wavy boundary.
BC—35 to 40 inches; mottled yellowish brown (10YR 5/8), olive gray (5Y 4/2), and light gray (5Y 7/1) clay; weak medium subangular blocky structure; firm; moderately sticky and moderately plastic; olive gray and light gray areas are iron depletions; few distinct clay films on faces of peds; common fine and medium manganese concretions; slightly acid; gradual wavy boundary.
C—40 to 62 inches; multicolored loam saprolite; massive; firm; neutral.

Range in Characteristics

Thickness of solum: 20 to 40 inches
Depth to bedrock: More than 60 inches
Concretions: None to common throughout the profile
Rock fragments: 0 to 15 percent, by volume, in the A and E horizons; mostly gravel
Reaction: Strongly acid to slightly acid in the A horizon and the upper part of the Bt horizon; moderately acid to slightly alkaline in the lower part of the Bt horizon and in the C horizon

A or Ap horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 4
Texture—fine sandy loam

E horizon:
Color—hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 to 4
Texture—fine sandy loam, sandy loam, loamy sand, or loam

BA or BE horizon (if it occurs):
Color—hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 3 to 8
Texture—sandy loam or sandy clay loam

Bt horizon:
Color—hue of 7.5YR to 5Y, value of 5 or 6, and chroma of 3 to 8
Redoximorphic features—iron depletions in shades of gray in the upper 10 inches of horizon; iron accumulations in shades of red, brown, or yellow
Texture—clay, clay loam, or sandy clay

Btg horizon (if it occurs):
Color—hue of 7.5YR to 5Y, value of 5 or 6, and chroma of 1 or 2
Redoximorphic features—iron accumulations in shades of red, brown, or yellow
Texture—clay, clay loam, or sandy clay

BC horizon:
Color—hue of 7.5YR to 5Y, value of 5 to 7, and chroma of 3 to 8
Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow
Texture—clay loam, sandy clay loam, or loam

BCg horizon (if it occurs):
Color—hue of 7.5YR to 5Y, value of 5 to 7, and chroma of 1 or 2
Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow
Texture—clay loam, sandy clay loam, or loam

C horizon:
Color—multicolored
Texture—variable; commonly loamy saprolite

Tatum Series

Depth class: Deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Landform: Piedmont uplands
Landscape position: Ridges and side slopes
Slope range: 2 to 15 percent
Taxonomic class: Clayey, mixed, thermic Typic Hapludults (fig. 21)

Typical Pedon

Tatum silty clay loam in an area of Tatum-Badin complex, 2 to 8 percent slopes, eroded; 1.8 miles east of Liberty on Secondary Road 1004 (Stokes Ferry Road), 0.2 mile north on Secondary Road 2142, about 200 feet west in a field; Gold Hill USGS

Figure 21.—Profile of the deep, well drained Tatum soil.

topographic quadrangle; lat. 35 degrees 34 minutes 24 seconds N. and long. 80 degrees 18 minutes 18 seconds W.

Ap—0 to 6 inches; yellowish red (5YR 5/8) silty clay loam; moderate fine granular structure; friable; many fine roots; neutral; clear smooth boundary.

Bt1—6 to 14 inches; red (2.5YR 4/6) silty clay; moderate fine subangular blocky structure; friable; slightly sticky and slightly plastic; few fine roots; common distinct clay films on faces of peds; strongly acid; clear smooth boundary.

Bt2—14 to 33 inches; red (2.5YR 4/6) clay; few fine distinct brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; firm; slightly sticky and slightly plastic; few fine roots; common distinct clay films on faces of peds; 5 percent, by volume, channers; very strongly acid; gradual wavy boundary.

Bt3—33 to 40 inches; red (2.5YR 4/6) silty clay; common medium distinct brownish yellow (10YR 6/6) mottles; weak fine subangular blocky structure; firm; slightly

sticky and slightly plastic; few faint clay films on faces of peds; 5 percent, by volume, channers; very strongly acid; gradual wavy boundary.

BC—40 to 45 inches; silty clay loam that is multicolored in shades of red and yellow; weak fine subangular blocky structure; friable; 5 percent, by volume, channers; very strongly acid; gradual wavy boundary.

C—45 to 55 inches; multicolored silt loam saprolite; massive; friable; 10 percent, by volume, channers; very strongly acid; abrupt smooth boundary.

Cr—55 to 60 inches; weathered, partially consolidated argillite that can be dug with difficulty with a spade; silt loam in fractures.

Range in Characteristics

Thickness of solum: 30 to 60 inches

Depth to bedrock: 40 to 60 inches to soft bedrock; more than 60 inches to hard bedrock

Rock fragments: 0 to 40 percent, by volume, throughout the profile; mostly gravel and channers

Reaction: Very strongly acid or strongly acid throughout the profile except where the surface layer has been limed

Ap or A horizon:
Color—hue of 5YR or 10YR, value of 3 to 6, and chroma of 2 to 8
Texture (fine-earth fraction)—silty clay loam or silt loam

E horizon (if it occurs):
Color—hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 3 to 6
Texture (fine-earth fraction)—silt loam, loam, or fine sandy loam

BE horizon (if it occurs):
Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 3 to 8
Texture (fine-earth fraction)—silt loam, silty clay loam, clay loam, or loam

Bt horizon:
Color—hue of 2.5YR, value of 4 or 5, and chroma of 6 or 8
Mottles—shades of yellow or brown; in the lower part of horizon
Texture (fine-earth fraction)—silty clay, clay, silty clay loam, or clay loam

BC horizon (if it occurs):
Color—horizon has hue of 10R or 5YR, value of 4 to 6, and chroma of 4 to 8 or is mottled in these colors
Texture (fine-earth fraction)—silty clay loam, clay loam, silty clay, or clay

C horizon:
Color—horizon has hue of 10YR to 5YR, value of 4 to 6, and chroma of 4 to 8 or is multicolored
Texture (fine-earth fraction)—silt loam, loam, clay loam, silty clay loam, silty clay, or clay saprolite

Cr layer:
Type of bedrock—weathered, partially consolidated fine grained rock of the Carolina Slate Belt; can be dug with difficulty with hand tools

Udorthents

Depth class: Shallow to very deep

Drainage class: Well drained or moderately well drained

Permeability: Moderate to very slow
Parent material: Fill areas—mixture of natural soil material; excavated areas—variable, depending on the type of underlying bedrock; landfills—alternating layers of nonsoil material and soil material
Landform: Piedmont uplands
Landscape position: Broad to narrow ridges and side slopes
Slope range: 0 to 10 percent
Taxonomic class: Udorthents

Typical Pedon

A typical pedon is not given due to the variable nature of the soil material.

Range in Characteristics

Thickness of soil material: 0 to more than 60 inches
Depth to bedrock: Excavated areas—0 to more than 60 inches; fill areas—40 to more than 60 inches; landfills—generally more than 20 feet
Rock fragments: Commonly less than 15 percent, by volume; ranging from gravel to stones
Reaction: Very strongly acid to slightly acid throughout the profile except where the surface layer has been limed

Fill areas:
Color—hue of 2.5YR to 10YR, value of 4 to 7, and chroma of 2 to 8
Texture (fine-earth fraction)—variable; commonly loamy

Excavated areas:
Color—hue of 2.5YR to 2.5Y, value of 4 to 7, and chroma of 2 to 8
Texture (fine-earth fraction)—variable; commonly loamy

Landfills:
Color—variable
Texture—variable; commonly loamy material that has layers of nonsoil material

Uwharrie Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from argillite and other fine grained rocks of the Carolina Slate Belt
Landform: Piedmont uplands
Landscape position: Ridges and side slopes
Slope range: 2 to 45 percent
Taxonomic class: Clayey, mixed, thermic Typic Hapludults

Typical Pedon

Uwharrie silty clay loam, 2 to 8 percent slopes, eroded; 0.6 mile north of U.S. Highway 52 at Gold Hill on Secondary Road 2140, about 0.3 mile north on Secondary Road 2142, about 600 feet north on a farm road, 1,400 feet northwest in a field along the wood line; Gold Hill USGS topographic quadrangle; lat. 35 degrees 32 minutes 21 seconds N. and long. 80 degrees 20 minutes 11 seconds W.

Ap—0 to 8 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine granular structure; friable; many fine roots; slightly acid; clear smooth boundary.

Bt1—8 to 14 inches; red (2.5YR 5/8) silty clay; moderate medium subangular blocky structure; friable; slightly sticky and slightly plastic; common fine roots; few faint clay films on faces of peds; moderately acid; gradual smooth boundary.

Bt2—14 to 23 inches; red (2.5YR 4/6) clay; moderate medium subangular blocky structure; firm; moderately sticky and moderately plastic; few fine roots; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt3—23 to 36 inches; red (2.5YR 4/6) clay; common fine distinct brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; firm; moderately sticky and moderately plastic; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt4—36 to 47 inches; red (2.5YR 4/6) silty clay; common medium distinct brownish yellow (10YR 6/6) mottles; weak fine subangular blocky structure; friable; slightly sticky and slightly plastic; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

BC—47 to 56 inches; red (2.5YR 4/6) silty clay loam; weak medium subangular blocky structure; friable; very strongly acid; gradual wavy boundary.

C—56 to 60 inches; multicolored silt loam saprolite; massive; friable; very strongly acid.

Range in Characteristics

Thickness of solum: 40 to more than 60 inches

Depth to bedrock: More than 60 inches

Rock fragments (loam and silty clay loam phases): 0 to 15 percent, by volume, throughout the profile; mostly gravel

Rock fragments (very stony phase): 15 to less than 60 percent, by volume, gravel, cobbles, and stones in the A and E horizons; less than 10 percent, by volume, mostly gravel in the B and C horizons

Reaction: Very strongly acid to moderately acid throughout the profile except where the surface layer has been limed

A or Ap horizon:
Color—hue of 5YR to 10YR, value of 3 to 6, and chroma of 2 to 6
Texture (fine-earth fraction)—silty clay loam, silt loam, or loam

E horizon (if it occurs):
Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 3 to 8
Texture (fine-earth fraction)—silt loam or loam

BA or BE horizon (if it occurs):
Color—hue of 2.5YR or 7.5YR, value of 3 to 6, and chroma of 6 or 8
Texture (fine-earth fraction)—silt loam, loam, silty clay loam, clay loam, or sandy clay loam

Bt horizon:
Color—hue of 10R to 5YR, value of 3 to 5, and chroma of 6 or 8
Mottles—shades of yellow or brown
Texture—clay, silty clay, silty clay loam, or clay loam

BC horizon:
Color—hue of 10R to 5YR, value of 4 or 5, and chroma of 6 or 8
Mottles—shades of brown, yellow, or gray
Texture—silty clay, clay, clay loam, silty clay loam, loam, or silt loam

C horizon:
Color—horizon is multicolored or is mottled in shades of red, yellow, brown, and gray
Texture—loamy saprolite

Vance Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Landform: Piedmont uplands
Landscape position: Ridges and side slopes
Slope range: 2 to 15 percent
Taxonomic class: Clayey, mixed, thermic Typic Hapludults (fig. 22)

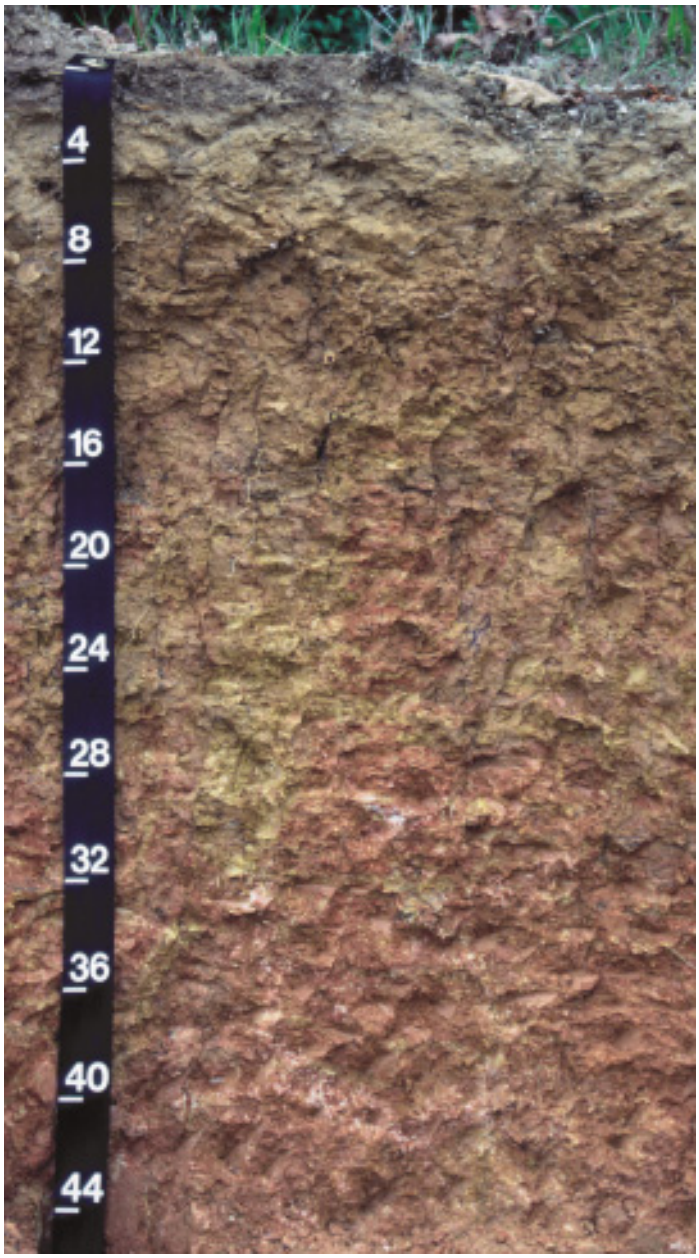

Figure 22.—Profile of the very deep, well drained Vance soil.

Typical Pedon

Vance sandy loam, 2 to 8 percent slopes; 1.0 mile north of the intersection of Secondary Road 2140 and U.S. Highway 52 at Gold Hill on U.S. Highway 52, about 0.75 mile north on a private road to a cleared field, 300 feet east along the field border, 300 feet north in the field; Gold Hill USGS topographic quadrangle; lat. 35 degrees 32 minutes 36 seconds N. and long. 80 degrees 21 minutes 01 second W.

Ap—0 to 8 inches; brown (10YR 4/3) sandy loam; moderate medium granular structure; very friable; many fine roots; neutral; abrupt smooth boundary.

E—8 to 10 inches; brownish yellow (10YR 6/6) sandy loam; weak medium granular structure; very friable; many fine roots; moderately acid; clear smooth boundary.

Bt1—10 to 18 inches; brownish yellow (10YR 6/8) clay; moderate medium subangular blocky structure; firm; slightly sticky and slightly plastic; common faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt2—18 to 26 inches; brownish yellow (10YR 6/8) clay; common medium prominent red (2.5YR 4/8) and few fine faint very pale brown (10YR 7/4) mottles; moderate medium subangular blocky structure; very firm; moderately sticky and moderately plastic; few fine roots; common distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt3—26 to 33 inches; yellowish brown (10YR 5/6) clay; common coarse distinct brownish yellow (10YR 6/8) and very pale brown (10YR 7/4) and common coarse prominent red (2.5YR 4/8) mottles; weak medium subangular blocky structure; very firm; moderately sticky and moderately plastic; common faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

BC—33 to 38 inches; brownish yellow (10YR 6/6) clay; many fine prominent red (2.5YR 4/8), common fine distinct very pale brown (10YR 7/4), and few fine distinct light brownish gray (2.5Y 6/2) mottles; weak medium subangular blocky structure; very firm; very sticky and very plastic; very strongly acid; gradual wavy boundary.

C1—38 to 50 inches; multicolored sandy clay loam saprolite; massive; firm; very strongly acid; gradual wavy boundary.

C2—50 to 60 inches; multicolored loam saprolite; massive; friable; very strongly acid.

Range in Characteristics

Thickness of solum: 24 to 40 inches

Depth to bedrock: More than 60 inches

Rock fragments: 0 to 35 percent, by volume, in the A and E horizons and less than 10 percent in the B and C horizons

Reaction: Moderately acid to very strongly acid in the A and E horizons except where the surface layer has been limed; strongly acid or very strongly acid in the B and C horizons

Ap or A horizon:

Color—typically hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 2 to 6; chroma ranging to 8 in eroded phases

Texture (fine-earth fraction)—sandy loam or sandy clay loam

E horizon:

Color—hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 3 to 6

Texture (fine-earth fraction)—sandy loam, fine sandy loam, or coarse sandy loam

BA or BE horizon (if it occurs):

Color—hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8

Texture—sandy clay loam or clay loam

Bt horizon:
Color—hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8
Mottles—shades of red, brown, or yellow and shades of gray or white in the lower part of horizon; gray and white mottles are not indicative of wetness
Texture—clay, sandy clay, or clay loam

BC horizon:
Color—hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8
Mottles—shades of red, yellow, brown, gray, or white; gray and white mottles are not indicative of wetness
Texture—clay, sandy clay, clay loam, sandy clay loam, or loam

C horizon:
Color—multicolored
Texture—variable; commonly clay loam, sandy clay loam, loam, or sandy loam saprolite

Wahee Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Slow
Parent material: Old alluvium
Landform: River and stream valleys and drainageways of the Piedmont
Landscape position: Low stream terraces
Slope range: 0 to 2 percent
Taxonomic class: Clayey, mixed, thermic Aeric Endoaquults

Typical Pedon

Wahee loam, 0 to 2 percent slopes, occasionally flooded; 0.45 mile south of the South Yadkin River on U.S. Highway 601, about 0.35 mile east on a farm road, 150 feet south in a wooded area; Churchland USGS topographic quadrangle; lat. 35 degrees 46 minutes 16 seconds N. and long. 80 degrees 29 minutes 57 seconds W.

A—0 to 4 inches; brown (10YR 4/3) loam; moderate fine granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.
E—4 to 7 inches; light brownish gray (2.5Y 6/2) loam; moderate fine granular structure; very friable; many fine roots; common fine distinct brown (7.5YR 5/4) irregularly shaped iron accumulations; strongly acid; gradual wavy boundary.
Bt1—7 to 12 inches; light yellowish brown (2.5Y 6/4) clay loam; weak fine subangular blocky structure; friable; slightly sticky and slightly plastic; common fine roots; many medium distinct light brownish gray (10YR 6/2) irregularly shaped iron depletions; brown (7.5YR 5/4) irregularly shaped masses of iron accumulation; common fine pores; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.
Bt2—12 to 19 inches; light yellowish brown (2.5Y 6/4) clay; moderate fine subangular blocky structure; firm; moderately sticky and moderately plastic; few fine roots; common fine pores; many medium distinct light brownish gray (10YR 6/2) irregularly shaped iron depletions; common fine prominent yellowish red (5YR 5/8) irregularly shaped masses of iron accumulation; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.
Bt3—19 to 26 inches; yellowish brown (10YR 5/6) clay; moderate fine subangular blocky structure; firm; moderately sticky and moderately plastic; few fine roots; many medium distinct light brownish gray (10YR 6/2) irregularly shaped iron depletions; common fine prominent red (2.5YR 5/8) irregularly shaped masses of

iron accumulation; common distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btg1—26 to 40 inches; light gray (10YR 6/1) clay; weak fine subangular blocky structure; very firm; moderately sticky and very plastic; few fine roots; common medium distinct strong brown (7.5YR 5/8) and brownish yellow (10YR 6/6) and few fine prominent yellowish red (5YR 5/8) irregularly shaped masses of iron accumulation; few distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btg2—40 to 48 inches; gray (5Y 6/1) clay; weak fine subangular blocky structure; very firm; moderately sticky and very plastic; few fine roots; many medium distinct brownish yellow (10YR 6/6) and common fine prominent strong brown (7.5YR 5/8) irregularly shaped masses of iron accumulation; few distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btg3—48 to 60 inches; gray (5Y 6/1) clay loam; weak fine subangular blocky structure; firm; moderately sticky and plastic; few fine roots; many medium distinct brownish yellow (10YR 6/6) and common fine prominent strong brown (7.5YR 5/8) irregularly shaped masses of iron accumulation; few distinct clay films on faces of peds; very strongly acid.

Range in Characteristics

Thickness of solum: 40 to more than 60 inches

Depth to bedrock: More than 60 inches

Reaction: Very strongly acid to moderately acid in the A and E horizons except where the surface layer has been limed; extremely acid to strongly acid in the B and C horizons

A or Ap horizon:

Color—horizon has hue of 10YR or 2.5Y or is neutral in hue and has value of 2 to 5 and chroma of 0 to 3

Texture—loam

E horizon:

Color—hue of 10YR to 5Y, value of 5 to 7, and chroma of 2 to 4

Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow

Texture—loam, silt loam, very fine sandy loam, fine sandy loam, or sandy loam

Bt horizon:

Color—hue of 10YR to 5Y, value of 5 to 7, and chroma of 3 to 8

Redoximorphic features—iron depletions in shades of gray; iron accumulations in shades of red, brown, or yellow

Texture—clay, clay loam, silty clay, sandy clay, or sandy clay loam

Btg horizon:

Color—horizon has hue of 10YR to 5Y or is neutral in hue and has value of 4 to 7 and chroma of 1 or 2

Redoximorphic features—iron accumulations in shades of red, brown, or yellow

Texture—clay, clay loam, silty clay, sandy clay, or sandy clay loam

BCg horizon (if it occurs):

Color—horizon has hue of 10YR to 5Y or is neutral in hue and has value of 4 to 7 and chroma of 1 or 2

Redoximorphic features—iron accumulations in shades of red, brown, or yellow

Texture—clay loam, silty clay loam, sandy clay loam, sandy clay, or fine sandy loam

Cg horizon (if it occurs):
Color—horizon has hue of 10YR to 5Y or is neutral in hue and has value of 4 to 7 and chroma of 1 or 2
Redoximorphic features—iron accumulations in shades of red, brown, or yellow
Texture—variable; commonly loamy

Wedowee Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Residuum weathered from felsic metamorphic or igneous rock
Landform: Piedmont uplands
Landscape position: Ridges and side slopes
Slope range: 2 to 15 percent
Taxonomic class: Clayey, kaolinitic, thermic Typic Kanhapludults (fig. 23)

Typical Pedon

Wedowee sandy loam in an area of Rion-Wedowee complex, 2 to 8 percent slopes; 4.2 miles west of Rockwell on North Carolina Highway 152, about 0.2 mile north of Shuping Mill on Secondary Road 2561, about 160 feet west on a farm road, 30 feet north in a field; Rockwell USGS topographic quadrangle; lat. 35 degrees 33 minutes 15 seconds N. and long. 80 degrees 28 minutes 52 seconds W.

Ap—0 to 8 inches; brown (10YR 4/3) sandy loam; weak medium granular structure; very friable; many fine roots; strongly acid; clear smooth boundary.
E—8 to 12 inches; brownish yellow (10YR 6/6) sandy loam; moderate medium granular structure; very friable; few fine roots; few fine feldspar crystals; moderately acid; gradual smooth boundary.
BE—12 to 15 inches; strong brown (7.5YR 5/6) sandy clay loam; common fine distinct brownish yellow (10YR 6/6) mottles; weak fine subangular blocky structure; friable; common fine roots; common fine feldspar crystals; few fine flakes of mica; strongly acid; gradual wavy boundary.
Bt1—15 to 20 inches; strong brown (7.5YR 5/6) clay; few fine distinct yellowish red (5YR 5/6) mottles; moderate fine subangular blocky structure; firm; slightly sticky and slightly plastic; few fine roots; few faint clay films on faces of peds; common fine feldspar crystals; few fine flakes of mica; strongly acid; gradual wavy boundary.
Bt2—20 to 29 inches; yellowish red (5YR 5/8) clay; common fine faint red (2.5YR 4/8) and few fine distinct brownish yellow (10YR 6/6) mottles; weak fine subangular blocky structure; firm; slightly sticky and slightly plastic; few fine roots; few faint clay films on faces of peds; few fine feldspar crystals; few fine flakes of mica; strongly acid; gradual wavy boundary.
BC—29 to 34 inches; yellowish red (5YR 5/8) sandy clay loam; common fine distinct red (2.5YR 4/8), common medium distinct brownish yellow (10YR 6/6), and few medium faint strong brown (7.5YR 5/6) mottles; weak fine subangular blocky structure; friable; few fine roots; common fine feldspar and quartz crystals; few fine flakes of mica; strongly acid; gradual wavy boundary.
C—34 to 60 inches; multicolored sandy loam saprolite; massive; very friable; strongly acid.

Range in Characteristics

Thickness of solum: 20 to 40 inches
Depth to bedrock: More than 60 inches

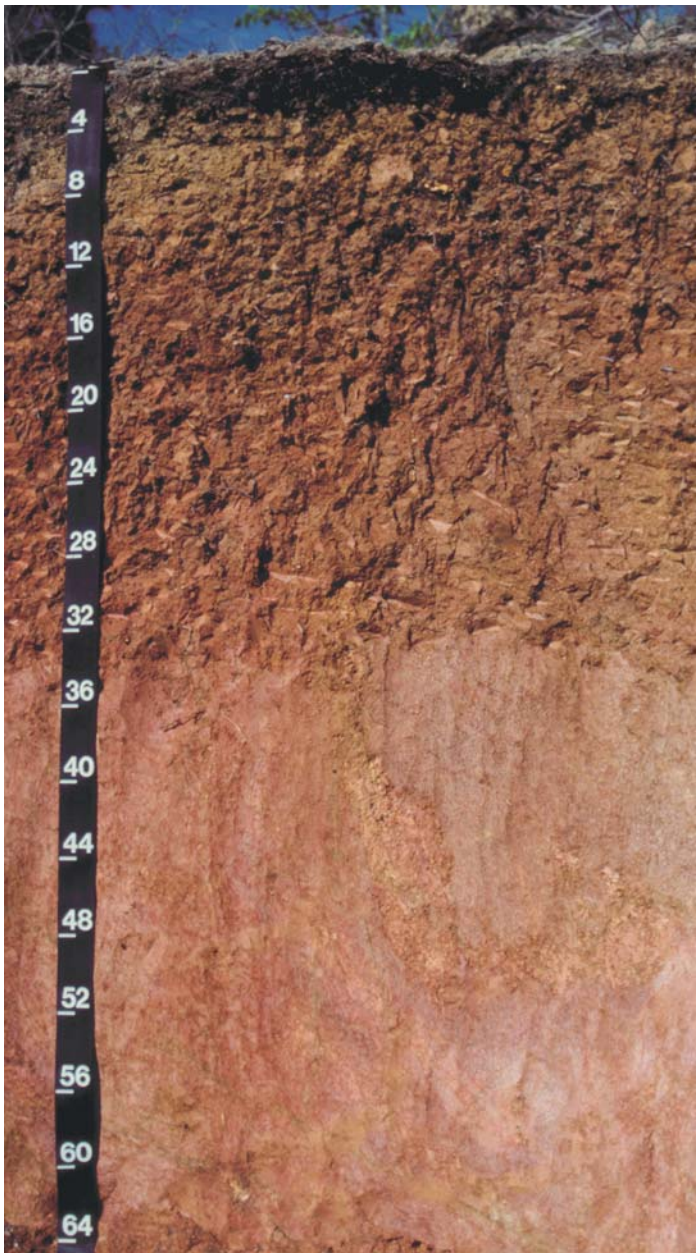

Figure 23.—Profile of the very deep, well drained Wedowee soil.

Mica flakes: None or few in the A and E horizons and the upper part of the B horizon; none to common in the lower part of the B horizon and in the C horizon
Rock fragments: 0 to 15 percent, by volume, throughout the profile; mostly gravel
Reaction: Extremely acid to strongly acid throughout the profile except where the surface layer has been limed

A or Ap horizon:
Color—hue of 7.5YR to 2.5Y, value of 3 to 6, and chroma of 2 to 8
Texture—sandy loam

E horizon:
Color—hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 3 to 8
Texture—sandy loam, fine sandy loam, loamy sand, coarse sandy loam, coarse loamy sand, or loam

BE or BA horizon:
Color—hue of 5YR to 10YR, value of 4 or 7, and chroma of 3 to 8
Mottles—shades of brown or yellow
Texture—sandy clay loam, sandy loam, loam, fine sandy loam, or clay loam

Bt horizon:
Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 6 or 8
Mottles—shades of red, yellow, or brown; in the lower part of horizon in most pedons and in the upper part in some pedons
Texture—clay, sandy clay, clay loam, or sandy clay loam

BC horizon:
Color—hue of 2.5YR to 10YR, value of 5 to 7, and chroma of 4 to 8
Mottles—shades of red, yellow, or brown
Texture—sandy clay loam, clay loam, loam, or fine sandy loam

C horizon:
Color—multicolored
Texture—variable; commonly sandy clay loam, clay loam, sandy loam, fine sandy loam, loam, or sandy clay saprolite

Wickham Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Parent material: Old alluvium
Landform: River and stream valleys of the Piedmont
Landscape position: High stream terraces
Slope range: 2 to 8 percent
Taxonomic class: Fine-loamy, mixed, thermic Typic Hapludults

Typical Pedon

Wickham fine sandy loam, 2 to 8 percent slopes; 4 miles west of Mount Vernon on Secondary Road 1003 (Cool Springs Road), 2.5 miles north on Secondary Road 1979 to Scotch Irish Plantation, 1,250 feet northeast of the house, in a pasture; Cool Springs USGS topographic quadrangle; lat. 35 degrees 51 minutes 14 seconds N. and long. 80 degrees 40 minutes 17 seconds W.

Ap—0 to 8 inches; reddish brown (5YR 4/4) fine sandy loam; moderate medium granular structure; friable; many fine roots; slightly acid; clear smooth boundary.
Bt1—8 to 24 inches; yellowish red (5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; many fine roots; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.
Bt2—24 to 34 inches; yellowish red (5YR 4/8) clay loam; few medium distinct brownish yellow (10YR 6/6) mottles; weak medium subangular blocky structure; friable; many fine roots; few faint clay films on faces of peds; moderately acid; gradual wavy boundary.
Bt3—34 to 42 inches; strong brown (7.5YR 5/6) sandy clay loam; common medium distinct brownish yellow (10YR 6/6) and common fine distinct red (2.5YR 4/8)

mottles; weak medium subangular blocky structure; friable; few fine roots; few fine pores; few faint clay films on faces of peds; moderately acid; gradual wavy boundary.

BC—42 to 50 inches; yellowish red (5YR 5/6) sandy clay loam; common medium distinct brownish yellow (10YR 6/6) and red (2.5YR 4/8) mottles; weak fine subangular blocky structure; friable; moderately acid; gradual wavy boundary.

C—50 to 70 inches; multicolored sandy loam; massive; friable; slightly brittle; strongly acid.

Range in Characteristics

Thickness of solum: 36 to more than 60 inches
Depth to bedrock: More than 60 inches
Mica flakes: None to common throughout the profile
Rock fragments: 0 to 15 percent, by volume, throughout the profile; mostly gravel
Reaction: Very strongly acid to moderately acid throughout the profile except where the surface layer has been limed

A or Ap horizon:
Color—hue of 5YR to 10YR, value of 4 to 6, and chroma of 2 to 8
Texture—fine sandy loam

E horizon (if it occurs):
Color—hue of 7.5YR or 2.5Y, value of 4 to 6, and chroma of 2 to 6
Texture—fine sandy loam, sandy loam, loam, loamy fine sand, or loamy sand

BA or BE horizon (if it occurs):
Color—hue of 2.5YR or 7.5YR, value of 4 to 6, and chroma of 6 or 8
Texture—sandy loam, fine sandy loam, or loam

Bt horizon:
Color—hue of 2.5YR to 7.5YR, value of 4 to 6, and chroma of 4 to 8
Mottles—shades of yellow, red, or brown; in the lower part of horizon in some pedons
Texture—dominantly sandy clay loam, clay loam, loam, or sandy loam; thin layers of sandy clay or clay in some pedons

BC horizon:
Color—hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 3 to 8
Mottles—shades of yellow, red, or brown; in most pedons
Texture—sandy loam, fine sandy loam, loam, sandy clay loam, or clay loam

C horizon:
Color—horizon has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 3 to 8 or is mottled in these colors
Texture—variable; commonly loam, sandy loam, or sandy clay loam

Zion Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow or moderately slow
Parent material: Residuum weathered from mafic or intermediate igneous or metamorphic rock
Landform: Piedmont uplands
Landscape position: Ridges and side slopes

Slope range: 2 to 15 percent
Taxonomic class: Fine, mixed, thermic Ultic Hapludalfs

Typical Pedon

Zion sandy loam in an area of Zion-Enon complex, 2 to 8 percent slopes; one block north of North Rowan High School in Spencer on Oakwood Drive, two blocks west of Pinecroft Drive, 80 feet northeast of the street, in an area of pine forest; Salisbury USGS topographic quadrangle; lat. 35 degrees 42 minutes 00 seconds N. and long. 80 degrees 25 minutes 50 seconds W.

Ap—0 to 6 inches; brown (10YR 4/3) sandy loam; moderate medium granular structure; friable; many fine roots; few fine manganese concretions; moderately acid; clear smooth boundary.

BA—6 to 9 inches; yellowish brown (10YR 5/4) silty clay loam; weak fine subangular blocky structure; friable; many fine roots; few fine feldspar crystals; few fine manganese concretions; moderately acid; abrupt smooth boundary.

Bt1—9 to 15 inches; brown (7.5YR 5/4) clay; moderate medium subangular blocky structure; very firm; very sticky and very plastic; many fine roots; many distinct clay films on faces of peds; few fine feldspar crystals; common fine manganese concretions; moderately acid; gradual smooth boundary.

Bt2—15 to 19 inches; yellowish brown (10YR 5/4) clay; weak medium subangular blocky structure; very firm; very sticky and very plastic; common fine roots; common distinct clay films on faces of peds; few fine feldspar crystals; many fine manganese concretions; slightly acid; gradual wavy boundary.

BC—19 to 23 inches; dark yellowish brown (10YR 4/4) clay; weak fine subangular blocky structure; very firm; common fine roots; many black minerals; many prominent pockets of gray and green saprolite; few fine manganese concretions; 5 percent gravel; neutral; gradual wavy boundary.

C—23 to 31 inches; multicolored loam saprolite; massive; friable; 5 percent gravel; neutral; gradual wavy boundary.

Cr—31 to 38 inches; weathered, partially consolidated mafic rock that can be dug with difficulty with a spade; diffuse wavy boundary.

R—38 inches; unweathered mafic rock.

Range in Characteristics

Thickness of solum: 20 to 40 inches
Depth to bedrock: 20 to 40 inches to hard bedrock
Concretions: Few to many in the A, B, BC, and C horizons; mostly manganese
Rock fragments: 0 to 35 percent, by volume, in the A, E, BA, and BE horizons, 0 to 15 percent in the Bt horizon, and 5 to 40 percent in the BC and C horizons; mostly gravel
Reaction: Very strongly acid to moderately acid in the A and E horizons and the upper part of the B horizon except where the surface layer has been limed; strongly acid to neutral in the lower part of the B horizon and in the C horizon

A or Ap horizon:
Color—hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4
Texture (fine-earth fraction)—sandy loam

E horizon (if it occurs):
Color—hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam, loam, or silt loam

BA or BE horizon (if it occurs):
Color—hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8
Texture (fine-earth fraction)—silty clay loam, loam, silt loam, or clay loam

Bt horizon:

Color—horizon has hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8 or is multicolored

Mottles (if they occur)—yellow or brown

Texture—clay, clay loam, or silty clay

BC horizon:

Color—horizon has hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8 or is multicolored

Mottles (if they occur)—shades of yellow or brown

Texture (fine-earth fraction)—clay loam, sandy clay loam, clay, or loam

C horizon:

Color—multicolored in shades of yellow, brown, or red

Texture (fine-earth fraction)—loamy saprolite

Cr layer:

Type of bedrock—weathered, partially consolidated mafic or intermediate igneous and high-grade metamorphic rock that can be dug with difficulty with hand tools

R layer:

Type of bedrock—unweathered mafic or intermediate igneous and high-grade metamorphic rock

Formation of the Soils

This section describes the factors of soil formation as they relate to the soils in Rowan County and explains the major processes of soil horizon development.

Factors of Soil Formation

Soils are formed by processes of the environment acting upon geologic materials, such as metamorphic, igneous, and sedimentary rocks and fluvial stream sediments. The characteristics of a soil are determined by the combined influence of parent material, climate, plant and animal life, relief, and time. These five factors are responsible for profile development and the chemical properties that differentiate soils *(4)*.

Parent Material

Parent material 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 this development. In Rowan County, parent material is a major factor in determining what kind of soil forms and can be correlated to some degree to geologic formations. The general soil map can be used as an approximate guide to the geology of the county.

The general soil map units and the geologic material of their parent material are as follows:

The soils of the Cecil-Pacolet and Pacolet general soil map units formed in materials weathered from felsic metamorphic and igneous rocks (such as granite, biotite gneiss, and biotite schist).

The soils of the Ashlar-Vance-Rion-Wedowee general soil map unit formed in materials weathered from felsic metamorphic and igneous rocks (such as porphyritic granite and other coarse grained rocks).

The soils of the Hiwassee-Cecil, Cecil-Vance-Enon, and Hiwassee-Mecklenburg general soil map units formed generally in materials weathered from mixed felsic, intermediate, and mafic igneous and metamorphic rocks (including granites, biotite gneiss, hornblende gneiss, diorite, and schists and in old alluvium in a few places).

The soils of the Enon-Mecklenburg-Poindexter general soil map unit formed in materials weathered from mafic and intermediate igneous and metamorphic rocks (such as diorite, gabbro, hornblende gneiss, and schist).

The soils of the Badin-Uwharrie-Tatum, Cid-Badin-Misenheimer, and Badin-Goldston general soil map units formed in materials weathered from argillite and other fine grained rocks of the Carolina Slate Belt.

Parent material is largely responsible for the chemical and mineralogical composition of soils and for the major differences among the soils of the county. Major differences in parent material, such as differences in texture, can be observed in the field. Less distinct differences, such as differences in mineralogical composition, can be determined only by careful laboratory analysis.

Climate

Climate, particularly precipitation and temperature, affects the physical, chemical, and biological relationships in the soil. It influences the rates at which rocks weather and organic matter decomposes. The amount of leaching in a soil is related to the amount of rainfall and the movement of water through the soil. The effects of climate also control the kinds of plants and animals living in and on a soil. Temperature influences the kind and growth of organisms and the speed of chemical and physical reactions in the soil.

Rowan County has a warm, humid climate. It is located on a moderate plateau ranging in elevation from about 560 to 1,100 feet. The climate favors rapid chemical processes, which result in the decomposition of organic matter and the weathering of rocks.

The effects of climate are reflected in the soils of Rowan County. Mild temperatures throughout the year and abundant rainfall have resulted in the depletion of organic matter and considerable leaching of soluble bases and oxidizing. Because variations in the climate are small, climate has probably not caused major local differences among soils. Climate has mainly affected the formation of soils in Rowan County by altering the parent material through changes in temperature and in the amount of precipitation and through influences on plant and animal life.

Plant and Animal Life

Plants and animals influence the formation and differentiation of soil horizons. The type and number of organisms in and on the soil are determined in part by climate and in part by the nature of the soil material, relief, and the age of the soil. Bacteria, fungi, and other micro-organisms aid in the weathering of rocks and in the decomposition of organic matter. The plants and animals that live on a soil are the primary source of organic material.

Plants largely determine the kinds and amounts of organic matter that are added to a soil under normal conditions and the way in which the organic matter is added. They also are important for the changes of base status and in the leaching process of a soil.

Animals convert complex compounds into simpler forms, add organic matter to the soil, and modify certain chemical and physical properties of the soil. In Rowan County most of the organic material accumulates on the surface. It is acted upon by micro-organisms, fungi, earthworms, and other forms of life and by direct chemical reaction. It is mixed with the uppermost mineral part of the soil by the activities of earthworms and other small invertebrates. Rodents have not significantly affected the formation of soils in the county.

Under the native forest of the survey area, not enough bases were brought to the surface by plants to counteract the effects of leaching. Generally, the soils of Rowan County developed under a hardwood forest. Trees took up elements from the subsoil and added organic matter to the soil by depositing leaves, roots, twigs, and other plant remains on the surface. The material deposited on the surface was acted upon by organisms and underwent chemical reaction.

Organic material decomposes rapidly in the county because of the moderate temperatures, the abundant moisture supply, and the character of the organic material. It decays so rapidly that little of it accumulates in the soil.

Relief

Relief causes differences in internal drainage, surface runoff, soil temperature, and the extent of geologic erosion. Relief in Rowan County is primarily determined by the

kind of underlying bedrock, the geology of the area, and the extent that the landscape is dissected by streams.

Relief affects the movement of water through the profile, which is important in soil formation because it aids chemical reactions and is necessary for leaching.

Slopes in the county range from 0 to 45 percent. In the uplands, where slopes are less than 8 percent, the soils generally have deeper, better defined profiles than the steeper soils. Examples are the well developed Appling, Cecil, and Hiwassee soils. Relief affects the depth of soils. On some soils that have slopes of 15 percent, geologic erosion removes soil material almost as fast as it forms. As a result, most of the strongly sloping to steep soils have a thin solum. Examples are Mocksville and Pacolet soils, which are not as deep to saprolite or as well developed as the less sloping soils.

Drainage also can be affected by relief. For example, a high water table is commonly associated with nearly level or gently sloping relief. Helena, Iredell, and Sedgefield soils on uplands are moderately well drained or somewhat poorly drained because they are gently sloping and have a slow rate of internal water movement.

Soils at the lower elevations are less sloping and receive runoff from the adjacent higher areas. The runoff tends to accumulate in the nearly level to slightly concave areas. Examples are the moderately well drained Dogue soils and somewhat poorly drained Wahee soils on stream terraces and the somewhat poorly drained Chewacla soils and poorly drained Armenia soils on flood plains.

Time

The length of time that soil material has been exposed to the soil-forming processes accounts for some differences between soils. The formation of a well defined profile, however, also depends on other factors. Less time is required for a profile to develop in coarse textured material than in similar but finer textured material in the same environment. Less time is required for a profile to develop in a warm, humid area where the plant cover is dense, as in Rowan County, than in a cold, dry area where the plant cover is sparse.

Soils vary considerably in age. The length of time that a soil has been forming is generally reflected in the profile. Old soils generally have better defined horizons than young soils. In Rowan County, the effects of time as a soil-forming factor are more apparent in the older soils, such as Cecil and Hiwassee soils, which are on the broader parts of the uplands. These soils have well defined horizons. In contrast, young soils, such as Chewacla soils, formed in recent alluvium on flood plains. They have not been in place long enough to develop as completely as Cecil and Hiwassee soils.

Processes of Horizon Differentiation

One or more soil-forming processes are involved in the formation of a succession of layers, or horizons, in a soil. These processes are the accumulation of organic matter; the leaching of carbonates and other soluble material; the chemical weathering, mainly by hydrolysis, of primary minerals into silicate clay minerals; the translocation of silicate clay and some silt-sized particles from one horizon to another; and the reduction and transfer of iron.

These processes have been active in the formation of most of the soils in Rowan County. The interaction of the first four processes is indicated by the strongly expressed horizons in Appling soils. All five processes have probably been active in the formation of the moderately well drained Helena soils.

Some organic matter has accumulated in all of the soils in the survey area. Most of the soils contain low amounts of organic matter in the surface layer.

Most of the soils in the survey area are acid in the upper layers unless the surface has been limed mainly because of the low content of carbonates in the parent material and because of the leaching of carbonates. Cecil and Pacolet soils are examples.

Some of the soils in the survey area have basic reaction in the layers at or near the surface. These soils formed from parent material that has a high content of carbonates. Examples are Enon and Iredell soils.

The translocation of clay minerals is an important process in the development of many soils in the survey area. As clay minerals are removed from the A horizon, they accumulate as clay films on the faces of peds, in pores, and in root channels in the B horizon.

As silicate clay forms from primary minerals, some iron is commonly released as hydrated oxides. These oxides are generally red. Even if they occur in small amounts, they give the soil material a brownish color. They are largely responsible for the strong brown, yellowish brown, reddish brown, red, or dark red colors that are dominant in the subsoil of many soils in the survey area.

The reduction and transfer of iron have occurred in all of the soils that are not characterized by good natural drainage. This process, known as gleying, is evidenced by a gray matrix color and by iron or clay depletions. Some of the iron may be reoxidized and segregated and thus form yellow, brown, red, or other brightly colored masses of iron accumulation in an essentially gray matrix in the subsoil. Nodules or concretions of iron or manganese commonly also form as a result of this process. Soil features associated with chemically reduced iron are referred to as redoximorphic features *(16)*. Gleying has occurred in Armenia, Helena, Sedgefield, and Wahee soils.

References

(1) American Association of State Highway and Transportation Officials. 1986. Standard specifications for highway materials and methods of sampling and testing. Ed. 14, 2 vols.

(2) American Society for Testing and Materials. 1993. Standard classification of soils for engineering purposes. ASTM Stand. D 2487.

(3) Beck, Donald E. 1962. Yellow-poplar site index curves. U.S. Dep. Agric., Forest Serv., Southeast. Forest Exp. Stn. Res. Note 180.

(4) Buol, S.W., F.D. Hole, and R.J. McCracken. 1980. Soil genesis and classification. 3d. ed.

(5) Coile, T.S., and F.X. Schumacher. 1953. Site index of young stands of loblolly and shortleaf pines in the Piedmont Plateau Region. J. For. 51: 432-435.

(6) North Carolina Agricultural Statistics. 1994. North Carolina agricultural statistics. N.C. Dep. Agric. and U.S. Dep. Agric., no. 178, pp. 84.

(7) United States Department of Agriculture. 1915. Soil survey of Rowan County, North Carolina.

(8) United States Department of Agriculture, Forest Service. 1991. Forest statistics for North Carolina, 1990. Southeast. Forest Exp. Stn. Resour. Bull. SE-120.

(9) United States Department of Agriculture, Natural Resources Conservation Service. 1996. Soil survey laboratory methods manual. Soil Surv. Invest. Rep. 42.

(10) United States Department of Agriculture, Soil Conservation Service. National soil survey handbook. Soil Surv. Staff. (Available in the State Office of the Natural Resources Conservation Service at Raleigh, North Carolina)

(11) United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Dep. Agric. Handb. 210.

(12) United States Department of Agriculture, Soil Conservation Service. 1975. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. U.S. Dep. Agric. Handb. 436.

(13) United States Department of Agriculture, Soil Conservation Service. 1993. Soil survey manual. Soil Surv. Staff, U.S. Dep. Agric. Handb. 18.

(14) United States Department of Agriculture, Soil Conservation Service. 1994. Keys to soil taxonomy. 6th ed. Soil Surv. Staff, Soil Manage. Support Serv. Tech Monogr. 19.

(15) United States Department of Commerce, Bureau of the Census. 1994. Estimate of resident population of states and counties, 1990-92. PPL-3.

(16) Vepraskas, Michael J. 1992. Redoximorphic features for identifying aquic conditions. N.C. State Univ., N.C. Agric. Res. Serv. Bull. 301.

Glossary

Access road. A road constructed to facilitate the use and management of the land. Access roads are designed for limited traffic and typically consist of a cut slope, a roadbed, and a fill outslope.

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.

Amphibolite. A metamorphic rock consisting mainly of amphibole and plagioclase and having little or no quartz. As the content of quartz increases, the rock grades into hornblende plagioclase gneiss.

Andesite. A fine grained igneous rock that has no quartz or orthoclase. It is composed of about 75 percent plagioclase feldspars with the balance being ferromagnesian silicates. Andesite is important as lavas and is possibly formed by fractional crystallization from basaltic magma.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Aquifer. A water-bearing bed or stratum of permeable rock, sand, or gravel capable of fielding considerable quantities of water to wells or springs.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

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 the soil passes from a plastic to a liquid state, and the plasticity index (PI), 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

Basal area. The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

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 material. Soil material that is, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

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.

Clod. See Aggregate, soil.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Coarse-loamy. According to family level criteria in the soil taxonomic system, soil containing less than 18 percent, by weight, clay and 15 percent or more fine sand or coarser material.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that is 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material is 35 to 60 percent of these rock fragments, and extremely cobbly soil material is more than 60 percent.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane that typically takes the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of

iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crust. A thin, hard layer of soil material that forms on the surface of cultivated areas as the result of fine soil material settling out of ponding.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Dbh (diameter at breast height). The diameter of a tree at 4.5 feet above the ground level on the uphill side.

Delineation. The process of drawing or plotting features on a map with lines and symbols.

Denitrification. The biochemical reduction of nitrate or nitrite to gaseous nitrogen either as molecular nitrogen or as an oxide of nitrogen.

Depression (depressional area). A portion of land surrounded on all sides by higher land. These areas generally do not have outlets for drainage.

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, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Diabase. A rock of basaltic composition consisting primarily of labradorite and pyroxene and characterized by ophitic texture.

Dike. A long, narrow, crosscutting mass of igneous rock that extends to or crops out on the land surface.

Diorite. A coarse grained igneous rock that has 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 wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained.* These classes are defined in the "Soil Survey Manual."

Drainage, surface. Runoff, or surface flow of water, from an area.

Drainageway. A narrow, gently sloping to very steep, concave colluvial area along an intermittent or perennial stream.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Eroded (soil phase). Because of erosion, these soils have lost an average of 25 to 75 percent of the original A horizon or the uppermost 2 to 6 inches if the original A horizon was less than 8 inches thick.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

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 cultivated 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. A term 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 metric tons per hectare (values determined by the Universal Soil Loss Equation assuming bare soil conditions and using rainfall and climate factors for North Carolina):

0 tons per hectare	none
Less than 2.5 tons per hectare	slight
2.5 to 10 tons per hectare	moderate
10 to 25 tons per hectare	severe
More than 25 tons per hectare	very severe

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Felsic rock. A general term for light-colored igneous rock and some metamorphic crystalline rock that have an abundance of quartz, feldspars, feldspathoids, and muscovite mica.

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.

Field border. A strip of perennial vegetation (trees, shrubs, or herbaceous plants) established on the edge of a field to control erosion, provide travel lanes for farm machinery, control competition from adjacent woodland, or provide food and cover for wildlife.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine-loamy. According to family level criteria in the soil taxonomic system, soil containing 18 to 35 percent, by weight, clay and 15 percent or more fine sand or coarser material.

Fine textured soil. Sandy clay, silty clay, or clay.

Flat. A general term for a level or nearly level surface or small area of land marked by little or no relief.

Flooding. The temporary covering of the soil 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 that flooding is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year). *Occasional* means that flooding occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year). *Frequent* means that flooding occurs often under normal weather conditions (the chance of flooding is more than 50 percent in any year). 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.

Foot slope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

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.

Geomorphic surface. A part of the surface of the land that represents an episode of landscape development and consists of one or more landforms. It is a mappable part of the land surface that is defined in terms of morphology (relief, slope, aspect, etc.); origin (erosional, constructional, etc.); age (absolute or relative); and stability of component landforms.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Gneiss. A coarse grained metamorphic rock in which bands rich in granular minerals alternate with bands that are dominantly schistose minerals. It is commonly formed by the metamorphism of granite.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

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.

Granodiorite. A plutonic rock roughly intermediate in composition between granite and diorite.

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 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A very small 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.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

High-grade metamorphic rocks. Highly metamorphosed rocks, such as gneiss and schist.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

High stream terrace. A terrace, commonly 20 feet or higher in elevation than the adjacent flood plain, that is no longer subject to flooding.

High water table (seasonal). 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.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Hornblende. A rock-forming ferromagnesian silicate mineral of the amphibole group.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Intermediate rock. Igneous or metamorphic crystalline rock that is intermediate in composition between mafic and felsic rock.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation include:

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Kaolinite. An aluminosilicate clay mineral with a 1:1 layer structure; that is, a silicon tetrahedral sheet alternating with an aluminum octahedral sheet. Little or no expansion occurs when water mixes with the clay.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Landform. The description of a given terrain based on position and configuration. Examples are flood plain, stream terrace, fan, mountain slope, and ridge.

Landform position. A particular place within a landform. Examples are summit of a ridge, shoulder of a ridge, nose slope, side slope, back slope, and foot slope.

Landscape. A collection of related, natural landforms; generally, the land surface that can be seen in a single view.

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 taxonomic 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-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Low stream terrace. A terrace in an area that floods, commonly 3 to 10 feet higher in elevation than the adjacent flood plain.

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.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Mean annual increment. The average yearly volume of a stand of trees from the year of origin to the age under consideration.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

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.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Montmorillonite. An aluminosilicate clay mineral with 2:1 layer structure; that is, two silicon tetrahedral sheets enclosing an aluminum octahedral sheet. Considerable expansion may occur when water mixes with the clay.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mudstone. Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

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. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and flooding.

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). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Porphyritic. A textural term for igneous rocks in which larger crystals, called phenocrysts, are set in a finer groundmass. The groundmass may be crystalline or glassy, or both.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

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:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5

Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

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.

Ridge. A long, narrow elevation of the land surface, usually having a sharp crest and steep sides.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Rippable. Rippable bedrock or hardpan can be excavated using a single-tooth ripping attachment mounted on a tractor with a 200-300 drawbar horsepower rating.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

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 and nearly level soils in depressions. The water 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 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.

Saddle. A localized concave dip in a main ridge where intermittent drainage starts to form on the adjacent side slope.

Sand. As a soil separate, individual rock or mineral fragments ranging 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. Unconsolidated residual material underlying the genetically developed soil and grading to bedrock below.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Schist. A metamorphic rock dominated by fibrous or platy minerals. It has schistose cleavage and is a product of regional metamorphism.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Side slope. The landscape position that is just below the shoulder and just above the toe slope, occupying most of the mountainside or hillside.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height

attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Skeletans. Coatings of light-colored, low luster silica flour or silica dust adhering to the natural surfaces in soil materials.

Skidding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most systems involve pulling the trees with wire cables attached to a bulldozer or rubber-tired tractor. Generally, felled trees are skidded or pulled with one end lifted to reduce friction and soil disturbance.

Skid trails. The paths left from skidding logs and the bulldozer or tractor used to pull them.

Slate. A fine grained metamorphic rock that has well developed slaty cleavage. It is 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, classes for simple slopes are as follows:

Nearly level	0 to 3 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.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

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. 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. Soil map units are generally designed to reflect significant differences in use and management among the soils of a survey area.

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 material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Specialty crop. Crops, such as strawberries and tomatoes, that require intensive management and a specific combination of soils and climate.

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 grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from soil blowing and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Suitability ratings. Ratings for the degree of suitability of soils for pasture, crops, woodland, and engineering uses. The ratings and the general criteria used for their selection are as follows:

Well suited.—The intended use may be initiated and maintained by using only the standard materials and methods typically required for that use. Good results can be expected.

Suited.—The limitations affecting the intended use make special planning, design, or maintenance necessary.

Poorly suited.—The intended use is difficult or costly to initiate and maintain because of certain soil properties, such as steep slopes, a severe hazard of erosion, a high water table, low fertility, and a hazard of flooding. Major soil reclamation, special design, or intensive management practices are needed.

Unsuited.—The intended use is very difficult or costly to initiate and maintain, and thus it generally should not be undertaken.

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. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water

soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine." 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 percent or more and the percentage of silt plus $1^1/_2$ 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, the content of sand is 85 to 90 percent and the percentage of silt plus $1^1/_2$ times the percentage of clay is not less than 15 and, 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 percent or more 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 percent or more 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 percent or more 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 percent or more clay and 45 percent or more sand.

Silty clay.—Soil material that contains 40 percent or more clay and 40 percent or more silt.

Clay.—Soil material that contains 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

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. 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.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wetness. A general term applied to soils that hold water at or near the surface long enough to be a common management problem.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1900-93 at Salisbury, North Carolina)

Month	Temperature						Precipitation			
				2 years in 10 will have--				2 years in 10 will have--		
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more
	o F	o F	o F	o F	o F	Units	In	In	In	
January-----	51.5	30.5	41.0	74	6	135	3.71	2.08	5.15	6
February----	54.4	31.7	43.0	76	10	151	3.92	2.26	5.39	6
March-------	63.0	38.7	50.9	84	17	350	4.31	2.67	5.80	7
April-------	72.6	46.9	59.7	91	27	581	3.62	2.16	4.92	6
May---------	80.7	55.7	68.2	95	36	860	3.91	2.00	5.58	6
June--------	87.3	63.7	75.5	100	47	1,045	4.18	2.17	5.95	6
July--------	90.0	67.4	78.7	101	54	1,163	4.81	2.70	6.69	7
August------	88.7	66.2	77.4	100	52	1,120	4.41	2.14	6.37	6
September---	83.2	60.2	71.7	97	41	924	3.55	1.41	5.42	4
October-----	73.4	47.8	60.6	90	27	618	3.16	1.13	5.04	4
November----	62.4	37.9	50.1	81	17	303	2.75	1.24	4.15	4
December----	52.6	31.3	42.0	73	9	143	3.76	2.08	5.24	6
Yearly:										
Average---	71.6	48.2	59.9	---	---	---	---	---	---	---
Extreme---	105	-11	---	102	4	---	---	---	---	---
Total-----	---	---	---	---	---	7,394	46.09	38.38	52.36	68

* 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 (40 degrees F).

Table 2.--Freeze Dates in Spring and Fall

(Recorded in the period 1900-93 at Salisbury, 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. 28	Apr. 11	Apr. 24
2 years in 10 later than--	Mar. 22	Apr. 5	Apr. 18
5 years in 10 later than--	Mar. 8	Mar. 24	Apr. 8
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 30	Oct. 23	Oct. 12
2 years in 10 earlier than--	Nov. 5	Oct. 28	Oct. 17
5 years in 10 earlier than--	Nov. 17	Nov. 7	Oct. 27

Table 3.--Growing Season

(Recorded in the period 1900-93 at Salisbury, 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	218	199	178
8 years in 10	227	208	186
5 years in 10	243	223	200
2 years in 10	260	239	214
1 year in 10	269	248	221

Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
ApB	Appling sandy loam, 1 to 6 percent slopes	3,597	1.1
ArA	Armenia loam, 0 to 2 percent slopes, frequently flooded	833	0.2
AsB	Ashlar-Rock outcrop complex, 2 to 8 percent slopes	2,159	0.6
AsC	Ashlar-Rock outcrop complex, 8 to 15 percent slopes	688	0.2
AsD	Ashlar-Rock outcrop complex, 15 to 25 percent slopes	141	*
BaB	Badin channery silt loam, 2 to 8 percent slopes	3,960	1.2
BaC	Badin channery silt loam, 8 to 15 percent slopes	1,374	0.4
BaD	Badin channery silt loam, 15 to 30 percent slopes	210	0.1
BgB	Badin-Goldston complex, 2 to 8 percent slopes	1,914	0.6
BgC	Badin-Goldston complex, 8 to 15 percent slopes	783	0.2
CcB	Cecil sandy loam, 2 to 8 percent slopes	2,628	0.8
CcC	Cecil sandy loam, 8 to 15 percent slopes	1,898	0.6
CeB2	Cecil sandy clay loam, 2 to 8 percent slopes, eroded	57,952	17.3
CeC2	Cecil sandy clay loam, 8 to 15 percent slopes, eroded	12,048	3.6
CfB	Cecil-Urban land complex, 2 to 8 percent slopes	3,173	0.9
ChA	Chewacla loam, 0 to 2 percent slopes, frequently flooded	25,138	7.5
CmB	Cid-Lignum complex, 1 to 6 percent slopes	6,764	2.0
DoA	Dogue fine sandy loam, 0 to 2 percent slopes, rarely flooded	499	0.1
DoB	Dogue fine sandy loam, 2 to 6 percent slopes, rarely flooded	1,043	0.3
EnB	Enon fine sandy loam, 2 to 8 percent slopes	19,766	5.9
EnC	Enon fine sandy loam, 8 to 15 percent slopes	8,582	2.6
EsC	Enon very cobbly loam, 4 to 15 percent slopes, very stony	523	0.2
EsD	Enon very cobbly loam, 15 to 25 percent slopes, very stony	166	*
EuB	Enon-Urban land complex, 2 to 10 percent slopes	2,061	0.6
HeB	Helena sandy loam, 1 to 6 percent slopes	4,238	1.3
HsD	Hiwassee loam, 15 to 25 percent slopes	652	0.2
HwB2	Hiwassee clay loam, 2 to 8 percent slopes, eroded	18,943	5.7
HwC2	Hiwassee clay loam, 8 to 15 percent slopes, eroded	2,830	0.8
IrB	Iredell loam, 1 to 8 percent slopes	702	0.2
KcB	Kirksey-Cid complex, 2 to 6 percent slopes	382	0.1
LgA	Lignum silt loam, 0 to 3 percent slopes	415	0.1
MbB	Mecklenburg loam, 2 to 8 percent slopes	2,003	0.6
MbC	Mecklenburg loam, 8 to 15 percent slopes	681	0.2
MeB2	Mecklenburg clay loam, 2 to 8 percent slopes, eroded	11,849	3.5
MeC2	Mecklenburg clay loam, 8 to 15 percent slopes, eroded	4,544	1.4
MkB	Misenheimer-Kirksey complex, 0 to 5 percent slopes	3,082	0.9
OkA	Oakboro silt loam, 0 to 2 percent slopes, frequently flooded	1,420	0.4
PaB	Pacolet sandy loam, 2 to 8 percent slopes	554	0.2
PaC	Pacolet sandy loam, 8 to 15 percent slopes	861	0.3
PaD	Pacolet sandy loam, 15 to 25 percent slopes	12,688	3.8
PaE	Pacolet sandy loam, 25 to 45 percent slopes	862	0.3
PcB2	Pacolet sandy clay loam, 2 to 8 percent slopes, eroded	18,936	5.7
PcC2	Pacolet sandy clay loam, 8 to 15 percent slopes, eroded	17,508	5.2
Pt	Pits, quarries	219	0.1
PxB	Poindexter-Mocksville complex, 2 to 8 percent slopes	913	0.3
PxC	Poindexter-Mocksville complex, 8 to 15 percent slopes	3,266	1.0
PxD	Poindexter-Mocksville complex, 15 to 25 percent slopes	7,205	2.2
PxE	Poindexter-Mocksville complex, 25 to 45 percent slopes	678	0.2
RnB	Rion-Wedowee complex, 2 to 8 percent slopes	4,443	1.3
RnC	Rion-Wedowee complex, 8 to 15 percent slopes	3,175	0.9
RoB	Rion-Wedowee-Ashlar complex, 2 to 8 percent slopes	4,273	1.3
RoC	Rion-Wedowee-Ashlar complex, 8 to 15 percent slopes	1,028	0.3
RvA	Riverview loam, 0 to 2 percent slopes, occasionally flooded	436	0.1
SaB	Saw-Pacolet complex, 2 to 8 percent slopes	844	0.3
SaC	Saw-Pacolet complex, 8 to 15 percent slopes	651	0.2
ScB2	Saw-Pacolet complex, 2 to 8 percent slopes, eroded	620	0.2
SeB	Sedgefield fine sandy loam, 1 to 6 percent slopes	3,061	0.9
TaB	Tatum-Badin complex, 2 to 8 percent slopes	1,279	0.4
TaC	Tatum-Badin complex, 8 to 15 percent slopes	446	0.1
TbB2	Tatum-Badin complex, 2 to 8 percent slopes, eroded	1,134	0.3
Ud	Udorthents, loamy	4,078	1.2

See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
Uf	Urban land	2,644	0.8
UhC	Uwharrie loam, 2 to 15 percent slopes, very stony	164	*
UhE	Uwharrie loam, 15 to 45 percent slopes, very stony	164	*
UrB	Uwharrie silt loam, 2 to 8 percent slopes	488	0.1
UwB2	Uwharrie silty clay loam, 2 to 8 percent slopes, eroded	816	0.2
UwC2	Uwharrie silty clay loam, 8 to 15 percent slopes, eroded	293	0.1
VaB	Vance sandy loam, 2 to 8 percent slopes	9,300	2.8
VaC	Vance sandy loam, 8 to 15 percent slopes	1,754	0.5
VnB2	Vance sandy clay loam, 2 to 8 percent slopes, eroded	4,398	1.3
VnC2	Vance sandy clay loam, 8 to 15 percent slopes, eroded	829	0.2
WaA	Wahee loam, 0 to 2 percent slopes, occasionally flooded	772	0.2
WkB	Wickham fine sandy loam, 2 to 8 percent slopes	622	0.2
ZeB	Zion-Enon complex, 2 to 8 percent slopes	1,558	0.5
ZeC	Zion-Enon complex, 8 to 15 percent slopes	2,942	0.9
	Water	9,381	2.8
	Total	334,924	100.0

* Less than 0.1 percent.

Table 5.--Land Capability and Yields per Acre of Crops and Pasture

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability	Corn	Corn silage	Soybeans	Barley	Wheat	Alfalfa hay	Pasture
		Bu	Tons	Bu	Bu	Bu	Tons	AUM*
ApB---------- Appling	IIe	95	14	35	55	50	5	8.0
ArA---------- Armenia	VIw	---	---	---	---	---	---	6.0
AsB**:								
Ashlar---------	IIIe	55	6	20	25	20	---	3.0
Rock outcrop---	VIIIs	---	---	---	---	---	---	---
AsC**:								
Ashlar---------	IVe	50	5	15	20	15	---	2.0
Rock outcrop---	VIIIs	---	---	---	---	---	---	---
AsD**:								
Ashlar---------	VIe	---	---	---	---	---	---	2.0
Rock outcrop---	VIIIs	---	---	---	---	---	---	---
BaB---------- Badin	IIIe	85	14	25	50	40	---	6.5
BaC---------- Badin	IVe	75	12	20	45	35	---	6.0
BaD---------- Badin	VIe	---	---	---	---	---	---	5.5
BgB:								
Badin----------	IIIe	85	14	25	50	40	---	6.5
Goldston-------	IVs	65	---	20	40	35	---	4.0
BgC:								
Badin----------	IVe	75	12	20	45	35	---	6.0
Goldston-------	IVs	60	---	20	35	30	---	4.0
CcB---------- Cecil	IIe	90	14	35	55	50	5	8.0
CcC---------- Cecil	IVe	80	12	25	50	45	4	7.0
CeB2---------- Cecil	IIIe	80	12	25	50	45	4	7.0
CeC2---------- Cecil	IVe	70	10	20	45	40	4	6.0
CfB**:								
Cecil----------	IIIe	---	---	---	---	---	---	---
Urban land-----	VIIIs	---	---	---	---	---	---	---

See footnotes at end of table.

Table 5.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Soil name and map symbol	Land capability	Corn	Corn silage	Soybeans	Barley	Wheat	Alfalfa hay	Pasture
		Bu	Tons	Bu	Bu	Bu	Tons	AUM*
ChA---------- Chewacla	IVw	80	18	45	---	---	---	9.0
CmB---------- Cid-Lignum	IIe	80	12	30	40	35	---	7.0
DoA---------- Dogue	IIw	120	18	50	70	60	---	9.5
DoB---------- Dogue	IIe	115	16	45	65	55	---	9.5
EnB---------- Enon	IIIe	85	14	30	45	40	---	8.5
EnC---------- Enon	IVe	75	13	25	40	40	---	8.0
EsC---------- Enon	VIs	---	---	---	---	---	---	4.5
EsD---------- Enon	VIIs	---	---	---	---	---	---	---
EuB**:								
Enon----------	IIIe	---	---	---	---	---	---	---
Urban land-----	VIIIs	---	---	---	---	---	---	---
HeB---------- Helena	IIe	80	12	30	45	40	---	7.0
HsD---------- Hiwassee	VIe	---	---	---	---	---	---	8.0
HwB2---------- Hiwassee	IIIe	90	18	35	55	45	6	8.5
HwC2---------- Hiwassee	IVe	80	16	30	50	40	5	7.5
IrB---------- Iredell	IIe	65	12	25	---	---	---	7.0
KcB:								
Kirksey--------	IIe	80	12	30	40	35	---	5.5
Cid----------	IIe	80	12	30	40	35	---	7.0
LgA---------- Lignum	IIw	80	12	30	40	35	---	6.0
MbB---------- Mecklenburg	IIe	90	16	40	55	45	6	6.0
MbC---------- Mecklenburg	IVe	70	14	30	45	35	5	5.0

See footnotes at end of table.

Table 5.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Soil name and map symbol	Land capability	Corn	Corn silage	Soybeans	Barley	Wheat	Alfalfa hay	Pasture
		Bu	Tons	Bu	Bu	Bu	Tons	AUM*
MeB2---------- Mecklenburg	IIIe	70	14	30	45	35	5	5.0
MeC2---------- Mecklenburg	IVe	65	12	25	40	30	4	4.0
MkB:								
Misenheimer----	IIIw	60	12	20	---	30	---	5.0
Kirksey--------	IIe	80	12	30	40	35	---	5.5
OkA---------- Oakboro	IVw	80	15	35	---	---	---	8.0
PaB---------- Pacolet	IIe	90	14	35	55	50	5	7.0
PaC---------- Pacolet	IVe	80	12	30	45	45	4	5.5
PaD---------- Pacolet	VIe	---	---	---	---	---	---	4.5
PaE---------- Pacolet	VIIe	---	---	---	---	---	---	---
PcB2---------- Pacolet	IIIe	80	12	30	45	45	4	6.0
PcC2---------- Pacolet	IVe	75	10	30	40	40	3	4.5
Pt**---------- Pits, quarries	VIIIs	---	---	---	---	---	---	---
PxB:								
Poindexter-----	IIe	60	10	25	50	45	2	5.0
Mocksville-----	IIe	85	10	35	50	45	3	8.5
PxC:								
Poindexter-----	IIIe	50	8	20	45	40	2	5.0
Mocksville-----	IVe	70	10	25	50	45	2	6.0
PxD:								
Poindexter-----	VIe	---	---	---	---	---	---	4.0
Mocksville-----	VIe	---	---	---	---	---	---	5.0
PxE---------- Poindexter- Mocksville	VIIe	---	---	---	---	---	---	---
RnB:								
Rion----------	IIe	80	10	25	45	40	4	7.0
Wedowee--------	IIe	85	14	35	55	50	5	7.0

See footnotes at end of table.

Table 5.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Soil name and map symbol	Land capability	Corn	Corn silage	Soybeans	Barley	Wheat	Alfalfa hay	Pasture
		Bu	Tons	Bu	Bu	Bu	Tons	AUM*
RnC:								
Rion	IVe	70	9	20	40	35	3	5.5
Wedowee	IVe	75	13	25	50	45	4	7.0
RoB:								
Rion	IIe	80	10	25	45	40	4	7.0
Wedowee	IIe	85	14	35	55	50	5	7.0
Ashlar	IIIe	70	8	20	35	30	2	4.0
RoC:								
Rion	IVe	70	9	20	40	35	3	5.5
Wedowee	IVe	75	13	25	50	45	4	7.0
Ashlar	IVe	65	7	15	30	25	2	4.0
RvA Riverview	IIw	130	20	50	---	---	---	10.0
SaB:								
Saw	IIe	75	12	25	50	45	4	5.5
Pacolet	IIe	90	14	35	55	50	5	7.0
SaC:								
Saw	IIIe	70	10	20	45	40	4	5.0
Pacolet	IVe	80	12	30	45	45	4	5.5
ScB2:								
Saw	IIIe	70	10	20	50	40	4	5.0
Pacolet	IIIe	80	12	30	45	45	4	6.0
SeB Sedgefield	IIe	85	16	35	---	---	---	5.5
TaB:								
Tatum	IIe	90	14	30	55	50	5	8.0
Badin	IIIe	85	14	25	50	40	---	6.5
TaC:								
Tatum	IIIe	85	13	30	50	40	5	7.5
Badin	IVe	75	12	20	45	35	---	6.0
TbB2:								
Tatum	IIIe	80	12	25	45	40	4	7.0
Badin	IVe	70	12	20	40	30	---	5.5
Ud** Udorthents, loamy	VIIs	---	---	---	---	---	---	---

See footnotes at end of table.

Table 5.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Soil name and map symbol	Land capability	Corn	Corn silage	Soybeans	Barley	Wheat	Alfalfa hay	Pasture
		Bu	Tons	Bu	Bu	Bu	Tons	AUM*
Uf**---------- Urban land	VIIIs	---	---	---	---	---	---	---
UhC---------- Uwharrie	VIs	---	---	---	---	---	---	---
UhE---------- Uwharrie	VIIs	---	---	---	---	---	---	---
UrB---------- Uwharrie	IIe	90	14	35	55	55	5	8.0
UwB2---------- Uwharrie	IIIe	80	13	30	45	50	4	6.0
UwC2---------- Uwharrie	IVe	65	12	25	40	45	4	5.0
VaB---------- Vance	IIIe	80	12	35	55	50	---	8.0
VaC---------- Vance	IVe	75	10	30	50	45	---	8.0
VnB2---------- Vance	IVe	75	10	30	50	45	---	7.0
VnC2---------- Vance	IVe	70	10	25	45	40	---	6.0
WaA---------- Wahee	IIw	110	18	45	---	---	---	10.0
WkB---------- Wickham	IIe	115	18	50	60	50	6	9.5
ZeB:								
Zion----------	IIIe	60	10	25	50	45	---	6.0
Enon----------	IIIe	85	14	30	45	40	---	8.5
ZeC:								
Zion----------	IVe	50	10	20	45	40	---	5.0
Enon----------	IVe	75	13	25	40	40	---	8.0

* Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

Table 6.--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
ApB	Appling sandy loam, 1 to 6 percent slopes
CcB	Cecil sandy loam, 2 to 8 percent slopes
CeB2	Cecil sandy clay loam, 2 to 8 percent slopes, eroded
ChA	Chewacla loam, 0 to 2 percent slopes, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
DoA	Dogue fine sandy loam, 0 to 2 percent slopes, rarely flooded
DoB	Dogue fine sandy loam, 2 to 6 percent slopes, rarely flooded
EnB	Enon fine sandy loam, 2 to 8 percent slopes
HeB	Helena sandy loam, 1 to 6 percent slopes
HwB2	Hiwassee clay loam, 2 to 8 percent slopes, eroded
MbB	Mecklenburg loam, 2 to 8 percent slopes
MeB2	Mecklenburg clay loam, 2 to 8 percent slopes, eroded
OkA	Oakboro silt loam, 0 to 2 percent slopes, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
PaB	Pacolet sandy loam, 2 to 8 percent slopes
PcB2	Pacolet sandy clay loam, 2 to 8 percent slopes, eroded
RnB	Rion-Wedowee complex, 2 to 8 percent slopes
RvA	Riverview loam, 0 to 2 percent slopes, occasionally flooded
SeB	Sedgefield fine sandy loam, 1 to 6 percent slopes
UrB	Uwharrie silt loam, 2 to 8 percent slopes
UwB2	Uwharrie silty clay loam, 2 to 8 percent slopes, eroded
VaB	Vance sandy loam, 2 to 8 percent slopes
WkB	Wickham fine sandy loam, 2 to 8 percent slopes

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: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Volume*	Trees to plant
ApB---------- Appling	8A	Slight	Slight	Slight	Slight	Loblolly pine-------	84	118	Loblolly pine, white oak.
						Shortleaf pine------	65	99	
						Virginia pine-------	74	114	
						Scarlet oak---------	74	56	
						White oak----------	64	39	
						Yellow-poplar-------	88	86	
						Sweetgum----------	---	---	
						Southern red oak----	---	---	
						Hickory----------	---	---	
ArA---------- Armenia	6W	Slight	Moderate	Moderate	Moderate	Loblolly pine-------	67	88	Loblolly pine, white oak.
						Shortleaf pine------	58	84	
						Post oak----------	44	29	
						White oak----------	47	32	
						Water oak----------	---	---	
						Sweetgum----------	---	---	
AsB**, AsC**:									
Ashlar---------	8S	Slight	Slight	Slight	Moderate	Loblolly pine-------	85	120	Loblolly pine, white oak.
						Shortleaf pine------	70	110	
						Virginia pine-------	70	109	
						Northern red oak----	60	43	
Rock outcrop.									
AsD**:									
Ashlar---------	8R	Moderate	Moderate	Slight	Moderate	Loblolly pine-------	85	120	Loblolly pine, white oak.
						Shortleaf pine------	70	110	
						Virginia pine-------	70	109	
						Northern red oak----	60	43	
Rock outcrop.									
BaB, BaC-------- Badin	8D	Slight	Slight	Slight	Moderate	Loblolly pine-------	80	110	Loblolly pine, white oak.
						Shortleaf pine------	68	106	
						Virginia pine-------	---	---	
						Yellow-poplar-------	---	---	
						White oak----------	63	46	
						Scarlet oak---------	65	48	
						Chestnut oak--------	66	48	
BaD---------- Badin	8R	Moderate	Moderate	Slight	Moderate	Loblolly pine-------	80	110	Loblolly pine, white oak.
						Shortleaf pine------	68	106	
						Virginia pine-------	---	---	
						Yellow-poplar-------	---	---	
						White oak----------	63	46	
						Scarlet oak---------	65	48	
						Chestnut oak--------	66	48	
BgB**, BgC**:									
Badin----------	8D	Slight	Slight	Slight	Moderate	Loblolly pine-------	80	110	Loblolly pine, white oak.
						Shortleaf pine------	68	106	
						Virginia pine-------	---	---	
						Yellow-poplar-------	---	---	
						White oak----------	63	46	
						Scarlet oak---------	65	48	
						Chestnut oak--------	66	48	

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
BgB**, BgC**:									
Goldston	7D	Slight	Slight	Moderate	Severe	Loblolly pine	76	103	Loblolly pine, white oak.
						Shortleaf pine	68	106	
						Southern red oak	66	48	
						White oak	69	51	
						Post oak	---	---	
						Hickory	---	---	
						Virginia pine	---	---	
						Red maple	---	---	
CcB, CcC	8A	Slight	Slight	Slight	Slight	Loblolly pine	83	116	Loblolly pine, white oak.
Cecil						Shortleaf pine	69	108	
						Virginia pine	71	110	
						White oak	79	61	
						Northern red oak	81	63	
						Southern red oak	79	61	
						Post oak	72	54	
						Scarlet oak	81	63	
						Sweetgum	76	70	
						Yellow-poplar	92	93	
CeB2, CeC2	7C	Slight	Moderate	Moderate	Slight	Loblolly pine	72	96	Loblolly pine, white oak.
Cecil						Shortleaf pine	63	93	
						Virginia pine	65	100	
						White oak	64	47	
						Northern red oak	---	---	
ChA	7W	Slight	Moderate	Slight	Moderate	Yellow-poplar	95	98	Yellow-poplar, loblolly pine, sweetgum, American sycamore.
Chewacla						Loblolly pine	95	142	
						Sweetgum	97	128	
						Water oak	80	74	
						Eastern cottonwood	---	---	
						Green ash	---	---	
						Southern red oak	---	---	
						Blackgum	---	---	
						Red maple	---	---	
						Willow oak	---	---	
						American beech	---	---	
						American sycamore	---	---	
CmB**:									
Cid	6W	Slight	Moderate	Slight	Moderate	Loblolly pine	66	86	White oak, loblolly pine.
						Shortleaf pine	56	80	
						White oak	52	36	
						Virginia pine	---	---	
						Southern red oak	---	---	
						Sweetgum	---	---	
						Blackgum	---	---	
						Willow oak	---	---	
						Black oak	---	---	
						Scarlet oak	---	---	
						Post oak	---	---	
						Red maple	---	---	

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
CmB**:									
Lignum	7W	Slight	Slight	Moderate	Slight	Loblolly pine	76	103	Loblolly pine.
						Northern red oak	68	50	
						Virginia pine	74	114	
						Shortleaf pine	66	101	
						Southern red oak	68	50	
						Red maple	---	---	
						Yellow-poplar	---	---	
DoA, DoB	9A	Slight	Moderate	Slight	Slight	Loblolly pine	90	131	Loblolly pine,
Dogue						Southern red oak	80	62	white oak.
						Sweetgum	90	106	
						Yellow-poplar	93	95	
						White oak	80	62	
EnB, EnC	7A	Slight	Slight	Slight	Slight	Loblolly pine	73	98	Loblolly pine,
Enon						Shortleaf pine	63	95	white oak.
						Virginia pine	---	---	
						Northern red oak	---	---	
						Sweetgum	87	98	
						White oak	---	---	
						Yellow-poplar	88	86	
						Hickory	---	---	
EsC	7X	Slight	Moderate	Severe	Slight	Loblolly pine	73	98	Loblolly pine,
Enon						Shortleaf pine	63	95	white oak.
						Virginia pine	---	---	
						Northern red oak	---	---	
						Sweetgum	87	98	
						White oak	---	---	
						Yellow-poplar	88	86	
						Hickory	---	---	
EsD	7X	Moderate	Moderate	Severe	Slight	Loblolly pine	73	98	Loblolly pine,
Enon						Shortleaf pine	63	95	white oak.
						Virginia pine	---	---	
						Northern red oak	---	---	
						Sweetgum	87	98	
						White oak	---	---	
						Yellow-poplar	88	86	
						Hickory	---	---	
HeB	8A	Slight	Slight	Slight	Slight	Loblolly pine	84	118	Loblolly pine,
Helena						Shortleaf pine	66	101	yellow-poplar.
						White oak	---	---	
						Yellow-poplar	---	---	
						Sweetgum	---	---	
						Northern red oak	---	---	
						Southern red oak	---	---	
						Black oak	---	---	
						Hickory	---	---	
						Virginia pine	---	---	
						Willow oak	---	---	
						American elm	---	---	

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
HsD---------- Hiwassee	8R	Moderate	Moderate	Slight	Slight	Loblolly pine-------	85	120	Loblolly pine, white oak.
						Northern red oak----	80	62	
						Shortleaf pine------	75	120	
						Southern red oak----	80	62	
						White oak----------	80	62	
						Yellow-poplar-------	85	81	
HwB2, HwC2------ Hiwassee	7C	Slight	Moderate	Moderate	Slight	Loblolly pine-------	71	95	Loblolly pine, white oak.
						Shortleaf pine------	68	106	
						Northern red oak----	75	58	
						White oak----------	70	52	
						Southern red oak----	75	57	
IrB---------- Iredell	6C	Slight	Moderate	Moderate	Slight	Loblolly pine-------	67	88	Loblolly pine, white oak.
						Shortleaf pine------	58	84	
						Post oak----------	44	29	
						White oak----------	47	32	
KcB**:									
Kirksey--------	6W	Slight	Slight	Slight	Slight	Loblolly pine-------	67	88	Loblolly pine.
						Shortleaf pine------	---	---	
						Southern red oak----	---	---	
						Willow oak----------	---	---	
						Black oak----------	---	---	
						Red maple----------	---	---	
						Blackgum----------	---	---	
						Water oak----------	---	---	
						Yellow-poplar-------	---	---	
Cid----------	6W	Slight	Moderate	Slight	Moderate	Loblolly pine-------	66	86	White oak, loblolly pine.
						Shortleaf pine------	56	80	
						White oak----------	52	36	
						Virginia pine-------	---	---	
						Southern red oak----	---	---	
						Sweetgum----------	---	---	
						Blackgum----------	---	---	
						Willow oak----------	---	---	
						Black oak----------	---	---	
						Scarlet oak---------	---	---	
						Post oak----------	---	---	
						Red maple----------	---	---	
LgA---------- Lignum	7W	Slight	Slight	Moderate	Slight	Loblolly pine-------	76	103	Loblolly pine.
						Northern red oak----	68	50	
						Virginia pine-------	74	114	
						Shortleaf pine------	66	101	
						Southern red oak----	68	50	
						Red maple----------	---	---	
						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
MbB, MbC-------- Mecklenburg	8A	Slight	Slight	Slight	Slight	Loblolly pine-------	79	68	Loblolly pine, white oak.
						Shortleaf pine------	64	97	
						Virginia pine-------	62	95	
						Yellow-poplar-------	97	102	
						Northern red oak----	---	---	
						Sweetgum----------	---	---	
						White oak----------	---	---	
						Hickory----------	---	---	
MeB2, MeC2------ Mecklenburg	6C	Slight	Moderate	Moderate	Slight	Loblolly pine-------	66	86	Loblolly pine, white oak.
						Shortleaf pine------	59	86	
						Northern red oak----	---	---	
						Virginia pine-------	---	---	
						Sweetgum----------	---	---	
						White oak----------	---	---	
						Hickory----------	---	---	
MkB**:									
Misenheimer----	6D	Slight	Moderate	Moderate	Severe	Shortleaf pine------	58	84	Shortleaf pine, white oak.
						White oak----------	59	42	
						Willow oak----------	59	42	
						Sweetgum----------	---	---	
						Red maple----------	---	---	
						Blackgum----------	---	---	
						Hickory----------	---	---	
						Post oak----------	---	---	
						Blackjack oak-------	---	---	
Kirksey--------	6W	Slight	Slight	Slight	Slight	Loblolly pine-------	67	88	Loblolly pine, white oak.
						Shortleaf pine------	---	---	
						Southern red oak----	---	---	
						Willow oak----------	---	---	
						Black oak----------	---	---	
						Red maple----------	---	---	
						Blackgum----------	---	---	
						Water oak----------	---	---	
						Yellow-poplar-------	---	---	
OkA---------- Oakboro	7W	Slight	Moderate	Slight	Slight	Yellow-poplar-------	99	105	Yellow-poplar, sweetgum, American sycamore, loblolly pine.
						Northern red oak----	78	60	
						Shortleaf pine------	79	150	
						Loblolly pine-------	98	149	
						Virginia pine-------	---	---	
						Sweetgum----------	---	---	
						Blackgum----------	---	---	
						Red maple----------	---	---	
						American sycamore---	---	---	
PaB, PaC-------- Pacolet	8A	Slight	Slight	Slight	Slight	Loblolly pine-------	78	107	Loblolly pine, white oak.
						Shortleaf pine------	70	110	
						Yellow-poplar-------	90	90	
						Virginia pine-------	---	---	
						Northern red oak----	---	---	
						Hickory----------	---	---	
						White 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
PaD---------- Pacolet	8R	Moderate	Moderate	Slight	Slight	Loblolly pine-------	78	107	Loblolly pine, white oak.
						Shortleaf pine------	70	110	
						Yellow-poplar-------	90	90	
						Virginia pine-------	---	---	
						Northern red oak----	---	---	
						Hickory----------	---	---	
						White oak----------	---	---	
PaE---------- Pacolet	8R	Severe	Severe	Slight	Slight	Loblolly pine-------	78	107	Loblolly pine, white oak.
						Shortleaf pine------	70	110	
						Yellow-poplar-------	90	90	
						Virginia pine-------	---	---	
						Northern red oak----	---	---	
						Hickory----------	---	---	
						White oak----------	---	---	
PcB2, PcC2------ Pacolet	6C	Slight	Moderate	Moderate	Slight	Loblolly pine-------	70	93	Loblolly pine, white oak.
						Shortleaf pine------	60	88	
						Yellow-poplar-------	80	71	
PxB**, PxC**:									
Poindexter-----	6A	Slight	Slight	Slight	Slight	Loblolly pine-------	70	93	Loblolly pine.
						Shortleaf pine------	60	88	
						Virginia pine-------	65	100	
						Northern red oak----	---	---	
Mocksville-----	8A	Slight	Slight	Slight	Slight	Loblolly pine-------	82	114	Loblolly pine, white oak.
						Virginia pine-------	80	122	
						Shortleaf pine------	78	126	
						Northern red oak----	83	65	
						Black oak----------	---	---	
						Scarlet oak---------	---	---	
						Hickory----------	---	---	
						White oak----------	---	---	
						American beech------	---	---	
						Sweetgum----------	---	---	
						Blackgum----------	---	---	
PxD**:									
Poindexter-----	6R	Moderate	Moderate	Slight	Slight	Loblolly pine-------	70	93	Loblolly pine, white oak.
						Shortleaf pine------	60	88	
						Virginia pine-------	65	100	
						Northern red oak----	---	---	
Mocksville-----	8R	Moderate	Moderate	Slight	Slight	Loblolly pine-------	82	114	Loblolly pine, white oak.
						Virginia pine-------	80	122	
						Shortleaf pine------	78	126	
						Northern red oak----	83	65	
						Black oak----------	---	---	
						Scarlet oak---------	---	---	
						Hickory----------	---	---	
						White oak----------	---	---	
						American beech------	---	---	
						Sweetgum----------	---	---	
						Blackgum----------	---	---	

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
PxE**:									
Poindexter-----	6R	Severe	Severe	Slight	Slight	Loblolly pine-------	70	93	Loblolly pine.
						Shortleaf pine------	60	88	
						Virginia pine-------	65	100	
						Northern red oak----	---	---	
Mocksville-----	8R	Severe	Severe	Slight	Slight	Loblolly pine-------	82	114	Loblolly pine,
						Virginia pine-------	80	122	white oak.
						Shortleaf pine------	78	126	
						Northern red oak----	83	65	
						Black oak----------	---	---	
						Scarlet oak---------	---	---	
						Hickory----------	---	---	
						White oak----------	---	---	
						American beech------	---	---	
						Sweetgum----------	---	---	
						Blackgum----------	---	---	
RnB**, RnC**:									
Rion----------	8A	Slight	Slight	Slight	Slight	Loblolly pine-------	80	110	Loblolly pine,
						Post oak----------	65	48	white oak.
						Shortleaf pine------	70	110	
						Southern red oak----	80	62	
						Sweetgum----------	80	79	
						White oak----------	70	52	
						Yellow-poplar-------	90	90	
						Hickory----------	---	---	
						Northern red oak----	---	---	
Wedowee--------	8A	Slight	Slight	Slight	Slight	Loblolly pine-------	80	110	Loblolly pine,
						Virginia pine-------	70	109	white oak.
						Shortleaf pine------	70	110	
						Southern red oak----	70	52	
						Northern red oak----	70	52	
						White oak----------	65	88	
						Yellow-poplar-------	---	---	
						Hickory----------	---	---	
RoB**, RoC**:									
Rion----------	8A	Slight	Slight	Slight	Slight	Loblolly pine-------	80	110	Loblolly pine,
						Post oak----------	65	48	white oak.
						Shortleaf pine------	70	110	
						Southern red oak----	80	62	
						Sweetgum----------	80	79	
						White oak----------	70	52	
						Yellow-poplar-------	90	90	
						Hickory----------	---	---	
						Northern red oak----	---	---	
Wedowee--------	8A	Slight	Slight	Slight	Slight	Loblolly pine-------	80	110	Loblolly pine,
						Virginia pine-------	70	109	white oak.
						Shortleaf pine------	70	110	
						Southern red oak----	70	52	
						Northern red oak----	70	52	
						White oak----------	65	48	

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
RoB**, RoC**:									
Ashlar	8S	Slight	Slight	Slight	Moderate	Loblolly pine	85	120	Loblolly pine, white oak.
						Shortleaf pine	70	110	
						Virginia pine	70	109	
						Northern red oak	60	43	
						White oak	---	---	
RvA Riverview	11A	Slight	Slight	Slight	Slight	Loblolly pine	100	154	Loblolly pine, yellow-poplar, sweetgum.
						Yellow-poplar	110	124	
						Sweetgum	100	138	
SaB**, SaC**:									
Saw	6D	Slight	Slight	Slight	Moderate	Loblolly pine	70	93	Loblolly pine, white oak.
						Shortleaf pine	---	---	
						Virginia pine	---	---	
						White oak	---	---	
						Northern red oak	---	---	
						Hickory	---	---	
						Post oak	---	---	
Pacolet	8A	Slight	Slight	Slight	Slight	Loblolly pine	78	107	Loblolly pine, white oak.
						Shortleaf pine	70	110	
						Yellow-poplar	90	90	
						Virginia pine	---	---	
						Northern red oak	---	---	
						Hickory	---	---	
						White oak	---	---	
ScB2**:									
Saw	6D	Slight	Moderate	Moderate	Moderate	Loblolly pine	65	85	Loblolly pine, white oak.
						Shortleaf pine	---	---	
						Virginia pine	---	---	
						White oak	---	---	
						Northern red oak	---	---	
						Scarlet oak	---	---	
						Post oak	---	---	
Pacolet	6C	Slight	Moderate	Moderate	Slight	Loblolly pine	70	93	Loblolly pine, white oak.
						Shortleaf pine	60	88	
						Yellow-poplar	80	71	
						White oak	---	---	
SeB Sedgefield	8W	Slight	Moderate	Slight	Slight	Loblolly pine	80	110	Loblolly pine, white oak.
						Shortleaf pine	---	---	
						Virginia pine	---	---	
						Southern red oak	---	---	
						Northern red oak	---	---	
						Sweetgum	---	---	
						Yellow-poplar	---	---	
						White oak	---	---	
						Willow oak	---	---	
						American elm	---	---	
TaB**, TaC**:									
Tatum	8A	Slight	Slight	Slight	Slight	Loblolly pine	78	107	Loblolly pine, white oak.
						Northern red oak	72	54	
						Virginia pine	68	105	
						Yellow-poplar	83	77	
						White 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
TaB**, TaC**:									
Badin	8D	Slight	Slight	Slight	Moderate	Loblolly pine	80	110	Loblolly pine, white oak.
						Shortleaf pine	68	106	
						Virginia pine	---	---	
						Yellow-poplar	---	---	
						White oak	63	46	
						Scarlet oak	65	48	
						Chestnut oak	66	48	
TbB2**:									
Tatum	6C	Slight	Moderate	Moderate	Slight	Loblolly pine	70	93	Loblolly pine, yellow-poplar.
						Northern red oak	72	54	
						Virginia pine	68	105	
						Yellow-poplar	83	77	
Badin	6D	Moderate	Moderate	Moderate	Moderate	Loblolly pine	70	93	Loblolly pine, white oak.
						Shortleaf pine	60	88	
						White oak	60	43	
						Scarlet oak	60	43	
						Chestnut oak	60	43	
						Virginia pine	---	---	
UhC	7X	Slight	Moderate	Slight	Slight	Yellow-poplar	96	100	Loblolly pine, white oak.
Uwharrie						Black oak	84	66	
						White oak	---	---	
						Southern red oak	---	---	
						Chestnut oak	---	---	
						Virginia pine	---	---	
						Shortleaf pine	---	---	
						Black cherry	---	---	
						Blackgum	---	---	
						Hickory	---	---	
						Post oak	---	---	
UhE	7R	Moderate	Moderate	Slight	Slight	Yellow-poplar	96	100	Loblolly pine, white oak.
Uwharrie						Black oak	84	66	
						White oak	---	---	
						Southern red oak	---	---	
						Chestnut oak	---	---	
						Virginia pine	---	---	
						Shortleaf pine	---	---	
						Black cherry	---	---	
						Blackgum	---	---	
						Hickory	---	---	
						Post oak	---	---	
UrB	8A	Slight	Slight	Slight	Slight	Loblolly pine	81	112	Loblolly pine, white oak.
Uwharrie						Shortleaf pine	63	95	
						White oak	---	---	
						Southern red oak	---	---	
						Chestnut oak	---	---	
						Virginia pine	---	---	
						Black oak	84	66	
						Yellow-poplar	96	100	
						Hickory	---	---	
UwB2, UwC2	6C	Slight	Moderate	Moderate	Slight	Loblolly pine	70	93	Loblolly pine, white oak.
Uwharrie						Shortleaf pine	58	84	
						Virginia pine	---	---	
						White 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, VaC--------Vance	7A	Slight	Slight	Slight	Slight	Loblolly pine-------	73	98	Loblolly pine, white oak.
						Shortleaf pine------	68	106	
						White oak----------	76	58	
						Northern red oak----	72	54	
						Hickory----------	---	---	
						Virginia pine-------	---	---	
						Yellow-poplar-------	---	---	
						Southern red oak----	---	---	
						Sweetgum----------	---	---	
VnB2, VnC2------Vance	6C	Slight	Moderate	Moderate	Slight	Loblolly pine-------	65	85	Loblolly pine, white oak.
						Shortleaf pine------	---	---	
						Virginia pine-------	---	---	
						Southern red oak----	---	---	
						Hickory----------	---	---	
						Sweetgum----------	---	---	
						White oak----------	---	---	
WaA----------Wahee	9W	Slight	Moderate	Moderate	Slight	Loblolly pine-------	86	123	Loblolly pine, sweetgum, American sycamore, water oak.
						Sweetgum----------	90	106	
						Blackgum----------	---	---	
						Water oak----------	---	---	
						Swamp chestnut oak--	---	---	
						Willow oak----------	---	---	
						Southern red oak----	---	---	
WkB----------Wickham	9A	Slight	Slight	Slight	Slight	Loblolly pine-------	90	131	Loblolly pine, white oak.
						Yellow-poplar-------	89	88	
						White oak----------	84	66	
						Southern red oak----	82	64	
						Sweetgum----------	---	---	
						Red maple----------	---	---	
						Northern red oak----	---	---	
						Water oak----------	---	---	
						Hickory----------	---	---	
						Shortleaf pine------	---	---	
ZeB**, ZeC**:									
Zion----------	6D	Slight	Slight	Slight	Moderate	Loblolly pine-------	70	93	Loblolly pine, white oak.
						Northern red oak----	70	52	
						Shortleaf pine------	60	88	
						Virginia pine-------	60	91	
						White oak----------	---	---	
Enon----------	7A	Slight	Slight	Slight	Slight	Loblolly pine-------	73	98	Loblolly pine, white oak.
						Shortleaf pine------	63	95	
						Virginia pine-------	---	---	
						Northern red oak----	---	---	
						Sweetgum----------	87	98	
						White oak----------	---	---	
						Yellow-poplar-------	88	86	
						Hickory----------	---	---	

* Productivity class is the yield in cubic feet per acre per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

** See description of the map unit for composition and behavior characteristics of the map unit.

Table 8.--Recreational Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." 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
ApB: Appling	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
ArA: Armenia	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
AsB*:					
Ashlar	Slight	Slight	Moderate: slope, small stones, depth to rock.	Slight	Moderate: droughty, depth to rock.
Rock outcrop.					
AsC*:					
Ashlar	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope, depth to rock.
Rock outcrop.					
AsD*:					
Ashlar	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Rock outcrop.					
BaB: Badin	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones, large stones.
BaC: Badin	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: small stones, large stones, slope.
BaD: Badin	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
BgB*:					
Badin	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones, large stones.
Goldston	Severe: depth to rock.	Severe: depth to rock.	Severe: small stones, depth to rock.	Slight	Severe: depth to rock.
BgC*:					
Badin	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: small stones, large stones, 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
BgC*:					
Goldston	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, small stones, depth to rock.	Slight	Severe: depth to rock.
CcB Cecil	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
CcC Cecil	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
CeB2 Cecil	Slight	Slight	Moderate: slope.	Slight	Slight.
CeC2 Cecil	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
CfB*:					
Cecil	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
Urban land.					
ChA 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: slope, small stones, wetness.	Severe: erodes easily.	Moderate: wetness.
Lignum	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
DoA Dogue	Severe: flooding.	Moderate: wetness, percs slowly.	Moderate: small stones, wetness.	Moderate: wetness.	Moderate: wetness.
DoB Dogue	Severe: flooding.	Moderate: wetness, percs slowly.	Moderate: slope, small stones, wetness.	Moderate: wetness.	Moderate: wetness.
EnB Enon	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones, percs slowly.	Slight	Slight.
EnC Enon	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	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
EsC: Enon	Severe: small stones.	Severe: small stones.	Severe: large stones, slope, small stones.	Moderate: large stones.	Severe: small stones, large stones.
EsD: Enon	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Moderate: large stones, slope.	Severe: small stones, large stones, slope.
EuB*:					
Enon	Moderate: percs slowly.	Moderate: percs slowly.	Severe: slope.	Slight	Slight.
Urban land.					
HeB: Helena	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
HsD: Hiwassee	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
HwB2: Hiwassee	Slight	Slight	Moderate: slope.	Slight	Slight.
HwC2: Hiwassee	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
IrB: Iredell	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
KcB*:					
Kirksey	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, small stones, wetness.	Severe: erodes easily.	Moderate: wetness.
Cid	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, small stones, wetness.	Severe: erodes easily.	Moderate: wetness.
LgA: Lignum	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
MbB: Mecklenburg	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones.	Slight	Slight.
MbC: Mecklenburg	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
MeB2: Mecklenburg	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight	Slight.
MeC2: Mecklenburg	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	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
MkB*:					
Misenheimer	Severe: wetness, depth to rock.	Severe: depth to rock.	Severe: small stones, wetness, depth to rock.	Moderate: wetness.	Severe: depth to rock.
Kirksey	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, small stones, wetness.	Severe: erodes easily.	Moderate: wetness.
OkA 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.
PaC Pacolet	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
PaD Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
PaE Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
PcB2 Pacolet	Slight	Slight	Moderate: slope.	Slight	Slight.
PcC2 Pacolet	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
Pt*. Pits, quarries					
PxB*:					
Poindexter	Slight	Slight	Moderate: slope, small stones, depth to rock.	Slight	Moderate: depth to rock.
Mocksville	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
PxC*:					
Poindexter	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope, depth to rock.
Mocksville	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
PxD*:					
Poindexter	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Mocksville	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: 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
PxE*:					
Poindexter	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Mocksville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
RnB*:					
Rion	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
Wedowee	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
RnC*:					
Rion	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope.
Wedowee	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
RoB*:					
Rion	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
Wedowee	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
Ashlar	Slight	Slight	Moderate: slope, small stones, depth to rock.	Slight	Moderate: droughty, depth to rock.
RoC*:					
Rion	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope.
Wedowee	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
Ashlar	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope, depth to rock.
RvA Riverview	Severe: flooding.	Slight	Moderate: flooding.	Slight	Moderate: flooding.
SaB*:					
Saw	Slight	Slight	Moderate: slope, small stones, depth to rock.	Slight	Moderate: depth to rock.

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
SaB*:					
Pacolet	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
SaC*:					
Saw	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope, depth to rock.
Pacolet	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
ScB2*:					
Saw	Slight	Slight	Moderate: slope, small stones, depth to rock.	Slight	Moderate: depth to rock.
Pacolet	Slight	Slight	Moderate: slope.	Slight	Slight.
SeB	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
TaB*:					
Tatum	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
Badin	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones, large stones.
TaC*:					
Tatum	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
Badin	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: small stones, large stones, slope.
TbB2*:					
Tatum	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
Badin	Slight	Slight	Moderate: slope, depth to rock, small stones.	Slight	Moderate: depth to rock.
Ud*. Udorthents, loamy					
Uf*. Urban land					

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
UhC Uwharrie	Moderate: large stones, slope.	Moderate: large stones, slope.	Severe: large stones, slope.	Moderate: large stones.	Severe: large stones.
UhE Uwharrie	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Severe: slope.	Severe: large stones, slope.
UrB, UwB2 Uwharrie	Slight	Slight	Moderate: slope.	Severe: erodes easily.	Slight.
UwC2 Uwharrie	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
VaB Vance	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones.	Slight	Slight.
VaC Vance	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
VnB2 Vance	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight	Slight.
VnC2 Vance	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
WaA Wahee	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
WkB Wickham	Slight	Slight	Moderate: slope.	Slight	Slight.
ZeB*:					
Zion	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones, depth to rock.	Slight	Moderate: droughty, depth to rock.
Enon	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones, percs slowly.	Slight	Slight.
ZeC*:					
Zion	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: droughty, slope, depth to rock.
Enon	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: slope.

* 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
ApB Appling	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ArA Armenia	Fair	Good	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair.
AsB*:										
Ashlar	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
Rock outcrop.										
AsC*:										
Ashlar	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
Rock outcrop.										
AsD*:										
Ashlar	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Rock outcrop.										
BaB Badin	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
BaC Badin	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
BaD Badin	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
BgB*:										
Badin	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Goldston	Poor	Poor	Fair	Poor	Poor	Poor	Very poor.	Poor	Poor	Very poor.
BgC*:										
Badin	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Goldston	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
CcB Cecil	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
CcC 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.

See footnote at end of table.

Table 9.--Wildlife Habitat--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
CeC2 Cecil	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
CfB*:										
Cecil	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Urban land.										
ChA Chewacla	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
CmB*:										
Cid	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
Lignum	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
DoA Dogue	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
DoB Dogue	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
EnB Enon	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
EnC Enon	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
EsC, EsD Enon	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
EuB*:										
Enon	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Urban land.										
HeB Helena	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HsD Hiwassee	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
HwB2 Hiwassee	Fair	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
HwC2 Hiwassee	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
IrB Iredell	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
KcB*:										
Kirksey	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	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
KcB*:										
Cid	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
LgA Lignum	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
MbB Mecklenburg	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MbC 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.
MeC2 Mecklenburg	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
MkB*:										
Misenheimer	Fair	Good	Good	Fair	Fair	Fair	Fair	Good	Good	Fair.
Kirksey	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
OkA 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.
PaC Pacolet	Poor	Fair	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
PaD, PaE Pacolet	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
PcB2 Pacolet	Poor	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
PcC2 Pacolet	Very poor.	Poor	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.
Pt*. Pits, quarries										
PxB*:										
Poindexter	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Mocksville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
PxC*:										
Poindexter	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Mocksville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

See footnote at end of table.

Table 9.--Wildlife Habitat--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
PxD*:										
Poindexter	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Mocksville	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
PxE*:										
Poindexter	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Mocksville	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
RnB*:										
Rion	Fair	Good	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Wedowee	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
RnC*:										
Rion	Poor	Fair	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Wedowee	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
RoB*:										
Rion	Fair	Good	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Wedowee	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Ashlar	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
RoC*:										
Rion	Poor	Fair	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Wedowee	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Ashlar	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
RvA Riverview	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
SaB*:										
Saw	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Pacolet	Fair	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	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
SaC*:										
Saw	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Pacolet	Poor	Fair	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
ScB2*:										
Saw	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Pacolet	Poor	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
SeB	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Sedgefield										
TaB*:										
Tatum	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Badin	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
TaC*:										
Tatum	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Badin	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
TbB2*:										
Tatum	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Badin	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Ud*.										
Udorthents, loamy										
Uf*.										
Urban land										
UhC	Very poor.	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Uwharrie										
UhE	Very poor.	Very poor.	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Uwharrie										
UrB, UwB2	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Uwharrie										
UwC2	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Uwharrie										
VaB	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Vance										

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
VaC---------- Vance	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
VnB2---------- Vance	Poor	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
VnC2---------- Vance	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
WaA---------- Wahee	Fair	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
WkB---------- Wickham	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ZeB*:										
Zion----------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Enon----------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ZeC*:										
Zion----------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Enon----------	Fair	Good	Good	Good	Good	Very 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
ApB Appling	Moderate: too clayey.	Slight	Slight	Slight	Moderate: low strength.	Slight.
ArA Armenia	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: shrink-swell, low strength, wetness.	Severe: wetness, flooding.
AsB*:						
Ashlar	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock.	Moderate: droughty, depth to rock.
Rock outcrop.						
AsC*:						
Ashlar	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope.	Moderate: droughty, slope, depth to rock.
Rock outcrop.						
AsD*:						
Ashlar	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
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.
BaC 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.
BaD Badin	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
BgB*:						
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.
Goldston	Severe: depth to rock.	Moderate: depth to rock, large stones.	Severe: depth to rock.	Moderate: slope, depth to rock, large stones.	Moderate: depth to rock, large stones.	Severe: depth to rock.

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
BgC*:						
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.
Goldston	Severe: depth to rock.	Moderate: slope, depth to rock, large stones.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, large stones.	Severe: depth to rock.
CcB Cecil	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
CcC 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.
CeC2 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.						
ChA Chewacla	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
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.
Lignum	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength.	Moderate: wetness.
DoA, DoB Dogue	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: low strength.	Moderate: wetness.
EnB Enon	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
EnC Enon	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: slope.
EsC Enon	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Severe: small stones, large stones.

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
EsD---------- Enon	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: small stones, large stones, slope.
EuB*:						
Enon----------	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
Urban land.						
HeB---------- Helena	Severe: wetness.	Severe: shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: wetness.
HsD---------- Hiwassee	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
HwB2---------- Hiwassee	Moderate: too clayey.	Slight---------	Slight---------	Moderate: slope.	Moderate: low strength.	Slight.
HwC2---------- Hiwassee	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.
KcB*:						
Kirksey----------	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: low strength.	Moderate: wetness.
Cid----------	Severe: depth to rock, wetness.	Moderate: wetness, shrink-swell, depth to rock.	Severe: wetness, depth to rock.	Moderate: wetness, shrink-swell, slope.	Severe: low strength.	Moderate: wetness.
LgA---------- Lignum	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength.	Moderate: wetness.
MbB---------- Mecklenburg	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
MbC---------- 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.
MeC2---------- Mecklenburg	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.

See footnote at end of table.

Table 10.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
MkB*:						
Misenheimer	Severe: wetness, depth to rock.	Severe: wetness.	Severe: wetness, depth to rock.	Severe: wetness.	Moderate: wetness, depth to rock.	Severe: depth to rock.
Kirksey	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: low strength.	Moderate: wetness.
OkA 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.
PaC Pacolet	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
PaD, PaE Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
PcB2 Pacolet	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
PcC2 Pacolet	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
Pt*. Pits, quarries						
PxB*:						
Poindexter	Moderate: depth to rock.	Slight	Moderate: depth to rock.	Moderate: slope.	Moderate: low strength.	Moderate: depth to rock.
Mocksville	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Slight.
PxC*:						
Poindexter	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope, low strength.	Moderate: slope, depth to rock.
Mocksville	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
PxD*, PxE*:						
Poindexter	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Mocksville	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
RnB*:						
Rion	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
Wedowee	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.

See footnote at end of table.

Table 10.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
RnC*:						
Rion	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Wedowee	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
RoB*:						
Rion	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
Wedowee	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
Ashlar	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock.	Moderate: droughty, depth to rock.
RoC*:						
Rion	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Wedowee	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
Ashlar	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope.	Moderate: droughty, slope, depth to rock.
RvA	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
Riverview						
SaB*:						
Saw	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock, low strength.	Moderate: depth to rock.
Pacolet	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
SaC*:						
Saw	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, low strength, slope.	Moderate: slope, depth to rock.
Pacolet	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
ScB2*:						
Saw	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock, low strength.	Moderate: depth to rock.

See footnote at end of table.

Table 10.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
ScB2*:						
Pacolet	Moderate: too clayey.	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
SeB Sedgefield	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, shrink-swell.	Moderate: wetness.
TaB*:						
Tatum	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
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.
TaC*:						
Tatum	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
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.
TbB2*:						
Tatum	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
Badin	Moderate: depth to rock, too clayey.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Moderate: depth to rock.
Ud*. Udorthents, loamy						
Uf*. Urban land						
UhC Uwharrie	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Severe: large stones.
UhE Uwharrie	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: large stones, slope.
UrB, UwB2 Uwharrie	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
UwC2 Uwharrie	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
VaB Vance	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
VaC: Vance	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
VnB2: Vance	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
VnC2: Vance	Moderate: too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
WaA: Wahee	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness.
WkB: Wickham	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
ZeB*:						
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.
Enon	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
ZeC*:						
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.
Enon	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: slope.

* 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
ApB Appling	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey, hard to pack.
ArA Armenia	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
AsB*:					
Ashlar	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock, small stones.
Rock outcrop.					
AsC*:					
Ashlar	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock, small stones.
Rock outcrop.					
AsD*:					
Ashlar	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop.					
BaB Badin	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
BaC 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.
BaD 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.
BgB*:					
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.

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
BgB*:					
Goldston	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock.	Poor: depth to rock, small stones.
BgC*:					
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.
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.
CcB	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey, hard to pack.
CcC	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
CeB2	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey, hard to pack.
CeC2	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.
Urban land.					
ChA	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.
Lignum	Severe: percs slowly, wetness.	Moderate: depth to rock, slope.	Severe: depth to rock, wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
DoA, DoB	Severe: wetness, percs slowly.	Severe: seepage, flooding, wetness.	Severe: seepage, wetness, too clayey.	Severe: wetness.	Poor: 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
EnB: Enon	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
EnC, EsC: Enon	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
EsD: 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.					
HeB: Helena	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
HsD: Hiwassee	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
HwB2: Hiwassee	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey, hard to pack.
HwC2: Hiwassee	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.
KcB*:					
Kirksey	Severe: wetness, percs slowly.	Severe: wetness.	Severe: depth to rock, wetness.	Moderate: depth to rock, wetness.	Fair: depth to rock, too clayey.
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.
LgA: Lignum	Severe: percs slowly, wetness.	Moderate: depth to rock.	Severe: depth to rock, wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
MbB: Mecklenburg	Severe: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight	Poor: 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
MbC: 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.
MeC2: Mecklenburg	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
MkB*:					
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.
Kirksey	Severe: wetness, percs slowly.	Severe: wetness.	Severe: depth to rock, wetness.	Moderate: depth to rock, wetness.	Fair: depth to rock, too clayey.
OkA: 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.
PaC: Pacolet	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: too clayey, slope.
PaD, PaE: Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
PcB2: Pacolet	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Fair: too clayey.
PcC2: Pacolet	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: too clayey, slope.
Pt*. Pits, quarries					
PxB*:					
Poindexter	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: seepage, depth to rock.	Poor: depth to rock.
Mocksville	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too sandy.

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
PxC*:					
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.
Mocksville	Moderate: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too sandy, slope.
PxD*, PxE*:					
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.
Mocksville	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
RnB*:					
Rion	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too clayey.
Wedowee	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Fair: small stones.
RnC*:					
Rion	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too clayey, slope.
Wedowee	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.
RoB*:					
Rion	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too clayey.
Wedowee	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Fair: small stones.
Ashlar	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock, small stones.
RoC*:					
Rion	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too clayey, slope.
Wedowee	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.

See footnote at end of table.

Table 11.--Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
RoC*:					
Ashlar	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock, small stones.
RvA Riverview	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Fair: thin layer.
SaB*:					
Saw	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock.
Pacolet	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Fair: too clayey.
SaC*:					
Saw	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock.
Pacolet	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: too clayey, slope.
ScB2*:					
Saw	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock.
Pacolet	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Fair: too clayey.
SeB Sedgefield	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
TaB*:					
Tatum	Moderate: depth to rock, percs slowly.	Moderate: seepage, depth to rock, slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock.	Poor: too clayey, hard to pack.
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.
TaC*:					
Tatum	Moderate: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock, slope.	Poor: 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
TaC*:					
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.
TbB2*:					
Tatum	Moderate: depth to rock, percs slowly.	Moderate: seepage, depth to rock, slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock.	Poor: too clayey, hard to pack.
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.
Ud*. Udorthents, loamy					
Uf*. Urban land					
UhC Uwharrie	Moderate: percs slowly, slope.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
UhE Uwharrie	Severe: slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
UrB, UwB2 Uwharrie	Moderate: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
UwC2 Uwharrie	Moderate: percs slowly, slope.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
VaB Vance	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
VaC Vance	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
VnB2 Vance	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
VnC2 Vance	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
WaA Wahee	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, 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
WkB: Wickham	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
ZeB*:					
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.
Enon	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
ZeC*:					
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.
Enon	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.

* 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
ApB Appling	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
ArA Armenia	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
AsB*, AsC*:				
Ashlar	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Rock outcrop.				
AsD*:				
Ashlar	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop.				
BaB, BaC Badin	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
BaD Badin	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, slope.
BgB*, BgC*:				
Badin	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
Goldston	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
CcB, CcC, CeB2, CeC2 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.				
ChA 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: too clayey, small stones.

See footnote at end of table.

Table 12.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
CmB*:				
Lignum	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
DoA, DoB	Fair: wetness.	Probable	Improbable: too sandy.	Fair: too clayey.
Dogue				
EnB, EnC	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Enon				
EsC	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
Enon				
EsD	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, slope.
Enon				
EuB*:				
Enon	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Urban land.				
HeB	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Helena				
HsD	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Hiwassee				
HwB2, HwC2	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Hiwassee				
IrB	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
Iredell				
KcB*:				
Kirksey	Fair: depth to rock, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, area reclaim, small stones.
Cid	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
LgA	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
Lignum				
MbB, MbC, MeB2, MeC2	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Mecklenburg				

See footnote at end of table.

Table 12.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
MkB*:				
Misenheimer	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, depth to rock.
Kirksey	Fair: depth to rock, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, area reclaim, small stones.
OkA Oakboro	Fair: depth to rock, thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, large stones, area reclaim.
PaB, PaC Pacolet	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
PaD Pacolet	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
PaE Pacolet	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
PcB2, PcC2 Pacolet	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Pt*. Pits, quarries				
PxB*:				
Poindexter	Poor: depth to rock.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer.	Fair: small stones, depth to rock.
Mocksville	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, small stones.
PxC*:				
Poindexter	Poor: depth to rock.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer.	Fair: small stones, slope, depth to rock.
Mocksville	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, small stones, slope.
PxD*:				
Poindexter	Poor: depth to rock.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer.	Poor: slope.
Mocksville	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.

See footnote at end of table.

Table 12.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
PxE*:				
Poindexter	Poor: slope, depth to rock.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer.	Poor: slope.
Mocksville	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
RnB*:				
Rion	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Wedowee	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
RnC*:				
Rion	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
Wedowee	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
RoB*:				
Rion	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Wedowee	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Ashlar	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
RoC*:				
Rion	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
Wedowee	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Ashlar	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
RvA	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, thin layer.
SaB*, SaC*, ScB2*:				
Saw	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
Pacolet	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
SeB	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.

See footnote at end of table.

Table 12.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
TaB*, TaC*, TbB2*:				
Tatum	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
Badin	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
Ud*. Udorthents, loamy				
Uf*. Urban land				
UhC Uwharrie	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
UhE Uwharrie	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
UrB, UwB2, UwC2 Uwharrie	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
VaB, VaC, VnB2, VnC2 Vance	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
WaA Wahee	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
WkB Wickham	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
ZeB*, ZeC*:				
Zion	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Enon	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 13.--Water Management

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
ApB Appling	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope	Soil blowing	Favorable.
ArA Armenia	Slight	Severe: hard to pack, wetness.	Percs slowly, flooding.	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
AsB*:						
Ashlar	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, soil blowing.	Depth to rock, soil blowing.	Droughty, depth to rock.
Rock outcrop.						
AsC*, AsD*:						
Ashlar	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Slope, droughty, soil blowing.	Slope, depth to rock, soil blowing.	Slope, droughty, depth to rock.
Rock outcrop.						
BaB Badin	Moderate: seepage, depth to rock, slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Depth to rock	Depth to rock.
BaC, BaD Badin	Severe: slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
BgB*:						
Badin	Moderate: seepage, depth to rock, slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Depth to rock	Depth to rock.
Goldston	Severe: depth to rock.	Severe: piping, large stones.	Deep to water	Slope, large stones, droughty.	Large stones, depth to rock.	Large stones, droughty.
BgC*:						
Badin	Severe: slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
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.
CcB Cecil	Moderate: seepage, slope.	Severe: piping, hard to pack.	Deep to water	Slope, soil blowing.	Soil blowing	Favorable.
CcC Cecil	Severe: slope.	Severe: piping, hard to pack.	Deep to water	Slope, soil blowing.	Slope, soil blowing.	Slope.

See footnote at end of table.

Table 13.--Water Management--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
CeB2 Cecil	Moderate: seepage, slope.	Severe: piping, hard to pack.	Deep to water	Slope	Favorable	Favorable.
CeC2 Cecil	Severe: slope.	Severe: piping, hard to pack.	Deep to water	Slope	Slope	Slope.
CfB*:						
Cecil	Moderate: seepage, slope.	Severe: piping, hard to pack.	Deep to water	Slope	Favorable	Favorable.
Urban land.						
ChA Chewacla	Moderate: seepage.	Severe: piping, hard to pack, wetness.	Flooding	Wetness, flooding.	Wetness	Wetness.
CmB*:						
Cid	Moderate: depth to rock, slope.	Severe: hard to pack.	Percs slowly, depth to rock, slope.	Slope, wetness, percs slowly.	Depth to rock, erodes easily, wetness.	Erodes easily, depth to rock, percs slowly.
Lignum	Moderate: depth to rock, slope.	Moderate: thin layer, hard to pack, wetness.	Slope, percs slowly.	Wetness, percs slowly, slope.	Erodes easily, wetness.	Wetness, erodes easily.
DoA Dogue	Moderate: seepage.	Severe: wetness.	Favorable	Wetness, soil blowing.	Wetness, soil blowing.	Favorable.
DoB Dogue	Moderate: seepage, slope.	Severe: wetness.	Slope	Wetness, soil blowing, slope.	Wetness, soil blowing.	Favorable.
EnB Enon	Moderate: slope.	Severe: hard to pack.	Deep to water	Slope, soil blowing, percs slowly.	Soil blowing, percs slowly.	Percs slowly.
EnC Enon	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, soil blowing, percs slowly.	Slope, soil blowing, percs slowly.	Slope, percs slowly.
EsC, EsD Enon	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly.	Slope, large stones, percs slowly.	Large stones, slope, percs slowly.
EuB*:						
Enon	Moderate: slope.	Severe: hard to pack.	Deep to water	Slope, soil blowing, percs slowly.	Soil blowing, percs slowly.	Percs slowly.
Urban land.						
HeB Helena	Moderate: slope.	Severe: hard to pack.	Percs slowly, slope.	Slope, wetness, percs slowly.	Wetness, percs slowly.	Percs slowly.

See footnote at end of table.

Table 13.--Water Management--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
HsD Hiwassee	Severe: slope.	Severe: hard to pack.	Deep to water	Slope	Slope	Slope.
HwB2 Hiwassee	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope	Favorable	Favorable.
HwC2 Hiwassee	Severe: slope.	Severe: hard to pack.	Deep to water	Slope	Slope	Slope.
IrB Iredell	Moderate: slope.	Severe: hard to pack.	Percs slowly, slope.	Slope, wetness.	Wetness	Wetness, percs slowly.
KcB*:						
Kirksey	Moderate: seepage, depth to rock, slope.	Severe: piping.	Slope	Wetness, slope, erodes easily.	Erodes easily, wetness.	Erodes easily.
Cid	Moderate: depth to rock, slope.	Severe: hard to pack.	Percs slowly, depth to rock, slope.	Slope, wetness, percs slowly.	Depth to rock, erodes easily, wetness.	Erodes easily, depth to rock, percs slowly.
LgA Lignum	Moderate: depth to rock.	Moderate: thin layer, hard to pack, wetness.	Percs slowly	Wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily.
MbB Mecklenburg	Moderate: slope, seepage.	Severe: hard to pack.	Deep to water	Percs slowly, slope.	Percs slowly	Percs slowly.
MbC 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.
MeC2 Mecklenburg	Severe: slope.	Severe: hard to pack.	Deep to water	Percs slowly, slope.	Slope, percs slowly.	Slope, percs slowly.
MkB*:						
Misenheimer	Severe: depth to rock.	Severe: thin layer, piping.	Depth to rock	Wetness, depth to rock.	Depth to rock, wetness.	Wetness, depth to rock.
Kirksey	Moderate: seepage, depth to rock.	Severe: piping.	Favorable	Wetness, erodes easily.	Erodes easily, wetness.	Erodes easily.
OkA 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.
PaC, PaD, PaE Pacolet	Severe: slope.	Severe: piping.	Deep to water	Slope	Slope, soil blowing.	Slope.

See footnote at end of table.

Table 13.--Water Management--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
TbB2*:						
Tatum	Moderate: seepage, depth to rock, slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
Badin	Moderate: seepage, depth to rock, slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Depth to rock	Depth to rock.
Ud*. Udorthents, loamy						
Uf*. Urban land						
UhC, UhE Uwharrie	Severe: slope.	Severe: hard to pack.	Deep to water	Slope	Slope, large stones.	Large stones, slope.
UrB, UwB2 Uwharrie	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
UwC2 Uwharrie	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
VaB Vance	Moderate: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, soil blowing.	Percs slowly	Percs slowly.
VaC Vance	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, soil blowing.	Slope, percs slowly.	Slope, percs slowly.
VnB2 Vance	Moderate: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly.	Percs slowly	Percs slowly.
VnC2 Vance	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly.	Slope, percs slowly.	Slope, percs slowly.
WaA Wahee	Slight	Severe: hard to pack, wetness.	Percs slowly, flooding.	Wetness	Wetness, percs slowly.	Wetness, percs slowly.
WkB Wickham	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope	Soil blowing	Favorable.
ZeB*:						
Zion	Moderate: seepage, depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, droughty, soil blowing.	Depth to rock	Droughty.
Enon	Moderate: slope.	Severe: hard to pack.	Deep to water	Slope, soil blowing, percs slowly.	Soil blowing, percs slowly.	Percs slowly.

See footnote at end of table.

Table 13.--Water Management--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
RoC*:						
Wedowee	Severe: slope.	Severe: piping.	Deep to water	Slope	Slope	Slope.
Ashlar	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Slope, droughty, soil blowing.	Slope, depth to rock, soil blowing.	Slope, droughty, depth to rock.
RvA Riverview	Severe: seepage.	Severe: piping.	Deep to water	Flooding	Favorable	Favorable.
SaB*:						
Saw	Severe: seepage.	Severe: hard to pack.	Deep to water	Slope, droughty, depth to rock.	Depth to rock, soil blowing.	Droughty, depth to rock.
Pacolet	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope	Soil blowing	Favorable.
SaC*:						
Saw	Severe: seepage, slope.	Severe: hard to pack.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock, soil blowing.	Slope, droughty, depth to rock.
Pacolet	Severe: slope.	Severe: piping.	Deep to water	Slope	Slope, soil blowing.	Slope.
ScB2*:						
Saw	Severe: seepage.	Severe: hard to pack.	Deep to water	Slope, depth to rock.	Depth to rock	Depth to rock.
Pacolet	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope	Favorable	Favorable.
SeB Sedgefield	Moderate: seepage, slope.	Severe: hard to pack.	Percs slowly, slope.	Slope, wetness.	Wetness, soil blowing, percs slowly.	Wetness, percs slowly.
TaB*:						
Tatum	Moderate: seepage, depth to rock, slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
Badin	Moderate: seepage, depth to rock, slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Depth to rock	Depth to rock.
TaC*:						
Tatum	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Badin	Severe: slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	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-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
TbB2*:						
Tatum	Moderate: seepage, depth to rock, slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
Badin	Moderate: seepage, depth to rock, slope.	Severe: thin layer.	Deep to water	Depth to rock, slope.	Depth to rock	Depth to rock.
Ud*. Udorthents, loamy						
Uf*. Urban land						
UhC, UhE Uwharrie	Severe: slope.	Severe: hard to pack.	Deep to water	Slope	Slope, large stones.	Large stones, slope.
UrB, UwB2 Uwharrie	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
UwC2 Uwharrie	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
VaB Vance	Moderate: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, soil blowing.	Percs slowly	Percs slowly.
VaC Vance	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly, soil blowing.	Slope, percs slowly.	Slope, percs slowly.
VnB2 Vance	Moderate: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly.	Percs slowly	Percs slowly.
VnC2 Vance	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, percs slowly.	Slope, percs slowly.	Slope, percs slowly.
WaA Wahee	Slight	Severe: hard to pack, wetness.	Percs slowly, flooding.	Wetness	Wetness, percs slowly.	Wetness, percs slowly.
WkB Wickham	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope	Soil blowing	Favorable.
ZeB*:						
Zion	Moderate: seepage, depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, droughty, soil blowing.	Depth to rock	Droughty.
Enon	Moderate: slope.	Severe: hard to pack.	Deep to water	Slope, soil blowing, percs slowly.	Soil blowing, percs slowly.	Percs slowly.

See footnote at end of table.

Table 13.--Water Management--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
ZeC*:						
Zion	Severe: slope.	Severe: thin layer.	Deep to water	Slope, droughty, soil blowing.	Slope, depth to rock.	Slope, droughty.
Enon	Severe: slope.	Severe: hard to pack.	Deep to water	Slope, soil blowing, percs slowly.	Slope, soil blowing, percs slowly.	Slope, percs slowly.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 14.--Engineering Index Properties

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
ApB---------- Appling	0-12	Sandy loam----	SM, SC-SM	A-2	0	0-5	86-100	80-100	55-91	15-35	<35	NP-7
	12-38	Sandy clay, clay loam, clay.	MH, ML, CL	A-7	0	0-5	95-100	90-100	70-95	51-80	41-74	15-30
	38-47	Sandy clay, clay loam, sandy clay loam.	SC, CL	A-4, A-6, A-7	0	0-5	95-100	85-100	70-90	40-75	25-45	8-22
	47-60	Variable------	---	---	---	---	---	---	---	---	---	---
ArA---------- Armenia	0-5	Loam----------	CL-ML, CL, ML	A-4, A-6, A-7-6	0-1	0-1	95-100	90-100	75-95	51-80	20-50	5-20
	5-50	Clay, silty clay, clay loam.	CH	A-7	0-1	0-1	95-100	95-100	85-100	65-95	55-100	30-70
	50-65	Sandy loam, sandy clay loam, clay loam.	SC, CL	A-2, A-4, A-6	0-1	0-5	85-100	75-100	55-90	30-70	25-40	7-20
AsB*, AsC*, AsD*:												
Ashlar------	0-9	Sandy loam----	SM, SC-SM	A-2, A-4, A-1	0	0-2	80-100	75-100	40-80	20-50	<25	NP-6
	9-37	Sandy loam, fine sandy loam, coarse sandy loam, gravelly sandy loam.	GM-GC, SC-SM, GM, SM	A-2, A-2, A-4	0	0-8	55-100	50-100	30-75	15-50	15-25	NP-6
	37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop.												
BaB, BaC, BaD- Badin	0-6	Channery silt loam.	ML, SM, SC-SM, GM	A-4, A-6, A-2-4	0-1	0-10	60-100	50-85	45-85	30-80	25-50	4-20
	6-35	Silty clay, silty clay loam, channery silty clay loam.	CL, CH, ML	A-6, A-7	0	0-5	65-100	60-100	55-100	50-98	30-65	15-35
	35-43	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
	43	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 14.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
BgB*, BgC*:												
Badin--------	0-6	Channery silt loam.	ML, SM, SC-SM, GM	A-4, A-6, A-2-4	0-1	0-10	60-100	50-85	45-85	30-80	25-50	4-20
	6-35	Silty clay, silty clay loam, channery silty clay loam.	CL, CH, ML	A-6, A-7	0	0-5	65-100	60-100	55-100	50-98	30-65	15-35
	35-43	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
	43	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Goldston-----	0-4	Channery silt loam.	GM, SM, ML	A-2-4, A-4	0-5	10-20	60-80	50-80	30-80	25-75	20-40	NP-10
	4-17	Very channery silt loam, very channery very fine sandy loam.	GM, SM, ML	A-2-4, A-4, A-1-b	0-10	20-50	40-80	30-80	25-80	20-60	20-40	NP-10
	17-27	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
	27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
CcB, CcC------ Cecil	0-9	Sandy loam----	SM, SC-SM	A-2, A-4	0	0-5	84-100	80-100	67-90	26-42	<30	NP-7
	9-12	Sandy clay loam, clay loam.	SM, SC, ML, CL	A-4, A-6	0	0-5	75-100	75-100	68-95	38-81	21-35	3-17
	12-51	Clay, clay loam.	MH, ML, CH	A-7, A-5	0	0-5	97-100	92-100	72-100	55-95	41-80	9-37
	51-60	Variable------	---	---	---	---	---	---	---	---	---	---
CeB2, CeC2---- Cecil	0-7	Sandy clay loam.	SM, SC, CL, ML	A-4, A-6	0	0-5	75-100	75-100	68-95	38-81	21-35	3-17
	7-10	Sandy clay loam, clay loam.	SM, SC, ML, CL	A-4, A-6	0	0-5	75-100	75-100	68-95	38-81	21-35	3-17
	10-51	Clay, clay loam.	MH, ML, CH	A-7, A-5	0	0-5	97-100	92-100	72-100	55-95	41-80	9-37
	51-71	Variable------	---	---	---	---	---	---	---	---	---	---
CfB*:												
Cecil--------	0-7	Sandy clay loam.	SM, SC, CL, ML	A-4, A-6	0	0-5	75-100	75-100	68-95	38-81	21-35	3-17
	7-10	Sandy clay loam, clay loam.	SM, SC, ML, CL	A-4, A-6	0	0-5	75-100	75-100	68-95	38-81	21-35	3-17
	10-51	Clay, clay loam.	MH, ML, CH	A-7, A-5	0	0-5	97-100	92-100	72-100	55-95	41-80	9-37
	51-71	Variable------	---	---	---	---	---	---	---	---	---	---
Urban land.												

See footnote at end of table.

Table 14.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
ChA---------- Chewacla	0-6	Loam----------	ML, CL, CL-ML	A-4, A-6, A-7	0	0	98-100	95-100	70-100	55-90	25-49	4-20
	6-25	Sandy clay loam, loam, sandy loam.	SM, SC-SM, ML, CL	A-4, A-7-6, A-6	0	0	96-100	95-100	60-100	36-70	20-45	2-15
	25-47	Silt loam, clay loam, silty clay loam.	ML, MH, CL, CH	A-4, A-6, A-7	0	0	85-100	75-100	60-100	51-98	22-61	4-28
	47-60	Variable------	---	---	---	---	---	---	---	---	---	---
CmB*:												
Cid----------	0-6	Silt loam-----	SM, ML	A-4	0	0-5	90-100	80-100	65-85	35-75	<35	NP-10
	6-27	Silty clay loam, silty clay, clay.	ML, MH, CL, CH	A-7	0	0-5	90-100	80-100	75-100	60-98	45-70	15-36
	27-35	Channery silty clay, channery silty clay loam, silty clay.	ML, MH	A-7	0	0-10	65-100	60-100	55-95	50-85	45-70	15-36
	35-39	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
	39	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Lignum-------	0-9	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	95-100	80-100	80-100	55-90	20-35	5-19
	9-36	Silty clay loam, silty clay, clay.	CH, CL	A-7	0	0-5	80-100	75-100	70-100	55-90	45-70	22-45
	36-54	Channery silt loam, silt loam, loam, channery silty clay loam.	SC, CL, ML, SM	A-4, A-6, A-7, A-2	0	0-15	70-85	35-80	30-80	20-75	30-50	8-18
	54-60	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
DoA, DoB------ Dogue	0-10	Fine sandy loam.	SM, SC, SC-SM	A-2, A-4	0	0	95-100	75-100	50-100	20-50	<25	NP-10
	10-18	Sandy clay loam, clay loam.	CL-ML, CL, SC	A-4, A-6	0	0	95-100	95-100	50-100	40-70	25-50	5-20
	18-50	Clay loam, clay, sandy clay.	CL, CH, SC	A-6, A-7	0	0	95-100	75-100	65-100	40-90	35-60	16-40
	50-60	Stratified sand to sandy clay loam.	SM, SC, SP-SM, SC-SM	A-2, A-4, A-1	0	0	80-100	60-100	35-100	10-40	<30	NP-10
EnB, EnC------ Enon	0-7	Fine sandy loam.	SM, SC-SM, SC	A-2-4, A-4	0	0-5	80-100	80-100	60-85	25-49	<30	NP-10
	7-10	Clay loam, sandy clay loam.	CL	A-4, A-6	0	0-5	80-100	80-100	70-90	50-80	25-40	7-20
	10-33	Clay loam, clay.	CH, CL	A-7-6	0	0-5	85-100	80-100	75-98	65-95	40-90	25-65
	33-72	Variable------	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 14.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
EsC, EsD------ Enon	0-8	Very cobbly loam.	GM, GC, SM, SC	A-1, A-2-4	15-25	25-50	45-85	35-75	25-55	10-35	<30	NP-10
	8-13	Sandy clay loam, clay loam.	CL	A-4, A-6	0-1	5-10	80-100	80-100	70-90	50-80	25-40	7-20
	13-39	Clay, clay loam.	CH, CL	A-7-6	0	0-10	85-100	80-100	65-98	55-95	40-75	25-49
	39-60	Variable------	---	---	---	---	---	---	---	---	---	---
EuB*:												
Enon---------	0-7	Fine sandy loam.	SM, SC-SM, SC	A-2-4, A-4	0	0-5	80-100	80-100	60-85	25-49	<30	NP-10
	7-10	Clay loam, sandy clay loam.	CL	A-4, A-6	0	0-5	80-100	80-100	70-90	50-80	25-40	7-20
	10-33	Clay loam, clay.	CH, CL	A-7-6	0	0-5	85-100	80-100	75-98	65-95	40-90	25-65
	33-72	Variable------	---	---	---	---	---	---	---	---	---	---
Urban land.												
HeB---------- Helena	0-8	Sandy loam----	SM, SC-SM, SC, ML	A-2, A-4	0	0-5	90-100	90-100	51-95	26-75	<35	NP-10
	8-11	Sandy clay loam, clay loam.	CL, SC	A-6, A-7	0	0-5	95-100	95-100	70-90	38-70	30-49	15-26
	11-42	Clay loam, sandy clay, clay.	CH	A-7	0	0-5	95-100	95-100	73-97	56-86	50-85	24-50
	42-60	Variable------	---	---	---	---	---	---	---	---	---	---
HsD----------	0-8	Loam----------	ML, CL-ML	A-6, A-4	0	0-2	95-100	90-100	85-95	40-75	18-30	3-15
	8-49	Clay, silty clay, clay loam.	ML, MH	A-7-5, A-7-6	0	0-2	95-100	95-100	80-100	51-95	40-80	12-36
	49-60	Sandy loam, loam, sandy clay loam.	SM, ML, SC-SM, CL	A-4, A-6, A-7	0	0-5	90-100	85-99	60-90	36-70	20-49	4-20
HwB2, HwC2---- Hiwassee	0-11	Clay loam-----	CL, ML, CL-ML	A-7-6, A-6, A-4	0	0-2	95-100	95-100	88-100	50-85	25-49	3-23
	11-67	Clay, silty clay, clay loam.	ML, MH	A-7-5, A-7-6	0	0-2	95-100	95-100	80-100	51-95	40-80	12-36
IrB---------- Iredell	0-6	Loam----------	ML, CL-ML	A-4, A-6	0-1	0-1	99-100	90-100	85-95	45-70	25-38	5-12
	6-25	Clay----------	CH	A-7	0	0	99-100	60-100	60-100	55-95	54-115	29-85
	25-32	Loam, sandy clay loam, clay loam.	CL, CH, SC	A-7	0-1	0-1	98-100	85-100	70-95	40-75	41-60	20-39
	32-60	Variable------	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 14.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
KcB*:												
Kirksey------	0-8	Silt loam-----	ML, CL-ML	A-4	0	0-2	90-100	88-100	80-95	70-90	15-40	NP-8
	8-42	Silty clay loam, clay loam, silt loam.	CL, ML	A-4, A-6, A-5, A-7	0	0-1	95-100	90-100	90-98	80-95	20-50	7-26
	42-45	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
	45	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Cid----------	0-6	Silt loam-----	SM, ML	A-4	0	0-5	90-100	80-100	65-85	35-75	<35	NP-10
	6-27	Silty clay loam, silty clay, clay.	ML, MH, CL, CH	A-7	0	0-5	90-100	80-100	75-100	60-98	45-70	15-36
	27-35	Channery silty clay, channery silty clay loam, silty clay.	ML, MH	A-7	0	0-10	65-100	60-100	55-95	50-85	45-70	15-36
	35-39	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
	39	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
LgA---------- Lignum	0-9	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	95-100	80-100	80-100	55-90	20-35	5-19
	9-36	Silty clay loam, silty clay, clay.	CH, CL	A-7	0	0-5	80-100	75-100	70-100	55-90	45-70	22-45
	36-54	Channery silt loam, silt loam, loam, channery silty clay loam.	CL, ML, SM	A-4, A-6, A-7, A-2	0	0-15	70-85	35-80	30-80	20-75	30-50	8-18
	54-60	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
MbB, MbC------ Mecklenburg	0-7	Loam----------	ML, SM, CL-ML, CL	A-4, A-6	0	0-5	90-100	80-100	65-90	36-65	20-40	NP-15
	7-28	Clay----------	CH, MH	A-7	0	0-5	90-100	85-100	80-100	75-95	51-75	20-43
	28-35	Loam, sandy clay loam, clay loam.	CL	A-4, A-6, A-7	0	0-5	90-100	85-100	80-100	50-80	25-49	8-25
	35-60	Variable------	---	---	---	---	---	---	---	---	---	---
MeB2, MeC2---- Mecklenburg	0-7	Clay loam-----	CL	A-6, A-7-6	0	0-5	90-100	90-100	80-100	50-80	25-49	11-25
	7-30	Clay----------	CH, MH	A-7	0	0-5	90-100	85-100	80-100	75-95	51-75	20-43
	30-38	Loam, sandy clay loam, clay loam.	CL	A-4, A-6, A-7	0	0-5	90-100	85-100	80-100	50-80	25-49	8-25
	38-60	Variable------	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 14.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
MkB*:												
Misenheimer--	0-6	Channery silt loam.	GM, SM, ML	A-4, A-2-4	0-5	0-15	65-90	55-80	30-80	25-75	20-40	NP-10
	6-18	Channery silt loam, channery loam, channery silty clay loam.	GM, SM, ML	A-4, A-2-4, A-6, A-7	0-5	0-15	65-90	55-80	30-80	25-75	20-45	NP-15
	18-22	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Kirksey------	0-8	Silt loam-----	ML, CL-ML	A-4	0	0-2	90-100	88-100	80-95	70-90	15-40	NP-8
	8-42	Silty clay loam, clay loam, silt loam.	CL, ML	A-4, A-6, A-5, A-7	0	0-1	95-100	90-100	90-98	80-95	20-50	7-26
	42-45	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
	45	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
OkA---------- Oakboro	0-4	Silt loam-----	ML, CL-ML, CL	A-4, A-6	0	0-15	96-100	95-100	85-100	60-90	<35	NP-15
	4-50	Loam, silt loam, silty clay loam.	ML, CL-ML, CL	A-4, A-6	0	0-15	96-100	95-100	85-100	70-95	<35	NP-15
	50	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
PaB, PaC, PaD- Pacolet	0-8	Sandy loam----	SM, SC-SM	A-2, A-1-b, A-4	0-1	0-2	85-100	80-100	42-90	16-42	<28	NP-7
	8-29	Sandy clay, clay loam, clay.	ML, MH, CL	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	29-38	Clay loam, sandy clay loam, sandy loam.	CL, CL-ML, SC-SM, SC	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	38-60	Sandy loam, fine sandy loam, loam.	SM, SC-SM	A-4, A-2-4	0-1	0-2	80-100	70-100	60-90	25-50	<28	NP-6
PaE---------- Pacolet	0-8	Sandy loam----	SM, SC-SM	A-2, A-1-b, A-4	0-1	0-2	85-100	80-100	42-90	16-42	<28	NP-7
	8-24	Sandy clay, clay loam, clay.	ML, MH, CL	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	24-29	Clay loam, sandy clay loam, sandy loam.	CL, CL-ML, SC-SM, SC	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	29-50	Sandy loam, fine sandy loam, loam.	SM, SC-SM	A-4, A-2-4	0-1	0-2	80-100	70-100	60-90	25-50	<28	NP-6

See footnote at end of table.

Table 14.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
PcB2, PcC2---- Pacolet	0-7	Sandy clay loam.	SC-SM, SC	A-4, A-6	0-1	0-1	95-100	90-100	65-87	36-50	20-40	4-17
	7-24	Sandy clay, clay loam, clay.	ML, MH, CL	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	24-33	Clay loam, sandy clay loam, sandy loam.	CL, CL-ML, SC-SM, SC	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	33-72	Sandy loam, fine sandy loam, loam.	SM, SC-SM	A-4, A-2-4	0-1	0-2	80-100	70-100	60-90	25-50	<28	NP-6
Pt*. Pits, quarries												
PxB*, PxC*, PxD*, PxE*:												
Poindexter--	0-7	Loam----------	ML, CL-ML	A-4	0	0	90-100	85-100	85-100	55-90	<25	NP-7
	7-26	Clay loam, sandy clay loam, loam.	SC, CL	A-6	0	0	90-100	80-100	60-100	35-85	30-40	11-20
	26-39	Loam, sandy loam.	SM, ML, CL-ML, SC-SM	A-2, A-4	0	0	95-100	80-100	55-95	30-70	<20	NP-5
	39-43	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
	43	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Mocksville--	0-9	Loam----------	SM, SC-SM, ML, CL-ML	A-2-4, A-4	0	0-3	90-100	85-100	50-100	30-60	<25	NP-7
	9-29	Loam, sandy clay loam, clay loam.	SC, CL	A-6, A-7-6	0	0-3	90-100	85-100	80-100	35-70	29-45	11-20
	29-60	Sandy loam, fine sandy loam, loam.	SC, ML, CL, SC-SM	A-2-4, A-2-6, A-4, A-6	0	0-3	90-100	85-100	50-100	30-60	<35	NP-12
RnB*, RnC*:												
Rion---------	0-8	Sandy loam----	SM	A-2, A-4	0-1	0-2	90-100	85-100	60-80	20-45	<35	NP-7
	8-38	Sandy loam, sandy clay loam, clay loam.	SC, SC-SM, CL-ML, CL	A-2, A-4, A-6	0-1	0-2	90-100	85-100	60-85	30-60	20-35	5-15
	38-60	Sandy loam, sandy clay loam, loamy sand.	SC, SM, SC-SM	A-2, A-4, A-6	0-1	0-2	90-100	80-100	60-85	15-50	<36	NP-12

See footnote at end of table.

Table 14.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
RnB*, RnC*:												
Wedowee------	0-12	Sandy loam----	SM, SC-SM	A-4, A-2-4	0	0	95-100	80-100	50-99	23-50	<30	NP-6
	12-15	Loam, sandy clay loam.	SM, SC, CL, ML	A-4, A-6	0	0	90-100	90-100	80-97	40-75	<32	NP-15
	15-29	Sandy clay, clay loam, clay.	SC, ML, CL, MH	A-6, A-7	0	0	95-100	95-100	65-97	45-75	28-58	5-30
	29-60	Sandy clay loam, clay loam, sandy loam.	SC, SC-SM, CL, CL-ML	A-2, A-4, A-6	0	0	80-100	70-100	60-80	30-60	20-54	5-25
RoB*, RoC*:												
Rion---------	0-8	Sandy loam----	SM	A-2, A-4	0-1	0-2	90-100	85-100	60-80	20-45	<35	NP-7
	8-38	Sandy loam, sandy clay loam, clay loam.	SC, SC-SM, CL-ML, CL	A-2, A-4, A-6	0-1	0-2	90-100	85-100	60-85	30-60	20-35	5-15
	38-60	Sandy loam, sandy clay loam, loamy sand.	SC, SM, SC-SM	A-2, A-4, A-6	0-1	0-2	90-100	80-100	60-85	15-50	<36	NP-12
Wedowee------	0-12	Sandy loam----	SM, SC-SM	A-4, A-2-4	0	0	95-100	80-100	50-99	23-50	<30	NP-6
	12-15	Loam, sandy clay loam.	SM, SC, CL, ML	A-4, A-6	0	0	90-100	90-100	80-97	40-75	<32	NP-15
	15-29	Sandy clay, clay loam, clay.	SC, ML, CL, MH	A-6, A-7	0	0	95-100	95-100	65-97	45-75	28-58	5-30
	29-60	Sandy clay loam, clay loam, sandy loam.	SC, SC-SM, CL, CL-ML	A-2, A-4, A-6	0	0	80-100	70-100	60-80	30-60	20-54	5-25
Ashlar-------	0-9	Sandy loam----	SM, SC-SM	A-2, A-4, A-1	0	0-2	80-100	75-100	40-80	20-50	<25	NP-6
	9-37	Sandy loam, fine sandy loam, coarse sandy loam, gravelly sandy loam.	GM-GC, SC-SM, GM, SM	A-2, A-2, A-4	0	0-8	55-100	50-100	30-75	15-50	15-25	NP-6
	37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
RvA---------- Riverview	0-10	Loam----------	CL, CL-ML, ML	A-4, A-6	0	0	100	100	90-100	60-80	15-30	3-14
	10-59	Sandy clay loam, silty clay loam, loam.	CL, ML, CL-ML	A-4, A-6	0	0	100	100	90-100	60-95	20-40	3-20
	59-72	Loamy fine sand, sandy loam, sand.	SM, SC-SM	A-2, A-4	0	0	100	100	50-95	15-45	<20	NP-7

See footnote at end of table.

Table 14.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
SaB*, SaC*:												
Saw----------	0-8	Sandy loam----	SM, SC-SM	A-2-4, A-4	0	0-5	85-100	80-100	65-90	20-40	20-35	NP-7
	8-20	Clay, sandy clay, clay loam.	ML, MH	A-6, A-7	0	0-5	85-100	80-100	70-95	51-75	38-65	11-30
	20-29	Sandy clay loam, sandy loam, gravelly sandy loam.	SM, SC-SM, GM	A-1-b, A-2-4, A-4	0	0-15	60-100	55-100	40-90	13-50	20-40	NP-10
	29	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Pacolet------	0-8	Sandy loam----	SM, SC-SM	A-2, A-1-b, A-4	0-1	0-2	85-100	80-100	42-90	16-42	<28	NP-7
	8-29	Sandy clay, clay loam, clay.	ML, MH, CL	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	29-38	Clay loam, sandy clay loam, sandy loam.	CL, CL-ML, SC-SM, SC	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	38-60	Sandy loam, fine sandy loam, loam.	SM, SC-SM	A-4, A-2-4	0-1	0-2	80-100	70-100	60-90	25-50	<28	NP-6
ScB2*:												
Saw----------	0-5	Sandy clay loam.	SM, SC, SC-SM, ML	A-4, A-6, A-5, A-7	0	0-5	85-100	85-100	65-90	36-65	30-50	3-15
	5-23	Clay, sandy clay, clay loam.	ML, MH	A-6, A-7	0	0-5	85-100	80-100	70-95	51-75	38-65	11-30
	23-34	Sandy clay loam, sandy loam, gravelly sandy loam.	SM, SC-SM, GM	A-1-b, A-2-4, A-4	0	0-15	60-100	55-100	40-90	13-50	20-40	NP-10
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Pacolet------	0-7	Sandy clay loam.	SC-SM, SC	A-4, A-6	0-1	0-1	95-100	90-100	65-87	36-50	20-40	4-17
	7-24	Sandy clay, clay loam, clay.	ML, MH, CL	A-6, A-7	0-1	0-1	80-100	80-100	60-100	51-75	38-65	11-33
	24-33	Clay loam, sandy clay loam, sandy loam.	CL, CL-ML, SC-SM, SC	A-2, A-4, A-6	0-1	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	33-72	Sandy loam, fine sandy loam, loam.	SM, SC-SM	A-4, A-2-4	0-1	0-2	80-100	70-100	60-90	25-50	<28	NP-6
SeB---------- Sedgefield	0-8	Fine sandy loam.	SM, SC, ML, CL	A-2, A-4, A-6	0	0-5	90-100	85-100	50-100	30-60	<35	NP-12
	8-40	Sandy clay, clay loam, clay.	CL, CH	A-7	0	0-5	95-100	95-100	73-93	60-85	45-85	25-60
	40-62	Variable------	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 14.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
TaB*, TaC*:												
Tatum--------	0-9	Silt loam-----	ML, CL, CL-ML	A-4, A-6	0	0-5	85-100	80-100	65-100	60-90	20-34	5-15
	9-41	Silty clay loam, silty clay, clay.	MH, CH	A-7	0	0-5	75-100	75-95	60-95	55-95	50-80	20-45
	41-58	Silty clay loam, silt loam.	CL, ML, CL-ML	A-4, A-6	0	0-15	75-100	70-95	55-95	45-90	20-40	5-15
	58-60	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Badin--------	0-6	Channery silt loam.	ML, SM, SC-SM, GM	A-4, A-6, A-2-4	0-1	0-10	60-100	50-85	45-85	30-80	25-50	4-20
	6-35	Silty clay, silty clay loam, channery silty clay loam.	CL, CH, ML	A-6, A-7	0	0-5	65-100	60-100	55-100	50-98	30-65	15-35
	35-43	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
	43	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
TbB2*:												
Tatum--------	0-6	Silty clay loam.	CL	A-6, A-7	0	0-5	85-100	75-90	65-90	60-85	32-44	12-20
	6-40	Silty clay loam, silty clay, clay.	MH, CH	A-7	0	0-5	75-100	75-95	60-95	55-95	50-80	20-45
	40-55	Silty clay loam, silt loam.	CL, ML, CL-ML	A-4, A-6	0	0-15	75-100	70-95	55-95	45-90	20-40	5-15
	55-60	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Badin--------	0-6	Silty clay loam.	CL, ML	A-6, A-7	0	0-5	85-100	75-95	65-90	60-85	30-49	11-20
	6-34	Silty clay, silty clay loam, channery silty clay loam.	CL, CH	A-6, A-7	0	0-5	65-100	60-100	55-100	50-98	30-65	15-35
	34-41	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
	41	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Ud*. Udorthents, loamy												
Uf*. Urban land												

See footnote at end of table.

Table 14.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
UhC, UhE------ Uwharrie	0-10	Loam----------	ML, CL-ML	A-4	15-25	35-50	90-100	85-100	65-100	51-98	25-40	NP-10
	10-15	Silt loam, silty clay loam, clay loam.	ML, MH	A-4, A-6, A-7	0-5	0-30	75-100	65-100	60-100	51-98	32-61	4-28
	15-45	Silty clay, clay loam, clay.	MH, CL, CH	A-7	0	0-10	95-100	95-100	70-100	60-95	40-80	20-40
	45-53	Silty clay, clay loam, silt loam.	CL, ML, CL-ML, MH	A-4, A-6, A-7	0	0-10	95-100	95-100	70-95	60-95	25-65	6-35
	53-72	Variable------	---	---	---	---	---	---	---	---	---	---
UrB---------- Uwharrie	0-9	Silt loam-----	ML, CL-ML	A-4	0	0-5	90-100	90-100	85-100	60-90	25-40	NP-10
	9-38	Silty clay, silty clay loam, clay.	MH, CL, CH	A-7	0	0-5	95-100	95-100	90-100	75-95	40-80	20-40
	38-49	Silty clay, silty clay loam, clay loam.	MH, CL, CH	A-7, A-6	0	0-5	90-100	90-100	90-100	70-95	30-60	10-35
	49-60	Variable------	---	---	---	---	---	---	---	---	---	---
UwB2, UwC2---- Uwharrie	0-8	Silty clay loam.	CL, ML	A-6, A-7	0	0-5	90-100	90-100	90-100	70-95	30-50	10-20
	8-47	Silty clay, silty clay loam, clay.	MH, CL, CH	A-7	0	0-5	95-100	95-100	90-100	75-95	40-80	20-40
	47-56	Silty clay, silty clay loam, clay loam.	MH, CL, CH	A-7, A-6	0	0-5	90-100	90-100	90-100	70-95	30-60	10-35
	56-60	Variable------	---	---	---	---	---	---	---	---	---	---
VaB, VaC------ Vance	0-10	Sandy loam----	SM, SC-SM	A-2, A-4	0	0-5	90-100	80-100	55-80	15-40	<27	NP-7
	10-38	Clay loam, sandy clay, clay.	CH	A-7	0	0-5	95-100	90-100	75-95	65-80	51-80	25-48
	38-60	Variable------	---	---	---	---	---	---	---	---	---	---
VnB2, VnC2---- Vance	0-10	Sandy clay loam.	CL, SC	A-6, A-4	0	0-5	95-100	90-100	70-95	40-70	25-40	8-20
	10-38	Clay loam, sandy clay, clay.	CH	A-7	0	0-5	95-100	90-100	75-95	65-80	51-80	25-48
	38-60	Variable------	---	---	---	---	---	---	---	---	---	---
WaA---------- Wahee	0-7	Loam----------	ML, CL-ML, CL	A-4	0	0	100	100	90-98	51-75	20-35	2-10
	7-60	Clay, clay loam, silty clay.	CL, CH	A-6, A-7	0	0	100	100	85-100	51-92	38-81	16-54
WkB---------- Wickham	0-8	Fine sandy loam.	SM, SC-SM, ML, CL-ML	A-4	0	0	95-100	90-100	70-100	45-80	<25	NP-7
	8-50	Sandy clay loam, clay loam, loam.	CL-ML, CL, SC, SM	A-2, A-4, A-6, A-7-6	0	0	95-100	90-100	75-100	30-70	20-41	3-15
	50-70	Variable------	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

Table 14.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
ZeB*, ZeC*:												
Zion---------	0-6	Sandy loam----	SM, SC, SC-SM	A-2, A-4	0	0-5	85-100	85-100	50-100	20-50	<25	NP-10
	6-19	Clay, silty clay, silty clay loam.	CH, CL	A-7	0	0	95-100	90-100	85-100	80-95	41-80	20-50
	19-23	Clay loam, clay.	CH	A-7	0	0-5	85-100	80-95	70-95	65-95	50-70	30-40
	23-31	Variable------	---	---	---	---	---	---	---	---	---	---
	31-38	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
	38	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Enon---------	0-7	Fine sandy loam.	SM, SC-SM, SC	A-2-4, A-4	0	0-5	80-100	80-100	60-85	25-49	<30	NP-10
	7-10	Clay loam, sandy clay loam.	CL	A-4, A-6	0	0-5	80-100	80-100	70-90	50-80	25-40	7-20
	10-33	Clay loam, clay.	CH, CL	A-7-6	0	0-5	85-100	80-100	75-98	65-95	40-90	25-65
	33-72	Variable------	---	---	---	---	---	---	---	---	---	---

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 15.--Physical and Chemical Properties of the Soils

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH					Pct
ApB---------- Appling	0-12	5-20	1.40-1.65	2.0-6.0	0.10-0.15	4.5-6.5	Low----------	0.24	4	3	.5-2
	12-38	35-60	1.25-1.45	0.6-2.0	0.15-0.17	4.5-5.5	Low----------	0.28			
	38-47	20-50	1.25-1.45	0.6-2.0	0.12-0.16	4.5-5.5	Low----------	0.28			
	47-60	---	---	---	---	---	----------	----			
ArA---------- Armenia	0-5	10-27	1.20-1.50	0.6-2.0	0.16-0.24	5.6-7.3	Low----------	0.37	5	6	1-4
	5-50	35-60	1.20-1.50	0.06-0.2	0.12-0.20	6.1-7.8	High----------	0.20			
	50-65	15-30	1.30-1.60	0.2-0.6	0.10-0.18	6.1-7.8	Low----------	0.28			
AsB*, AsC*, AsD*:											
Ashlar----------	0-9	5-15	1.30-1.55	2.0-6.0	0.08-0.15	4.5-6.0	Low----------	0.24	2	3	.5-1
	9-37	5-15	1.30-1.55	2.0-6.0	0.04-0.14	4.5-5.5	Low----------	0.24			
	37	---	---	---	---	---	----------	----			
Rock outcrop.											
BaB, BaC, BaD---- Badin	0-6	10-27	1.40-1.60	0.6-2.0	0.14-0.20	3.6-6.5	Low----------	0.15	2	5	1-3
	6-35	35-55	1.30-1.50	0.6-2.0	0.14-0.19	3.6-5.5	Moderate-----	0.24			
	35-43	---	---	---	---	---	----------	----			
	43	---	---	---	---	---	----------	----			
BgB*, BgC*:											
Badin----------	0-6	10-27	1.40-1.60	0.6-2.0	0.14-0.20	3.6-6.5	Low----------	0.15	2	5	1-3
	6-35	35-55	1.30-1.50	0.6-2.0	0.14-0.19	3.6-5.5	Moderate-----	0.24			
	35-43	---	---	---	---	---	----------	----			
	43	---	---	---	---	---	----------	----			
Goldston--------	0-4	5-27	1.40-1.60	2.0-6.0	0.10-0.16	3.6-5.5	Low----------	0.15	1	8	.5-2
	4-17	5-27	1.40-1.60	2.0-6.0	0.06-0.12	3.6-5.5	Low----------	0.05			
	17-27	---	---	---	---	---	----------	----			
	27	---	---	---	---	---	----------	----			
CcB, CcC--------- Cecil	0-9	5-20	1.30-1.50	2.0-6.0	0.12-0.14	4.5-6.5	Low----------	0.28	4	3	.5-1
	9-12	20-35	1.30-1.50	0.6-2.0	0.13-0.15	4.5-5.5	Low----------	0.28			
	12-51	35-70	1.30-1.50	0.6-2.0	0.13-0.15	4.5-5.5	Low----------	0.28			
	51-60	---	---	---	---	---	----------	----			
CeB2, CeC2------- Cecil	0-7	20-35	1.30-1.50	0.6-2.0	0.13-0.15	4.5-6.5	Low----------	0.28	3	5	.5-1
	7-10	20-35	1.30-1.50	0.6-2.0	0.13-0.15	4.5-5.5	Low----------	0.28			
	10-51	35-70	1.30-1.50	0.6-2.0	0.13-0.15	4.5-5.5	Low----------	0.28			
	51-71	---	---	---	---	---	----------	----			
CfB*:											
Cecil----------	0-7	20-35	1.30-1.50	0.6-2.0	0.13-0.15	4.5-6.5	Low----------	0.28	3	5	.5-1
	7-10	20-35	1.30-1.50	0.6-2.0	0.13-0.15	4.5-5.5	Low----------	0.28			
	10-51	35-70	1.30-1.50	0.6-2.0	0.13-0.15	4.5-5.5	Low----------	0.28			
	51-71	---	---	---	---	---	----------	----			
Urban land.											
ChA---------- Chewacla	0-6	10-35	1.30-1.60	0.6-2.0	0.15-0.24	4.5-6.5	Low----------	0.28	5	5	1-4
	6-25	18-35	1.30-1.60	0.6-2.0	0.12-0.20	4.5-6.5	Low----------	0.28			
	25-47	18-35	1.30-1.50	0.6-2.0	0.15-0.24	4.5-7.8	Low----------	0.32			
	47-60	---	---	---	---	---	----------	----			

See footnote at end of table.

Table 15.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH					Pct
CmB*:											
Cid----------	0-6	10-25	1.35-1.60	0.6-2.0	0.14-0.20	4.5-5.5	Low----------	0.37	2	5	.5-2
	6-27	35-60	1.25-1.55	0.06-0.2	0.12-0.18	4.5-5.5	Moderate-----	0.28			
	27-35	35-60	1.25-1.55	0.06-0.2	0.12-0.18	4.5-5.5	Moderate-----	0.28			
	35-39	---	---	---	---	---	----------	----			
	39	---	---	---	---	---	----------	----			
Lignum----------	0-9	10-25	1.20-1.50	0.6-2.0	0.14-0.20	4.5-5.5	Low----------	0.37	4	3	.5-2
	9-36	35-55	1.25-1.55	<0.06	0.10-0.18	4.5-5.5	Moderate-----	0.28			
	36-54	20-40	1.25-1.55	0.2-0.6	0.10-0.18	4.5-5.5	Low----------	0.28			
	54-60	---	---	---	---	---	----------	----			
DoA, DoB---------	0-10	5-10	1.35-1.50	2.0-6.0	0.08-0.15	3.6-5.5	Low----------	0.28	5	3	.5-1
Dogue	10-18	20-30	1.35-1.50	0.6-2.0	0.12-0.17	3.6-5.5	Low----------	0.28			
	18-50	35-50	1.45-1.60	0.2-0.6	0.12-0.19	3.6-5.5	Moderate-----	0.28			
	50-60	5-30	1.30-1.50	0.6-6.0	0.05-0.14	3.6-5.5	Low----------	0.17			
EnB, EnC---------	0-7	5-15	1.45-1.65	2.0-6.0	0.11-0.15	5.1-6.5	Low----------	0.24	3	3	.5-2
Enon	7-10	20-35	1.30-1.50	0.6-2.0	0.12-0.15	5.1-6.5	Low----------	0.24			
	10-33	35-60	1.20-1.40	0.06-0.2	0.12-0.16	5.1-7.8	High---------	0.28			
	33-72	---	---	---	---	---	----------	----			
EsC, EsD---------	0-8	5-20	1.45-1.65	2.0-6.0	0.06-0.11	5.1-6.5	Low----------	0.10	3	8	.5-2
Enon	8-13	20-35	1.30-1.50	0.6-2.0	0.12-0.15	5.1-6.5	Low----------	0.24			
	13-39	35-60	1.20-1.40	0.06-0.2	0.12-0.16	5.1-7.8	High---------	0.28			
	39-60	---	---	---	---	---	----------	----			
EuB*:											
Enon----------	0-7	5-15	1.45-1.65	2.0-6.0	0.11-0.15	5.1-6.5	Low----------	0.24	3	3	.5-2
	7-10	20-35	1.30-1.50	0.6-2.0	0.12-0.15	5.1-6.5	Low----------	0.24			
	10-33	35-60	1.20-1.40	0.06-0.2	0.12-0.16	5.1-7.8	High---------	0.28			
	33-72	---	---	---	---	---	----------	----			
Urban land.											
HeB----------	0-8	5-20	1.58-1.62	2.0-6.0	0.10-0.12	4.5-6.5	Low----------	0.24	4	5	.5-2
Helena	8-11	20-35	1.46-1.56	0.2-0.6	0.13-0.15	4.5-5.5	Moderate-----	0.28			
	11-42	35-60	1.44-1.55	0.06-0.2	0.13-0.15	4.5-5.5	High---------	0.28			
	42-60	---	---	---	---	---	----------	----			
HsD----------	0-8	10-35	1.35-1.55	0.6-2.0	0.12-0.15	4.5-6.5	Low----------	0.28	5	6	.5-2
Hiwassee	8-49	35-60	1.30-1.45	0.6-2.0	0.12-0.15	4.5-6.5	Low----------	0.28			
	49-60	7-35	1.45-1.65	0.6-2.0	0.10-0.14	4.5-6.5	Low----------	0.28			
HwB2, HwC2-------	0-11	10-35	1.35-1.55	0.6-2.0	0.12-0.15	4.5-6.5	Low----------	0.28	5	6	.5-2
Hiwassee	11-67	35-60	1.30-1.45	0.6-2.0	0.12-0.15	4.5-6.5	Low----------	0.28			
IrB----------	0-6	15-35	1.20-1.40	0.6-2.0	0.14-0.17	5.1-7.3	Low----------	0.32	3	6	.5-2
Iredell	6-25	50-80	1.20-1.45	0.06-0.2	0.16-0.22	5.6-7.3	Very high----	0.20			
	25-32	15-35	1.30-1.60	0.06-0.2	0.14-0.18	6.1-7.8	High---------	0.28			
	32-60	---	---	---	---	---	----------	----			
KcB*:											
Kirksey---------	0-8	4-20	1.20-1.40	0.6-2.0	0.15-0.22	5.1-6.5	Low----------	0.43	3	5	.5-2
	8-42	18-35	1.20-1.40	0.2-0.6	0.12-0.18	4.5-5.5	Low----------	0.43			
	42-45	---	---	---	---	---	----------	----			
	45	---	---	---	---	---	----------	----			

See footnote at end of table.

Table 15.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH					Pct
KcB*:											
Cid----------	0-6	10-25	1.35-1.60	0.6-2.0	0.14-0.20	4.5-5.5	Low----------	0.37	2	5	.5-2
	6-27	35-60	1.25-1.55	0.06-0.2	0.12-0.18	4.5-5.5	Moderate-----	0.28			
	27-35	35-60	1.25-1.55	0.06-0.2	0.12-0.18	4.5-5.5	Moderate-----	0.28			
	35-39	---	---	---	---	---	----------	----			
	39	---	---	---	---	---	----------	----			
LgA----------	0-9	10-25	1.20-1.50	0.6-2.0	0.14-0.20	4.5-5.5	Low----------	0.37	4	3	.5-2
Lignum	9-36	35-55	1.25-1.55	<0.06	0.10-0.18	4.5-5.5	Moderate-----	0.28			
	36-54	20-40	1.25-1.55	0.2-0.6	0.10-0.18	4.5-5.5	Low----------	0.28			
	54-60	---	---	---	---	---	----------	----			
MbB, MbC---------	0-7	8-25	1.30-1.50	0.6-2.0	0.14-0.19	5.6-7.3	Low----------	0.24	4	5	.5-2
Mecklenburg	7-28	40-60	1.40-1.60	0.06-0.2	0.12-0.14	5.6-7.3	Moderate-----	0.28			
	28-35	20-35	1.40-1.60	0.6-2.0	0.12-0.14	5.6-7.3	Low----------	0.32			
	35-60	---	---	---	---	---	----------	----			
MeB2, MeC2-------	0-7	20-35	1.40-1.60	0.6-2.0	0.12-0.14	5.6-7.3	Low----------	0.28	2	6	.5-1
Mecklenburg	7-30	40-60	1.40-1.60	0.06-0.2	0.12-0.14	5.6-7.3	Moderate-----	0.28			
	30-38	20-35	1.40-1.60	0.6-2.0	0.12-0.14	5.6-7.3	Low----------	0.32			
	38-60	---	---	---	---	---	----------	----			
MkB*:											
Misenheimer-----	0-6	7-27	1.40-1.60	0.6-6.0	0.12-0.18	3.6-5.5	Low----------	0.15	1	5	.5-1
	6-18	7-35	1.40-1.60	0.6-6.0	0.12-0.18	3.6-5.5	Low----------	0.15			
	18-22	---	---	---	---	---	----------	----			
	22	---	---	---	---	---	----------	----			
Kirksey---------	0-8	4-20	1.20-1.40	0.6-2.0	0.15-0.22	5.1-6.5	Low----------	0.43	3	5	.5-2
	8-42	18-35	1.20-1.40	0.2-0.6	0.12-0.18	4.5-5.5	Low----------	0.43			
	42-45	---	---	---	---	---	----------	----			
	45	---	---	---	---	---	----------	----			
OkA----------	0-4	10-27	1.30-1.50	0.6-2.0	0.15-0.20	4.5-6.5	Low----------	0.28	3	5	1-4
Oakboro	4-50	18-35	1.30-1.50	0.6-2.0	0.15-0.25	4.5-6.5	Low----------	0.28			
	50	---	---	---	---	---	----------	----			
PaB, PaC, PaD----	0-8	8-20	1.00-1.50	2.0-6.0	0.08-0.12	4.5-6.5	Low----------	0.20	3	3	.5-2
Pacolet	8-29	35-65	1.30-1.50	0.6-2.0	0.12-0.15	4.5-6.0	Low----------	0.28			
	29-38	15-30	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low----------	0.28			
	38-60	10-25	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low----------	0.28			
PaE----------	0-8	8-20	1.00-1.50	2.0-6.0	0.08-0.12	4.5-6.5	Low----------	0.20	3	3	.5-2
Pacolet	8-24	35-65	1.30-1.50	0.6-2.0	0.12-0.15	4.5-6.0	Low----------	0.28			
	24-29	15-30	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low----------	0.28			
	29-50	10-25	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low----------	0.28			
PcB2, PcC2-------	0-7	20-35	1.30-1.50	0.6-2.0	0.10-0.14	4.5-6.5	Low----------	0.24	2	5	.5-1
Pacolet	7-24	35-65	1.30-1.50	0.6-2.0	0.12-0.15	4.5-6.0	Low----------	0.28			
	24-33	15-30	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low----------	0.28			
	33-72	10-25	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low----------	0.28			
Pt*.											
Pits, quarries											

See footnote at end of table.

Table 15.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH					Pct
PxB*, PxC*, PxD*, PxE*:											
Poindexter-----	0-7	10-25	1.25-1.45	2.0-6.0	0.12-0.20	5.1-7.3	Low----------	0.37	3	5	.5-2
	7-26	20-35	1.35-1.45	0.6-2.0	0.13-0.19	5.1-7.3	Low----------	0.24			
	26-39	10-35	1.30-1.55	0.6-6.0	0.08-0.15	5.1-7.3	Low----------	0.24			
	39-43	---	---	---	---	---	----------	----			
	43	---	---	---	---	---	----------	----			
Mocksville-----	0-9	8-20	1.30-1.55	2.0-6.0	0.12-0.18	5.1-7.3	Low----------	0.28	3	3	0-2
	9-29	18-35	1.30-1.55	0.6-2.0	0.15-0.20	5.6-7.3	Low----------	0.24			
	29-60	15-25	1.35-1.60	0.6-2.0	0.10-0.18	5.6-7.3	Low----------	0.28			
RnB*, RnC*:											
Rion----------	0-8	5-20	1.30-1.50	2.0-6.0	0.08-0.12	4.5-6.5	Low----------	0.24	3	3	.5-2
	8-38	18-35	1.40-1.50	0.6-2.0	0.08-0.15	4.5-6.5	Low----------	0.20			
	38-60	2-20	1.30-1.50	2.0-6.0	0.06-0.12	4.5-6.5	Low----------	0.20			
Wedowee---------	0-12	5-20	1.25-1.60	2.0-6.0	0.10-0.18	3.6-5.5	Low----------	0.24	3	3	.5-3
	12-15	14-30	1.30-1.55	0.6-2.0	0.12-0.18	3.6-5.5	Low----------	0.28			
	15-29	35-45	1.30-1.50	0.6-2.0	0.12-0.18	3.6-5.5	Low----------	0.28			
	29-60	15-30	1.20-1.50	0.6-2.0	0.08-0.15	3.6-5.5	Low----------	0.28			
RoB*, RoC*:											
Rion----------	0-8	5-20	1.30-1.50	2.0-6.0	0.08-0.12	4.5-6.5	Low----------	0.24	3	3	.5-2
	8-38	18-35	1.40-1.50	0.6-2.0	0.08-0.15	4.5-6.5	Low----------	0.20			
	38-60	2-20	1.30-1.50	2.0-6.0	0.06-0.12	4.5-6.5	Low----------	0.20			
Wedowee---------	0-12	5-20	1.25-1.60	2.0-6.0	0.10-0.18	3.6-5.5	Low----------	0.24	3	3	.5-3
	12-15	14-30	1.30-1.55	0.6-2.0	0.12-0.18	3.6-5.5	Low----------	0.28			
	15-29	35-45	1.30-1.50	0.6-2.0	0.12-0.18	3.6-5.5	Low----------	0.28			
	29-60	15-30	1.20-1.50	0.6-2.0	0.08-0.15	3.6-5.5	Low----------	0.28			
Ashlar----------	0-9	5-15	1.30-1.55	2.0-6.0	0.08-0.15	4.5-6.0	Low----------	0.24	2	3	.5-1
	9-37	5-15	1.30-1.55	2.0-6.0	0.04-0.14	4.5-5.5	Low----------	0.24			
	37	---	---	---	---	---	----------	----			
RvA---------- Riverview	0-10	10-27	1.30-1.60	0.6-2.0	0.16-0.24	4.5-6.5	Low----------	0.32	5	5	.5-2
	10-59	18-35	1.20-1.40	0.6-2.0	0.15-0.22	4.5-6.0	Low----------	0.24			
	59-72	4-18	1.20-1.50	2.0-6.0	0.07-0.11	4.5-6.0	Low----------	0.17			
SaB*, SaC*:											
Saw----------	0-8	5-20	1.30-1.50	2.0-6.0	0.08-0.12	4.5-7.3	Low----------	0.20	2	3	.5-2
	8-20	35-60	1.30-1.50	0.6-2.0	0.12-0.15	4.5-6.5	Low----------	0.28			
	20-29	5-30	1.30-1.50	0.6-6.0	0.07-0.12	4.5-6.0	Low----------	0.20			
	29	---	---	---	---	---	----------	----			
Pacolet---------	0-8	8-20	1.00-1.50	2.0-6.0	0.08-0.12	4.5-6.5	Low----------	0.20	3	3	.5-2
	8-29	35-65	1.30-1.50	0.6-2.0	0.12-0.15	4.5-6.0	Low----------	0.28			
	29-38	15-30	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low----------	0.28			
	38-60	10-25	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low----------	0.28			
ScB2*:											
Saw----------	0-5	20-40	1.30-1.50	0.6-2.0	0.12-0.15	4.5-7.3	Low----------	0.28	2	5	<1
	5-23	35-60	1.30-1.50	0.6-2.0	0.12-0.15	4.5-6.5	Low----------	0.28			
	23-34	5-30	1.30-1.50	0.6-6.0	0.07-0.12	4.5-6.0	Low----------	0.20			
	34	---	---	---	---	---	----------	----			

See footnote at end of table.

Table 15.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH					Pct
ScB2*:											
Pacolet---------	0-7	20-35	1.30-1.50	0.6-2.0	0.10-0.14	4.5-6.5	Low----------	0.24	2	5	.5-1
	7-24	35-65	1.30-1.50	0.6-2.0	0.12-0.15	4.5-6.0	Low----------	0.28			
	24-33	15-30	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low----------	0.28			
	33-72	10-25	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low----------	0.28			
SeB----------	0-8	8-20	1.40-1.60	2.0-6.0	0.10-0.15	5.1-6.5	Low----------	0.28	3	3	.5-2
Sedgefield	8-40	35-60	1.25-1.40	0.06-0.2	0.14-0.18	5.1-6.5	High---------	0.28			
	40-62	---	---	---	---	---	----------	----			
TaB*, TaC*:											
Tatum----------	0-9	12-27	1.10-1.40	0.6-2.0	0.16-0.20	4.5-5.5	Low----------	0.37	4	3	.5-2
	9-41	45-60	1.40-1.60	0.6-2.0	0.10-0.19	4.5-5.5	Moderate-----	0.28			
	41-58	12-27	1.30-1.50	0.6-2.0	0.16-0.20	4.5-5.5	Low----------	0.37			
	58-60	---	---	0.00-0.06	---	---	----------	----			
Badin----------	0-6	10-27	1.40-1.60	0.6-2.0	0.14-0.20	3.6-6.5	Low----------	0.15	2	5	1-3
	6-35	35-55	1.30-1.50	0.6-2.0	0.14-0.19	3.6-5.5	Moderate-----	0.24			
	35-43	---	---	---	---	---	----------	----			
	43	---	---	---	---	---	----------	----			
TbB2*:											
Tatum----------	0-6	27-40	1.30-1.50	0.6-2.0	0.14-0.18	4.5-5.5	Low----------	0.32	3	6	0-2
	6-40	45-60	1.40-1.60	0.6-2.0	0.10-0.19	4.5-5.5	Moderate-----	0.28			
	40-55	12-27	1.30-1.50	0.6-2.0	0.16-0.20	4.5-5.5	Low----------	0.37			
	55-60	---	---	0.00-0.06	---	---	----------	----			
Badin----------	0-6	27-40	1.20-1.45	0.6-2.0	0.14-0.19	3.6-6.5	Low----------	0.28	2	7	.5-2
	6-34	35-55	1.30-1.50	0.6-2.0	0.14-0.19	3.6-5.5	Moderate-----	0.24			
	34-41	---	---	---	---	---	----------	----			
	41	---	---	---	---	---	----------	----			
Ud*.											
Udorthents, loamy											
Uf*.											
Urban land											
UhC, UhE---------	0-10	10-27	1.20-1.50	0.6-2.0	0.08-0.12	4.5-6.0	Low----------	0.20	4	8	.2-5
Uwharrie	10-15	15-35	1.20-1.50	0.6-2.0	0.10-0.16	4.5-6.0	Low----------	0.28			
	15-45	35-75	1.25-1.55	0.6-2.0	0.12-0.18	4.5-6.0	Moderate-----	0.28			
	45-53	15-60	1.30-1.60	0.6-2.0	0.12-0.18	4.5-6.0	Moderate-----	0.28			
	53-72	---	---	---	---	---	----------	----			
UrB----------	0-9	10-27	1.20-1.45	0.6-2.0	0.16-0.20	4.5-6.5	Low----------	0.43	4	5	1-3
Uwharrie	9-38	35-60	1.25-1.55	0.6-2.0	0.12-0.18	4.5-6.0	Moderate-----	0.32			
	38-49	27-50	1.30-1.60	0.6-2.0	0.12-0.18	4.5-6.0	Moderate-----	0.28			
	49-60	---	---	---	---	---	----------	----			
UwB2, UwC2-------	0-8	27-35	1.20-1.45	0.6-2.0	0.14-0.19	4.5-6.5	Low----------	0.37	4	6	.5-2
Uwharrie	8-47	35-60	1.25-1.55	0.6-2.0	0.12-0.18	4.5-6.0	Moderate-----	0.32			
	47-56	27-50	1.30-1.60	0.6-2.0	0.12-0.18	4.5-6.0	Moderate-----	0.28			
	56-60	---	---	---	---	---	----------	----			
VaB, VaC---------	0-10	8-20	1.45-1.70	2.0-6.0	0.10-0.14	4.5-6.0	Low----------	0.24	3	3	.5-2
Vance	10-38	35-60	1.25-1.40	0.06-0.2	0.12-0.15	4.5-5.5	Moderate-----	0.28			
	38-60	---	---	---	---	---	----------	----			

See footnote at end of table.

Table 15.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH					Pct
VnB2, VnC2------- Vance	0-10	20-35	1.30-1.45	0.6-2.0	0.12-0.15	4.5-6.0	Low----------	0.28	2	5	.5-1
	10-38	35-60	1.25-1.40	0.06-0.2	0.12-0.15	4.5-5.5	Moderate-----	0.28			
	38-60	---	---	---	---	---	----------	----			
WaA---------- Wahee	0-7	10-27	1.20-1.50	0.2-2.0	0.15-0.20	4.5-6.0	Low----------	0.28	5	5	.5-5
	7-60	35-70	1.40-1.60	0.06-0.2	0.12-0.20	3.6-5.5	Moderate-----	0.28			
WkB---------- Wickham	0-8	8-15	1.45-1.65	2.0-6.0	0.11-0.16	4.5-6.0	Low----------	0.24	5	3	.5-2
	8-50	18-35	1.30-1.50	0.6-2.0	0.12-0.17	4.5-6.0	Low----------	0.24			
	50-70	---	---	---	---	---	----------	----			
ZeB*, ZeC*:											
Zion----------	0-6	5-18	1.30-1.55	2.0-6.0	0.08-0.15	4.5-6.0	Low----------	0.28	2	3	.5-2
	6-19	35-60	1.20-1.50	0.06-0.6	0.10-0.19	4.5-7.3	High---------	0.28			
	19-23	35-50	1.30-1.60	0.2-2.0	0.07-0.15	5.1-7.3	High---------	0.17			
	23-31	---	---	---	---	---	----------	----			
	31-38	---	---	---	---	---	----------	----			
	38	---	---	---	---	---	----------	----			
Enon----------	0-7	5-15	1.45-1.65	2.0-6.0	0.11-0.15	5.1-6.5	Low----------	0.24	3	3	.5-2
	7-10	20-35	1.30-1.50	0.6-2.0	0.12-0.15	5.1-6.5	Low----------	0.24			
	10-33	35-60	1.20-1.40	0.06-0.2	0.12-0.16	5.1-7.8	High---------	0.28			
	33-72	---	---	---	---	---	----------	----			

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 16.--Soil and Water Features

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hard-ness	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In			
ApB----------Appling	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
ArA----------Armenia	D	Frequent----	Brief-----	Dec-Apr	0.5-1.5	Apparent	Dec-Apr	>60	---	High-----	Low.
AsB*, AsC*, AsD*:											
Ashlar----------	B	None--------	---	---	>6.0	---	---	20-40	Hard	Low------	High.
Rock outcrop.											
BaB, BaC, BaD-----Badin	B	None--------	---	---	>6.0	---	---	20-40 >40	Soft Hard	High-----	High.
BgB*, BgC*:											
Badin----------	B	None--------	---	---	>6.0	---	---	20-40 >40	Soft Hard	High-----	High.
Goldston---------	C	None--------	---	---	>6.0	---	---	10-20 20-40	Soft Hard	Moderate	High.
CcB, CcC, CeB2, CeC2----------Cecil	B	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
CfB*:											
Cecil----------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
Urban land.											
ChA----------Chewacla	C	Frequent----	Brief-----	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.
Lignum----------	C	None--------	---	---	1.5-2.5	Perched	Dec-May	40-60	Soft	High-----	High.
DoA, DoB----------Dogue	C	Rare--------	---	---	1.5-3.0	Apparent	Jan-Mar	>60	---	High-----	High.
EnB, EnC, EsC, EsD----------Enon	C	None--------	---	---	>6.0	---	---	>60	---	High-----	Moderate.
EuB*:											
Enon----------	C	None--------	---	---	>6.0	---	---	>60	---	High-----	Moderate.
Urban land.											
HeB----------Helena	C	None--------	---	---	1.5-2.5	Perched	Jan-Apr	>60	---	High-----	High.
HsD, HwB2, HwC2---Hiwassee	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.

See footnote at end of table.

Table 16.--Soil and Water Features--Continued

Soil name and map symbol	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hard-ness	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In			
IrB---------- Iredell	C/D	None--------	---	---	1.0-2.0	Perched	Dec-Apr	>60	---	High-----	Low.
KcB*:											
Kirksey----------	C	None--------	---	---	1.5-3.0	Perched	Dec-Mar	40-60	Hard	Moderate	High.
Cid----------	C	None--------	---	---	1.5-2.5	Perched	Dec-May	20-40	Hard	High-----	High.
LgA---------- Lignum	C	None--------	---	---	1.5-2.5	Perched	Dec-May	40-60	Soft	High-----	High.
MbB, MbC, MeB2, MeC2---------- Mecklenburg	C	None--------	---	---	>6.0	---	---	>60	---	High-----	Moderate.
MkB*:											
Misenheimer------	C	None--------	---	---	1.0-1.5	Perched	Dec-Apr	10-20 20-40	Soft Hard	High-----	High.
Kirksey----------	C	None--------	---	---	1.5-3.0	Perched	Dec-Mar	40-60	Hard	Moderate	High.
OkA---------- Oakboro	C	Frequent----	Brief-----	Nov-Apr	1.0-2.0	Apparent	Dec-Apr	40-60	Hard	High-----	Moderate.
PaB, PaC, PaD, PaE, PcB2, PcC2-- Pacolet	B	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
Pt*. Pits, quarries											
PxB*, PxC*, PxD*, PxE*:											
Poindexter------	B	None--------	---	---	>6.0	---	---	20-40 40-60	Soft Hard	Moderate	Moderate.
Mocksville------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
RnB*, RnC*:											
Rion----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High.
Wedowee----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High.
RoB*, RoC*:											
Rion----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High.
Wedowee----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High.
Ashlar----------	B	None--------	---	---	>6.0	---	---	20-40	Hard	Low------	High.
RvA---------- Riverview	B	Occasional	Brief-----	Dec-Mar	3.0-5.0	Apparent	Dec-Mar	>60	---	Low------	Moderate.
SaB*, SaC*, ScB2*:											
Saw----------	B	None--------	---	---	>6.0	---	---	20-40	Hard	Moderate	Moderate.
Pacolet----------	B	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
SeB---------- Sedgefield	C	None--------	---	---	1.0-1.5	Perched	Jan-Mar	>60	---	High-----	Moderate.

See footnote at end of table.

Table 16.--Soil and Water Features--Continued

Soil name and map symbol	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hard-ness	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In			
TaB*, TaC*, TbB2*:											
Tatum	B	None	---	---	>6.0	---	---	40-60	Soft	High	High.
Badin	B	None	---	---	>6.0	---	---	20-40 >40	Soft Hard	High	High.
Ud*. Udorthents, loamy											
Uf*. Urban land											
UhC, UhE, UrB, UwB2, UwC2 Uwharrie	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
VaB, VaC, VnB2, VnC2 Vance	C	None	---	---	>6.0	---	---	>60	---	High	High.
WaA Wahee	D	Occasional	Very brief to brief.	Dec-Apr	0.5-1.5	Apparent	Dec-Mar	>60	---	High	High.
WkB Wickham	B	None	---	---	>6.0	---	---	>60	---	Moderate	High.
ZeB*, ZeC*:											
Zion	C	None	---	---	>6.0	---	---	20-40	Hard	High	Moderate.
Enon	C	None	---	---	>6.0	---	---	>60	---	High	Moderate.

* See description of the map unit for composition and behavior characteristics of the map unit.

Table 17.--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
Appling	Clayey, kaolinitic, thermic Typic Kanhapludults
*Armenia	Fine, montmorillonitic, thermic Typic Argiaquolls
Ashlar	Coarse-loamy, mixed, thermic Typic Dystrochrepts
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
Dogue	Clayey, mixed, thermic Aquic Hapludults
Enon	Fine, mixed, thermic Ultic Hapludalfs
Goldston	Loamy-skeletal, siliceous, thermic, shallow Typic Dystrochrepts
Helena	Clayey, mixed, thermic Aquic Hapludults
Hiwassee	Clayey, kaolinitic, thermic Typic Kanhapludults
*Iredell	Fine, montmorillonitic, thermic Typic Hapludalfs
Kirksey	Fine-silty, siliceous, thermic Aquic Hapludults
Lignum	Clayey, mixed, thermic Aquic Hapludults
Mecklenburg	Fine, mixed, thermic Ultic Hapludalfs
Misenheimer	Loamy, siliceous, thermic, shallow Aquic Dystrochrepts
Mocksville	Fine-loamy, mixed, thermic Typic Hapludalfs
Oakboro	Fine-loamy, mixed, thermic Fluvaquentic Dystrochrepts
Pacolet	Clayey, kaolinitic, thermic Typic Kanhapludults
Poindexter	Fine-loamy, mixed, thermic Typic Hapludalfs
Rion	Fine-loamy, mixed, thermic Typic Hapludults
Riverview	Fine-loamy, mixed, thermic Fluventic Dystrochrepts
Saw	Clayey, kaolinitic, thermic Typic Kanhapludults
Sedgefield	Fine, mixed, thermic Aquultic Hapludalfs
Tatum	Clayey, mixed, thermic Typic Hapludults
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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