United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

In cooperation with
Virginia Polytechnic
Institute and State
University

Soil Survey of Henry County, Virginia

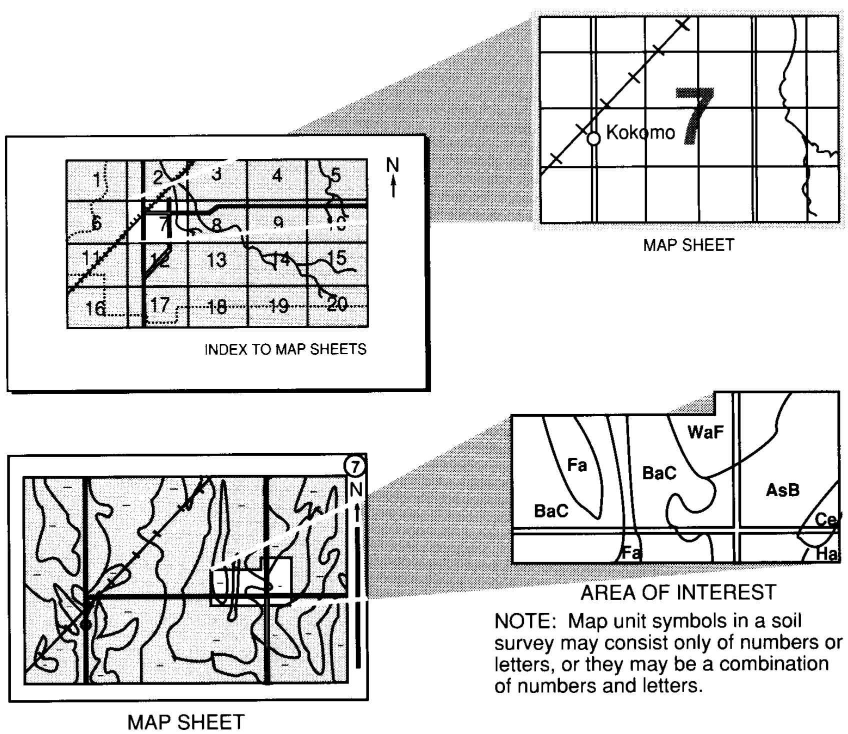
How To Use This Soil Survey

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.

National Cooperative Soil Survey

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey. This survey was made cooperatively by the Natural Resources Conservation Service and Virginia Polytechnic Institute and State University. The survey is part of the technical assistance furnished to the Blue Ridge Soil and Water Conservation District. The Henry County Board of Supervisors provided financial assistance for the survey.

Major fieldwork for this soil survey was completed in 1994. Soil names and descriptions were approved in 1995. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1995. The most current official data are available at http://websoilsurvey.nrcs.usda.gov/app/. Taxonomic classifications of soil series have been updated to the 10th edition of Soil Taxonomy.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale. The information contained in this soil survey is not site specific and does not eliminate the need for onsite investigation.

Nondiscrimination Statement

Cover **Caption:** Planted tobacco field in Henry County, Virginia.

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

Soil surveys contain information that affects land use planning in survey areas. They include predictions of soil behavior for selected land uses. The surveys highlight soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil surveys are designed for many different users. Farmers, ranchers, foresters, and agronomists can use the surveys 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 surveys 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 surveys to help them understand, protect, and enhance the environment.

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

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

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

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State Conservationist
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Soil Survey of
Henry County, Virginia

By Dabney H. Eastham and Mark A. Van Lear, Natural Resources Conservation Service

Fieldwork by Dabney H. Eastham and Jerry C. McDaniel, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
Virginia Polytechnic Institute and State University, Henry County Board of Supervisors, and Blue Ridge Soil and Water Conservation District Board of Directors

The survey area encompasses all of HENRY COUNTY and is located in the southern part of Virginia (fig. 1) in the Piedmont Physiographic Province. It has an area of 252,700 acres, or 394.8 square miles. Henry County is bordered on the north by Franklin County, on the south by Stokes and Rockingham counties, North Carolina, on the east by Pittsylvania County, and on the west by Patrick County. U.S. Route 220 runs north-south through the county, and U.S. 58 runs east-west. Both roads pass through the city of Martinsville.

According to the Bureau of the Census, in 2000, the population of the county was 57,930 (19).

General Nature of the Survey Area

This section provides general information about the survey area. It discusses physiography, relief, and drainage, and climate.

Physiography, Relief, and Drainage

The survey area is completely within the Piedmont Physiographic Province. It includes a few scattered foothills of the Blue Ridge Mountains. The geologic features of the area are very old, except for the Triassic Basin in the extreme southeastern corner of Henry County.

The survey area is well dissected by streams. It has wide to narrow, undulating to rolling interstream divides. Areas near the larger streams are steep. The foothill mountains are rolling to very steep.

Elevation generally ranges from 700 to 1,350 feet above sea level. The Triassic Basin in the southeastern corner of the county ranges from 620 to 740 feet. The highest point in the county is 1,850 feet and is located on Turkeycock Mountain on the Henry-Franklin County line. The lowest point is 540 feet and is located along the Smith River at the North Carolina State line.

The Smith River is the major drainage system in the county. It runs northwest to southeast, from Philpott Reservoir through Martinsville and into North Carolina. Leatherwood Creek drains a large portion of the northern part of the county and joins

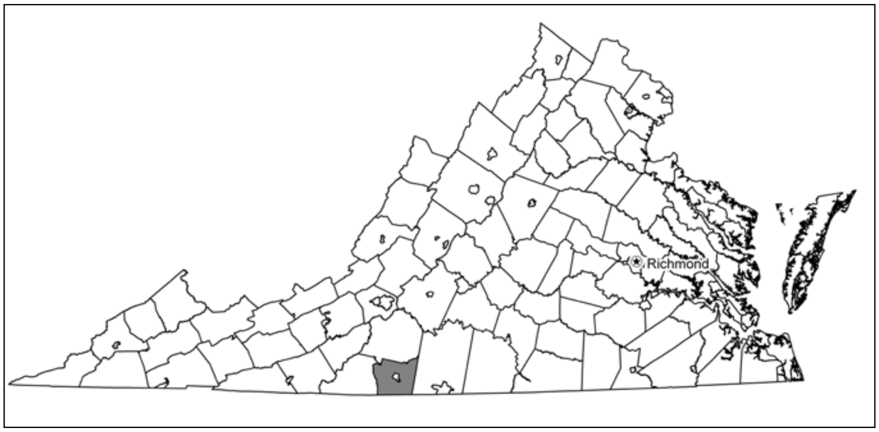

Figure 1.—Location of Henry County in Virginia.

with the Smith River southeast of Martinsville. The Mayo River flows through the southwestern portion of the county, from Patrick County into North Carolina.

Climate

Prepared by the Natural Resources Conservation Service National Water and Climate Center, Portland, Oregon.

Climate tables are created from climate station PHILPOTT DAM 2 Virginia

Thunderstorm days, relative humidity, percent sunshine, and wind information are estimated from First Order station Greensboro, North Carolina.

Table 1 gives data on temperature and precipitation for the survey area as recorded at PHILPOTT DAM 2 in the period 1971 to 2000. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on the length of the growing season.

In winter, the average temperature is 37.8 degrees F and the average daily minimum temperature is 26.8 degrees. The lowest temperature on record, which occurred at PHILPOTT DAM 2 on January 21, 1985, is -10 degrees. In summer, the average temperature is 73.8 degrees and the average daily maximum temperature is 85.1 degrees. The highest temperature, which occurred at PHILPOTT DAM 2 on August 22, 1983, is 102 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 average annual total precipitation is about 50.32 inches. Of this, about 31.65 inches, or 63 percent, usually falls in April through October. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 8.28 inches at PHILPOTT DAM 2 on September 8, 1987. Thunderstorms occur on about 40 days each year, and most occur in July.

The average seasonal snowfall is 4.7 inches. The greatest snow depth at any one time during the period of record was 22 inches recorded on January 26, 1987. On an average, 7 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 22.5 inches recorded on March 14, 1993.

The average relative humidity in mid-afternoon is about 55 percent. Humidity is higher at night, and the average at dawn is about 83 percent. The sun shines 62 percent of the time in summer and 53 percent in winter. The prevailing wind is from the southwest. Average wind speed is highest, 8.6 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 the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. 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 unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of 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 were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

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

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

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

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

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

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

Detailed Soil Map Units

The map units delineated on the detailed soil maps in 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.

A map unit delineation on a soil 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. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils 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 minor components that belong to taxonomic classes other than those of the major soils.

Most minor 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, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. 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 contrasting components are mentioned in the map unit descriptions. A few areas of minor components 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 minor components 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. If intensive use of small areas is planned, however, 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, salinity, 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, Minnieville loam, 7 to 15 percent slopes is a phase of the Minnieville 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. Orenda-Spriggs complex, 15 to 25 percent slopes is an example.

Table 4 lists the map units in this survey area. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

1B—Ayersville gravelly loam, 2 to 7 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands on Triassic basin
Position on the landform: Broad concave summits and shoulders
Elevation: 620 to 738 feet
Size of areas: 55 acres (one delineation for join purposes)

Map Unit Composition

Ayersville and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Ayersville

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

Subsoil:
8 to 22 inches—dark reddish brown gravelly loam with iron-manganese concretions

Substratum:
22 to 26 inches—reddish brown very gravelly silt loam

Soft bedrock:
26 to 30 inches—siltstone bedrock

Hard bedrock:
30 inches—siltstone bedrock

Minor Components

Dissimilar components:
- Mayodan soils, very deep to bedrock, on smoother slightly convex upland summits, shoulders, and backslopes
- Creedmoor soils, very deep to bedrock, moderately well drained, on smoother portions of the same landscape
- Leaksville soils, moderately deep to bedrock, poorly drained, on adjacent to intermittent drainageways

Similar components:
- Stoneville soils, deep to bedrock, on similar landscape positions
- Other soils, shallow to bedrock, on similar landscape positions

Soil Properties and Qualities

Available water capacity: Very low (about 2.6 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Triassic residuum weathered from shale, siltstone, and mudstone

Use and Management Considerations

Cropland
Suitability: Moderately suited to wheat and grass-legume hay; poorly suited to corn and soybeans; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The limited available water capacity may cause plants to suffer from moisture stress.

Pastureland
Suitability: Moderately suited to pasture
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The limited available water capacity may cause plants to suffer from moisture stress during the drier summer months.

Woodland
Suitability: Moderately suited to chestnut oak
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- The low strength interferes with the construction of haul roads and log landings.
- The low strength may create unsafe conditions for log trucks.

Building sites
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.

Septic tank absorption fields
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of proper installation of the effluent distribution lines is increased.

Local roads and streets
- These soils are well suited to local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland

Land capability class: 2e
Virginia soil management group: FF
Hydric soil: No

1C—Ayersville gravelly loam, 7 to 15 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands on Triassic basin
Position on the landform: Broad concave summits, shoulders, and backslopes
Elevation: 620 to 738 feet
Size of areas: 190 acres (one delineation for join purposes)

Map Unit Composition

Ayersville and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Ayersville

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

Subsoil:
8 to 22 inches—dark reddish brown gravelly loam with iron-manganese concretions

Substratum:
22 to 26 inches—reddish brown very gravelly silt loam

Soft bedrock:
26 to 30 inches—siltstone bedrock

Hard bedrock:
30 inches—siltstone bedrock

Minor Components

Dissimilar components:
- Mayodan soils, very deep to bedrock, on smoother slightly convex upland summits, shoulders, and backslopes
- Creedmoor soils, very deep to bedrock, moderately well drained, on smoother portions of the same landscape
- Leaksville soils, moderately deep to bedrock, poorly drained, on adjacent to intermittent drainageways

Similar components:
- Stoneville soils, deep to bedrock, on similar landscape positions
- Other soils, shallow to bedrock, on similar landscape positions

Soil Properties and Qualities

Available water capacity: Very low (about 2.6 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None

Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Triassic residuum weathered from shale, siltstone, and mudstone

Use and Management Considerations

Cropland

Suitability: Moderately suited to wheat and grass-legume hay; poorly suited to corn and soybeans; not suited to alfalfa hay

- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The limited available water capacity may cause plants to suffer from moisture stress.

Pastureland

Suitability: Moderately suited to pasture

- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The limited available water capacity may cause plants to suffer from moisture stress during the drier summer months.

Woodland

Suitability: Moderately suited to chestnut oak

- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- The low strength interferes with the construction of haul roads and log landings.
- The low strength may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of proper installation of the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: FF
Hydric soil: No

2B—Buckhall sandy loam, 2 to 7 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands
Position on the landform: Narrow to broad convex summits, shoulders, and backslopes
Elevation: 699 to 1,351 feet
Size of areas: 3 to 35 acres

Map Unit Composition

Buckhall and similar soils: Typically 95 percent, ranging from about 90 to 100 percent

Typical Profile

Buckhall

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

Subsoil:
9 to 12 inches—reddish yellow sandy clay loam
12 to 19 inches—reddish yellow clay loam
19 to 35 inches—strong brown clay
35 to 42 inches—strong brown clay loam
42 to 46 inches—reddish yellow clay loam

Substratum:
46 to 65 inches—yellow, red, and reddish yellow sandy clay loam

Minor Components

Dissimilar components:
- None identified

Similar components:
- Clifford soils, with redder subsoils, on similar landscape positions
- Areas with slopes outside the defined map unit range
- Areas with gravelly surfaces

Soil Properties and Qualities

Available water capacity: Moderate (about 6.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Residuum weathered from granite and gneiss

Use and Management Considerations

Cropland
Suitability: Well suited to wheat and grass-legume hay; moderately suited to corn, soybeans, and alfalfa hay

- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.

Pastureland
Suitability: Well suited to pasture
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland
Suitability: Moderately suited to loblolly pine, northern red oak, and yellow-poplar
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope may restrict the use of some mechanical planting equipment.
- These soils are well suited to haul roads and log landings.
- These soils are well suited to equipment operations.

Building sites
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- These soils are well suited to septic tank absorption fields.

Local roads and streets
- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: V
Hydric soil: No

2C—Buckhall sandy loam, 7 to 15 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands
Position on the landform: Narrow to broad convex summits, shoulders, and backslopes
Elevation: 699 to 1,351 feet
Size of areas: 5 to 20 acres

Map Unit Composition

Buckhall and similar soils: Typically 95 percent, ranging from about 90 to 100 percent

Typical Profile

Buckhall

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

Subsoil:
9 to 12 inches—reddish yellow sandy clay loam
12 to 19 inches—reddish yellow clay loam

19 to 35 inches—strong brown clay
35 to 42 inches—strong brown clay loam
42 to 46 inches—reddish yellow clay loam

Substratum:
46 to 65 inches—yellow, red, and reddish yellow sandy clay loam

Minor Components

Dissimilar components:
- None identified

Similar components:
- Clifford soils, with redder subsoils, on similar landscape positions
- Areas with slopes outside the defined map unit range
- Areas with gravelly surfaces

Soil Properties and Qualities

Available water capacity: Moderate (about 6.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Residuum weathered from granite and gneiss

Use and Management Considerations

Cropland
Suitability: Moderately suited to corn, soybeans, wheat, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.

Pastureland
Suitability: Well suited to pasture
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland
Suitability: Moderately suited to loblolly pine, northern red oak, and yellow-poplar
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- These soils are well suited to haul roads and log landings.

Building sites
- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: V
Hydric soil: No

3E—Buffstat-Bugley complex, 25 to 60 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands
Position on the landform: Convex to linear backslopes
Elevation: 699 to 1,351 feet
Size of areas: 3 to 1045 acres
Note: These two soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping

Map Unit Composition

Buffstat and similar soils: Typically 55 percent, ranging from about 50 to 60 percent
Bugley and similar soils: Typically 40 percent, ranging from about 35 to 45 percent

Typical Profile

Buffstat

Surface layer:
0 to 3 inches—brown channery silt loam

Subsurface layer:
3 to 5 inches—strong brown silt loam

Subsoil:
5 to 41 inches—yellowish red silty clay loam

Soft bedrock:
41 to 66 inches—graphitic schist bedrock

Bugley

Surface layer:
0 to 3 inches—dark yellowish brown channery silt loam

Subsoil:
3 to 11 inches—strong brown very channery silt loam

Hard bedrock:
11 inches—graphitic schist bedrock

Minor Components

Dissimilar components:
- Areas of rock outcrop on similar landscape positions

Similar components:
- Littlejoe soils, deep to bedrock, with redder subsoils, on similar landscape positions
- Clifford soils, very deep to bedrock, in granite gneiss material, on similar landscape positions
- Other soils, less clay in the subsoil, on similar landscape positions

Soil Properties and Qualities

Available water capacity: Buffstat—Low (about 4.6 inches); Bugley—Very low (about 1.2 inches)
Slowest saturated hydraulic conductivity: Buffstat—Moderately high (about 0.57 in/hr); Bugley—High (about 1.98 in/hr)
Depth class: Buffstat—Deep (40 to 60 inches); Bugley—Shallow (10 to 20 inches)
Depth to root-restrictive feature: Buffstat—40 to 60 inches to bedrock (paralithic); Bugley—10 to 20 inches to bedrock (lithic)
Drainage class: Buffstat—Well drained; Bugley—Somewhat excessively drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Buffstat—Moderate; Bugley—Low
Runoff class: Buffstat—High; Bugley—Very high
Surface fragments: None
Parent material: Residuum weathered from graphitic and sericitic schist, and phyllite

Use and Management Considerations

Cropland
- These soils are unsuited to cropland.

Pastureland
- These soils are unsuited to pastureland.

Woodland
Suitability: Moderately suited to loblolly pine and northern red oak
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality, especially in areas on steeper slopes. A timber harvest plan should focus on the proper location of haul road and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The slope makes the use of mechanical planting equipment impractical.
- The low strength interferes with the construction of haul roads and log landings.

Building sites
- The slope influences the use of machinery and the amount of excavation required.

Septic tank absorption fields
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.
- The low strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: Buffstat—CC; Bugley—A
Hydric soil: No

4B—Clifford sandy loam, 2 to 7 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands
Position on the landform: Narrow to broad convex summits and shoulders
Elevation: 699 to 1,351 feet
Size of areas: 3 to 600 acres

Map Unit Composition

Clifford and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Clifford

Surface layer:
0 to 7 inches—brown sandy loam

Subsoil:
7 to 11 inches—yellowish red clay loam
11 to 54 inches—red clay
54 to 62 inches—red clay loam

Substratum:
62 to 82 inches—strong brown, dark red, and red fine sandy loam

Minor Components

Dissimilar components:
- None identified

Similar components:
- Minnieville soils, in mafic material, on similar landscape positions
- Dyke soils, in alluvium, on high stream terrace landscapes
- Delanco soils, moderately well drained, adjacent to streams
- Other soils, very deep to bedrock, with thinner sola, on similar landscape positions
- Other soils with severely eroded surfaces having sandy clay loam textures, on similar landscape positions
- Other soils, moderately well drained, in alluvium, adjacent to intermittent streams and drainageways
- Areas of soils with slopes outside the defined map unit range
- Areas of soils with gravelly surface horizons, on similar landscape positions

Soil Properties and Qualities

Available water capacity: Moderate (about 7.4 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: None
Parent material: Residuum weathered from granite and gneiss, and mica schist

Use and Management Considerations

Cropland
Suitability: Well suited to wheat, tobacco, and grass-legume hay; moderately suited to corn and soybeans
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.

Pastureland
Suitability: Moderately suited to pasture
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland
Suitability: Well suited to northern red oak; moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope may restrict the use of some mechanical planting equipment.
- These soils are well suited to haul roads and log landings.
- These soils are well suited to equipment operations.

Building sites
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The excessive permeability limits the proper treatment of the effluent from conventional septic systems and may pollute the water table.
- These soils are well suited to septic tank absorption fields.

Local roads and streets
- The low strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: X
Hydric soil: No

4C—Clifford sandy loam, 7 to 15 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands
Position on the landform: Narrow to broad convex summits, shoulders, backslopes, and footslopes
Elevation: 699 to 1,351 feet
Size of areas: 3 to 7,125 acres

Map Unit Composition

Clifford and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Clifford

Surface layer:
0 to 7 inches—brown sandy loam

Subsoil:
7 to 11 inches—yellowish red clay loam
11 to 54 inches—red clay
54 to 62 inches—red clay loam

Substratum:
62 to 82 inches—strong brown, dark red, and red fine sandy loam

Minor Components

Dissimilar components:
- Delanco soils, moderately well drained, adjacent to streams
- Other soils, moderately well drained, in alluvium, adjacent to intermittent streams and drainageways

Similar components:
- Minnieville soils, in mafic material, on similar landscape positions
- Dyke soils, in alluvium, on high stream terrace landscapes
- Other soils, very deep to bedrock, with thinner sola, on similar landscape positions
- Other soils with severely eroded surfaces having sandy clay loam textures, on similar landscape positions
- Areas of soils with slopes outside the defined map unit range
- Areas of soils with gravelly surface horizons, on similar landscape positions

Soil Properties and Qualities

Available water capacity: Moderate (about 7.4 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Medium
Surface fragments: None
Parent material: Residuum weathered from granite and gneiss, and mica schist

Use and Management Considerations

Cropland

Suitability: Well suited to tobacco; moderately suited to corn, soybeans, and wheat

- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.

Pastureland

Suitability: Moderately suited to pasture (fig. 2)

- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Well suited to northern red oak; moderately suited to yellow-poplar

- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- These soils are well suited to haul roads and log landings.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Figure 2.—An area of Clifford sandy loam, 7 to 15 percent slopes, which is typically used for hayland and pasture.

Septic tank absorption fields
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- The low strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: X
Hydric soil: No

4D—Clifford sandy loam, 15 to 25 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands
Position on the landform: Convex to concave shoulders and backslopes and areas adjacent to intermittent drainageways
Elevation: 699 to 1,351 feet
Size of areas: 3 to 865 acres

Map Unit Composition

Clifford and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Clifford

Surface layer:
0 to 7 inches—brown sandy loam

Subsoil:
7 to 11 inches—yellowish red clay loam
11 to 54 inches—red clay
54 to 62 inches—red clay loam

Substratum:
62 to 82 inches—strong brown, dark red, and red fine sandy loam

Minor Components

Dissimilar components:
- Spriggs soils, shallow to bedrock, in mafic or felsic material with slower permeability, on narrow, strongly convex shoulder and backslopes
- Orenda soils, in mafic or felsic material with slower permeability, on similar landscape positions
- Woolwine soils, moderately deep to bedrock, on similar landscape positions
- Delanco soils, moderately well drained, adjacent to streams
- Other soils, moderately well drained, in alluvium, adjacent to intermittent streams and drainageways
- Areas of soils with gravel, cobbles or large stones on the soil surface, on similar landscape positions
- Areas of rock outcrop, on similar landscape positions

Similar components:
- Minnieville soils, in mafic material, on similar landscape positions
- Dyke soils, in alluvium, on high stream terrace landscapes
- Other soils, very deep to bedrock, with thinner sola, on similar landscape positions
- Other soils with severely eroded surfaces having sandy clay loam textures, on similar landscape positions
- Areas of soils with slopes outside the defined map unit range
- Areas of soils with gravelly surface horizons, on similar landscape positions
- Areas of soils, severely eroded or gullied, on similar landscape positions

Soil Properties and Qualities

Available water capacity: Moderate (about 7.4 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Residuum weathered from granite and gneiss, and mica schist

Use and Management Considerations

Cropland
Suitability: Moderately suited to wheat, grass-legume hay, and alfalfa hay; poorly suited to corn and soybeans
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.

Pastureland
Suitability: Moderately suited to pasture
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland
Suitability: Well suited to northern red oak; moderately suited to yellow-poplar and eastern white pine
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The low strength interferes with the construction of haul roads and log landings.

Building sites
- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- The low strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: X
Hydric soil: No

4E—Clifford sandy loam, 25 to 45 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands
Position on the landform: Convex to concave shoulders and backslopes and areas adjacent to intermittent drainageways
Elevation: 699 to 1,351 feet
Size of areas: 3 to 1,080 acres

Map Unit Composition

Clifford and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Clifford

Surface layer:
0 to 7 inches—brown sandy loam

Subsoil:
7 to 11 inches—yellowish red clay loam
11 to 54 inches—red clay
54 to 62 inches—red clay loam

Substratum:
62 to 82 inches—strong brown, dark red, and red fine sandy loam

Minor Components

Dissimilar components:
- Spriggs soils, shallow to bedrock, in mafic or felsic material with slower permeability, on narrow, strongly convex shoulder and backslopes
- Orenda soils, in mafic or felsic material with slower permeability, on similar landscape positions
- Woolwine soils, moderately deep to bedrock, on similar landscape positions
- Delanco soils, moderately well drained, adjacent to streams
- Other soils, moderately well drained, in alluvium, adjacent to intermittent streams and drainageways
- Areas of soils with gravel, cobbles or large stones on the soil surface, on similar landscape positions
- Areas of rock outcrop, on similar landscape positions

Similar components:
- Minnieville soils, in mafic material, on similar landscape positions
- Dyke soils, in alluvium, on high stream terrace landscapes
- Other soils, very deep to bedrock, with thinner sola, on similar landscape positions
- Other soils with severely eroded surfaces having sandy clay loam textures, on similar landscape positions
- Areas of soils with slopes outside the defined map unit range
- Areas of soils with gravelly surface horizons, on similar landscape positions
- Areas of soils, severely eroded or gullied, on similar landscape positions

Soil Properties and Qualities

Available water capacity: Moderate (about 7.4 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Residuum weathered from granite and gneiss, and mica schist

Use and Management Considerations

Cropland
- These soils are unsuited to cropland.

Pastureland
- These soils are unsuited to pastureland.

Woodland
Suitability: Well suited to northern red oak; moderately suited to yellow-poplar and eastern white pine
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality, especially in areas on steeper slopes. A timber harvest plan should focus on the proper location of haul road and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The slope makes the use of mechanical planting equipment impractical.
- The low strength interferes with the construction of haul roads and log landings.

Building sites
- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- The low strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: X
Hydric soil: No

5A—Codorus loam, 0 to 2 percent slopes, frequently flooded

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Flood plains
Position on the landform: Smooth to concave toeslopes
Elevation: 699 to 1,351 feet
Size of areas: 3 to 205 acres

Map Unit Composition

Codorus and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Codorus

Surface layer:
0 to 8 inches—brown loam

Subsoil:
8 to 12 inches—brown loam
12 to 22 inches—strong brown loam with brownish yellow iron depletions
22 to 36 inches—strong brown loam with brownish yellow clay depletions
36 to 47 inches—grayish brown loam with strong brown and yellowish red masses of oxidized iron

Substratum:
47 to 62 inches—grayish brown loam with yellowish red and strong brown masses of oxidized iron

Minor Components

Dissimilar components:
- Delanco soils, moderately well drained, on stream terrace treads
- Elsinboro soils, well drained, on stream terrace treads
- Colvard soils, well drained, on smooth, nearly level to slightly convex positions on the flood plain
- Other soils, very poorly drained, on lower depressional areas

Similar components:
- Other soils, poorly drained, on lower depressional areas
- Other soils, higher percentage of clay, on similar positions

Soil Properties and Qualities

Available water capacity: High (about 9.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Moderately well drained

Depth to seasonal water saturation: About 12 to 24 inches
Water table kind: Apparent
Flooding hazard: Frequent
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Low
Surface fragments: None
Parent material: Alluvium

Use and Management Considerations

Cropland

Suitability: Well suited to corn, soybeans, wheat, grass-legume hay, and alfalfa hay
- Frost action may damage the root system of winter grain crops.
- Frequent flooding restricts the use of winter grain crops.
- Flooding may damage crops.
- The seasonal high water table restricts equipment operation, decreases the viability of crops, and interferes with the planting and harvesting of crops.

Pastureland

Suitability: Well suited to pasture
- Flooding may damage pastures.
- Frost action may damage the root systems of plants.

Woodland

Suitability: Well suited to northern red oak, yellow-poplar, and eastern white pine
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should focus on streamside management zones and stream crossings and should include general adherence to all applicable best management practices.
- Flooding may damage haul roads.
- Flooding restricts the safe use of roads by log trucks.
- Soil wetness may limit the use of log trucks.
- The low strength interferes with the construction of haul roads and log landings.
- The low strength may create unsafe conditions for log trucks.

Building sites

- Flooding limits these soils for building site development.
- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields

- Flooding limits these soils for septic tank absorption fields.
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets

- Flooding may damage local roads and streets.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.
- The low strength may cause structural damage to local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 2w
Virginia soil management group: A
Hydric soil: No

6A—Colvard fine sandy loam, 0 to 2 percent slopes, occasionally flooded

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Flood plains
Position on the landform: Smooth to convex toeslopes
Elevation: 699 to 1,351 feet
Size of areas: 3 to 1,200 acres

Map Unit Composition

Colvard and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Colvard

Surface layer:
0 to 12 inches—brown fine sandy loam

Substratum:
12 to 43 inches—brown fine sandy loam
43 to 62 inches—dark yellowish brown fine sandy loam

Minor Components

Dissimilar components:
- Delanco soils, moderately well drained, on stream terrace treads
- Elsinboro soils, well drained, with more clay, on stream terrace treads
- Codorus soils, somewhat poorly drained, on slightly concave to smooth segments of the flood plain
- Other soils, very poorly drained to poorly drained, on lower depressional areas of the flood plain

Similar components:
- None identified

Soil Properties and Qualities

Available water capacity: Low (about 5.4 inches)
Slowest saturated hydraulic conductivity: High (about 1.98 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: About 48 to 79 inches
Water table kind: Apparent
Flooding hazard: Occasional
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Negligible
Surface fragments: None
Parent material: Alluvium

Use and Management Considerations

Cropland

Suitability: Moderately suited to wheat; poorly suited to corn and soybeans; not suited to grass-legume hay and alfalfa hay
- Flooding may damage crops.

Pastureland

Suitability: Poorly suited to pasture

- Flooding may damage pastures.

Woodland

Suitability: Well suited to yellow-poplar; moderately suited to eastern white pine

- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should focus on streamside management zones and stream crossings and should include general adherence to all applicable best management practices.
- Flooding may damage haul roads.
- Flooding restricts the safe use of roads by log trucks.

Building sites

- Flooding limits these soils for building site development.
- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields

- Flooding limits these soils for septic tank absorption fields.

Local roads and streets

- Flooding may damage local roads and streets.
- These soils are well suited to local roads and streets.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 2s
Virginia soil management group: II
Hydric soil: No

7B—Creedmoor fine sandy loam, 1 to 4 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands on Triassic basin
Position on the landform: Broad concave summits and adjacent to drainageways
Elevation: 620 to 738 feet
Size of areas: 3 to 7 acres

Map Unit Composition

Creedmoor and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Creedmoor

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

Subsurface layer:
7 to 11 inches—light yellowish brown fine sandy loam

Subsoil:
11 to 32 inches—strong brown clay with pinkish gray clay depletions

32 to 47 inches—brown clay with yellowish red masses of oxidized iron and pinkish gray clay depletions

Substratum:
47 to 67 inches—dark reddish brown, pinkish gray, and yellowish red clay loam

Soft bedrock:
67 to 77 inches—sandstone bedrock

Minor Components

Dissimilar components:
- Mayodan soils, well drained, on smoother slightly convex upland summits, shoulders, and backslopes
- Ayersville soils, moderately deep to bedrock, well drained, on shoulders, backslopes, and footslopes
- Leaksville soils, moderately deep to bedrock, poorly drained, on adjacent to intermittent drainageways
- Stoneville soils, deep to bedrock, well drained, on smoother slightly convex upland summits, shoulders, and backslopes

Similar components:
- None identified

Soil Properties and Qualities

Available water capacity: Moderate (about 6.3 inches)
Slowest saturated hydraulic conductivity: Low (about 0.00 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: 60 to 120 inches to bedrock (paralithic)
Drainage class: Moderately well drained
Depth to seasonal water saturation: About 12 to 30 inches
Water table kind: Perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: High
Runoff class: Very high
Surface fragments: None
Parent material: Triassic residuum weathered from siltstone, mudstone, fine-grained sandstone, and shale

Use and Management Considerations

Cropland
Suitability: Well suited to tobacco; moderately suited to grass-legume hay; poorly suited to corn, soybeans, and wheat; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.
- The seasonal high water table restricts equipment operation, decreases the viability of crops, and interferes with the planting and harvesting of crops.

Pastureland
Suitability: Moderately suited to pasture
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland
Suitability: Well suited to loblolly pine; moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in order to minimize the potential

negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Soil wetness may limit the use of log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites
- The seasonal high water table may restrict the period when excavations can be made.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.
- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.
- The low strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 2e
Virginia soil management group: KK
Hydric soil: No

8A—Delanco loam, 0 to 4 percent slopes, rarely flooded

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Stream terraces
Position on the landform: Smooth to concave toeslopes
Elevation: 699 to 1,351 feet
Size of areas: 4 to 110 acres

Map Unit Composition

Delanco and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Delanco

Surface layer:
0 to 10 inches—brown loam

Subsoil:
10 to 26 inches—light olive brown clay loam with yellowish brown masses of oxidized iron and light brownish gray iron depletions
26 to 37 inches—light brownish gray clay with yellowish brown masses of oxidized iron

Substratum:
37 to 50 inches—light gray clay loam with light olive brown masses of oxidized iron
50 to 57 inches—light gray loamy sand with light olive brown masses of oxidized iron
57 to 80 inches—light gray very gravelly sand with light olive brown masses of oxidized iron

Minor Components

Dissimilar components:
- Colvard soils, well drained, on flood plains subject to occasional flooding
- Codorus soils, somewhat poorly drained, on flood plains subject to frequent flooding
- Other soils, very poorly drained to poorly drained, in depressional areas

Similar components:
- Elsinboro soils, well drained, on slightly convex portions of similar landform positions

Soil Properties and Qualities

Available water capacity: Moderate (about 6.7 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.14 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Moderately well drained
Depth to seasonal water saturation: About 12 to 30 inches
Water table kind: Apparent
Flooding hazard: Rare
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Alluvium

Use and Management Considerations

Cropland
Suitability: Well suited to corn, soybeans, wheat, and grass-legume hay; moderately suited to alfalfa hay (fig. 3)
- Frost action may damage the root system of winter grain crops.
- The seasonal high water table restricts equipment operation, decreases the viability of crops, and interferes with the planting and harvesting of crops.

Pastureland
Suitability: Well suited to pasture
- Frost action may damage the root systems of plants.

Woodland
Suitability: Moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Soil wetness may limit the use of log trucks.
- The low strength interferes with the construction of haul roads and log landings.
- The low strength may create unsafe conditions for log trucks.

Building sites
- Flooding limits these soils for building site development.

Figure 3.—Cropland in an area of Delanco loam, 0 to 4 percent slopes, rarely flooded is in the lower landscape position in the foreground. An area of Elsinboro fine sandy loam, 0 to 4 percent slopes, rarely flooded is in the higher landscape position in the background.

- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.
- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.
- The low strength may cause structural damage to local roads and streets.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2w
Virginia soil management group: B
Hydric soil: No

9B—Dyke loam, 2 to 7 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: High stream terraces
Position on the landform: Broad convex toeslopes
Elevation: 699 to 1,351 feet
Size of areas: 3 to 45 acres

Map Unit Composition

Dyke and similar soils: Typically 95 percent, ranging from about 90 to 100 percent

Typical Profile

Dyke

Surface layer:
0 to 6 inches—dark reddish brown loam

Subsoil:
6 to 9 inches—dusky red clay loam
9 to 65 inches—dusky red clay

Minor Components

Dissimilar components:
- Areas of soils with cobbles and/or stones on the surface, on similar landscape positions

Similar components:
- Clifford soils on adjacent upland backslopes and footslopes
- Minnieville soils on adjacent upland backslopes and footslopes
- Areas of soils with slopes outside the defined range

Soil Properties and Qualities

Available water capacity: Moderate (about 6.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Old alluvium

Use and Management Considerations

Cropland
Suitability: Well suited to corn, soybeans, wheat, and grass-legume hay; moderately suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland
Suitability: Well suited to pasture
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland
Suitability: Well suited to northern red oak; moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope may restrict the use of some mechanical planting equipment.

- The low strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- These soils are well suited to septic tank absorption fields.

Local roads and streets
- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.
- The low strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: O
Hydric soil: No

9C—Dyke loam, 7 to 15 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: High stream terraces
Position on the landform: Broad convex toeslopes
Elevation: 699 to 1,351 feet
Size of areas: 3 to 75 acres

Map Unit Composition

Dyke and similar soils: Typically 95 percent, ranging from about 90 to 100 percent

Typical Profile

Dyke

Surface layer:
0 to 6 inches—dark reddish brown loam

Subsoil:
6 to 9 inches—dusky red clay loam
9 to 65 inches—dusky red clay

Minor Components

Dissimilar components:
- Areas of soils with cobbles and/or stones on the surface, on similar landscape positions

Similar components:
- Clifford soils on adjacent upland backslopes and footslopes
- Minnieville soils on adjacent upland backslopes and footslopes
- Areas of soils with slopes outside the defined range

Soil Properties and Qualities

Available water capacity: Moderate (about 6.3 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)

Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Old alluvium

Use and Management Considerations

Cropland

Suitability: Well suited to wheat and grass-legume hay; moderately suited to corn and soybeans

- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland

Suitability: Well suited to pasture

- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Well suited to northern red oak; moderately suited to yellow-poplar

- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The low strength interferes with the construction of haul roads and log landings.
- The low strength may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.
- The low strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: O
Hydric soil: No

10A—Elsinboro fine sandy loam, 0 to 4 percent slopes, rarely flooded

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Stream terraces
Position on the landform: Smooth to convex toeslopes
Elevation: 699 to 1,351 feet
Size of areas: 3 to 65 acres

Map Unit Composition

Elsinboro and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Elsinboro

Surface layer:
0 to 11 inches—brown fine sandy loam

Subsoil:
11 to 25 inches—strong brown clay loam
25 to 38 inches—strong brown sandy clay loam

Substratum:
38 to 60 inches—brown sandy loam

Minor Components

Dissimilar components:
- Colvard soils, with less clay, on flood plains subject to occasional flooding
- Codorus soils, somewhat poorly drained, on flood plains subject to frequent flooding
- Other soils, very poorly drained to poorly drained, in depressions on similar landscape positions

Similar components:
- Delanco soils, moderately well drained, on linear to concave areas of the same landscape

Soil Properties and Qualities

Available water capacity: Moderate (about 7.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 60 inches
Water table kind: Apparent
Flooding hazard: Rare
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Low
Surface fragments: None
Parent material: Alluvium

Use and Management Considerations

Cropland
Suitability: Well suited to corn, soybeans, wheat, and grass-legume hay; moderately suited to alfalfa hay

Pastureland
Suitability: Well suited to pasture
- These soils are well suited to pastureland.

Woodland
Suitability: Moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- These soils are well suited to haul roads and log landings.
- These soils are well suited to equipment operations.

Building sites
- Flooding limits these soils for building site development.
- The seasonal high water table may restrict the period when excavations can be made.

Septic tank absorption fields
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.
- The excessive permeability limits the proper treatment of the effluent from conventional septic systems and may pollute the water table.

Local roads and streets
- The low strength may cause structural damage to local roads and streets.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2s
Virginia soil management group: L
Hydric soil: No

11A—Leaksville silt loam, 0 to 4 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Upland on Triassic basin
Position on the landform: Shoulders adjacent to intermittent drainageways
Elevation: 620 to 738 feet
Size of areas: 3 to 15 acres

Map Unit Composition

Leaksville and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Leaksville

Surface layer:
0 to 6 inches—dark grayish brown silt loam with iron-manganese concretions

Subsurface layer:
6 to 9 inches—light brownish gray channery silt loam with iron-manganese concretions, light yellowish brown masses of oxidized iron, and yellowish brown masses of oxidized iron

Subsoil:
9 to 18 inches—grayish brown clay with iron-manganese concretions and yellowish brown masses of oxidized iron

Substratum:
18 to 24 inches—dark grayish brown very channery silty clay loam with iron-manganese concretions, grayish brown masses of oxidized iron, and yellowish brown masses of oxidized iron

Soft bedrock:
24 to 30 inches—shale bedrock

Hard bedrock:
30 inches—shale bedrock

Minor Components

Dissimilar components:
- Ayersville soils, well drained, on slightly higher convex parts of the landscape
- Stoneville soils, deep to bedrock, well drained, on slightly higher convex parts of the landscape
- Mayodan soils, very deep to bedrock, well drained, on slightly higher convex parts of the landscape
- Creedmoor soils, very deep to bedrock, moderately well drained, on similar linear to concave parts of the landscape

Similar components:
- None identified

Soil Properties and Qualities

Available water capacity: Very low (about 2.6 inches)
Slowest saturated hydraulic conductivity: Low (about 0.00 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Poorly drained
Depth to seasonal water saturation: About 0 to 12 inches
Water table kind: Perched
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: High
Runoff class: High
Surface fragments: None
Parent material: Triassic residuum weathered from shale

Use and Management Considerations

Cropland

Suitability: Moderately suited to grass-legume hay; poorly suited to corn, soybeans, and wheat; not suited to alfalfa hay
- The high clay content restricts the rooting depth of crops.
- The limited available water capacity may cause plants to suffer from moisture stress.
- The risk of compaction increases when the soil is wet.

- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.
- The seasonal high water table restricts equipment operation, decreases the viability of crops, and interferes with the planting and harvesting of crops.

Pastureland

Suitability: Moderately suited to pasture

- The limited available water capacity may cause plants to suffer from moisture stress during the drier summer months.
- The seasonal high water table can affect equipment use, grazing patterns, and viability of grass and legume species.
- Compaction may occur when soils are wet.

Woodland

- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Soil wetness may limit the use of log trucks.
- Bedrock may interfere with the construction of haul roads and log landings.
- The low strength interferes with the construction of haul roads and log landings.
- The low strength may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The stickiness of the soil restricts the use of equipment for site preparation to the drier periods.

Building sites

- The seasonal high water table may restrict the period when excavations can be made.
- Shrinking and swelling of the soil may crack foundations and basement walls.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.

Septic tank absorption fields

- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.
- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.
- The low strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4w
Virginia soil management group: KK
Hydric soil: Yes

12C—Littlejoe silt loam, 7 to 15 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands

Position on the landform: Convex summits, shoulders, and backslopes
Elevation: 699 to 1,351 feet
Size of areas: 3 to 320 acres

Map Unit Composition

Littlejoe and similar soils: Typically 95 percent, ranging from about 90 to 100 percent

Typical Profile

Littlejoe

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

Subsoil:
8 to 20 inches—strong brown clay loam
20 to 45 inches—red clay

Soft bedrock:
45 to 59 inches—phyllite bedrock

Hard bedrock:
59 inches—phyllite bedrock

Minor Components

Dissimilar components:
- Bugley soils, shallow to bedrock, on similar landscape positions
- Areas of rock outcrop on similar landscape positions

Similar components:
- Buffstat soils, reddish brown subsoils, on similar landscape positions
- Other soils, deep to bedrock, less clay in the subsoil, on similar landscape positions

Soil Properties and Qualities

Available water capacity: Low (about 4.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Deep (40 to 60 inches)
Depth to root-restrictive feature: 40 to 60 inches to bedrock (paralithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Residuum weathered from graphitic and sericitic schist, and phyllite

Use and Management Considerations

Cropland
Suitability: Moderately suited to corn, soybeans, wheat, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited to pasture

- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to loblolly pine, northern red oak, and yellow-poplar

- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The low strength interferes with the construction of haul roads and log landings.
- The low strength may create unsafe conditions for log trucks.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.
- The low strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: V
Hydric soil: No

12D—Littlejoe silt loam, 15 to 25 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands
Position on the landform: Convex shoulders and backslopes
Elevation: 699 to 1,351 feet
Size of areas: 3 to 140 acres

Map Unit Composition

Littlejoe and similar soils: Typically 95 percent, ranging from about 90 to 100 percent

Typical Profile

Littlejoe

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

Subsoil:
8 to 20 inches—strong brown clay loam
20 to 45 inches—red clay

Soft bedrock:
45 to 59 inches—phyllite bedrock

Hard bedrock:
59 inches—phyllite bedrock

Minor Components

Dissimilar components:
- Bugley soils, shallow to bedrock, on similar landscape positions
- Areas of rock outcrop on similar landscape positions

Similar components:
- Buffstat soils, reddish brown subsoils, on similar landscape positions
- Other soils, deep to bedrock, less clay in the subsoil, on similar landscape positions

Soil Properties and Qualities

Available water capacity: Low (about 4.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Deep (40 to 60 inches)
Depth to root-restrictive feature: 40 to 60 inches to bedrock (paralithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: None
Parent material: Residuum weathered from graphitic and sericitic schist, and phyllite

Use and Management Considerations

Cropland

Suitability: Moderately suited to wheat, grass-legume hay, and alfalfa hay; poorly suited to corn and soybeans
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

Pastureland

Suitability: Well suited to pasture
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to loblolly pine, northern red oak, and yellow-poplar
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.

- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- The low strength interferes with the construction of haul roads and log landings.
- The low strength may create unsafe conditions for log trucks.

Building sites
- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.
- The low strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: V
Hydric soil: No

13B—Mayodan fine sandy loam, 2 to 7 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands on Triassic basin
Position on the landform: Broad convex summits and shoulders
Elevation: 620 to 738 feet
Size of areas: 4 to 270 acres

Map Unit Composition

Mayodan and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Mayodan

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

Subsoil:
6 to 10 inches—yellowish red sandy clay loam
10 to 38 inches—reddish brown clay
38 to 48 inches—reddish brown clay loam

Substratum:
48 to 63 inches—reddish brown loam

Minor Components

Dissimilar components:
- Creedmoor soils, very deep to bedrock, moderately well drained, on smoother portions of the same landscape
- Ayersville soils, moderately deep to bedrock, well drained, on similar landscape positions
- Leaksville soils, moderately deep to bedrock, poorly drained, in concave landscape positions
- Other soils, shallow to bedrock, well drained, on the same landscape
- Other soils, deep to bedrock, moderately well drained, on similar landscape positions

Similar components:
- Stoneville soils, deep to bedrock, well drained, on smoother portions of the same landscape

Soil Properties and Qualities

Available water capacity: Moderate (about 6.8 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Triassic residuum weathered from sandstone and siltstone

Use and Management Considerations

Cropland

Suitability: Well suited to wheat, tobacco, and grass-legume hay; moderately suited to corn and soybeans
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland

Suitability: Well suited to pasture
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Well suited to loblolly pine
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- These soils are well suited to haul roads and log landings.

Building sites

- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- These soils are well suited to septic tank absorption fields.

Local roads and streets

- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.
- The low strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: V
Hydric soil: No

13C—Mayodan fine sandy loam, 7 to 15 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands on Triassic basin
Position on the landform: Broad convex summits, shoulders, and backslopes
Elevation: 620 to 738 feet
Size of areas: 3 to 75 acres

Map Unit Composition

Mayodan and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Mayodan

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

Subsoil:
6 to 10 inches—yellowish red sandy clay loam
10 to 38 inches—reddish brown clay
38 to 48 inches—reddish brown clay loam

Substratum:
48 to 63 inches—reddish brown loam

Minor Components

Dissimilar components:

- Creedmoor soils, very deep to bedrock, moderately well drained, on smoother portions of the same landscape
- Ayersville soils, moderately deep to bedrock, well drained, on similar landscape positions
- Leaksville soils, moderately deep to bedrock, poorly drained, in concave landscape positions
- Other soils, shallow to bedrock, well drained, on the same landscape
- Other soils, deep to bedrock, moderately well drained, on similar landscape positions

Similar components:

- Stoneville soils, deep to bedrock, well drained, on smoother portions of the same landscape

Soil Properties and Qualities

Available water capacity: Moderate (about 6.8 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Triassic residuum weathered from sandstone and siltstone

Use and Management Considerations

Cropland
Suitability: Moderately suited to corn, soybeans, wheat, tobacco, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland
Suitability: Well suited to pasture
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland
Suitability: Well suited to loblolly pine
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- These soils are well suited to haul roads and log landings.

Building sites
- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.
- The low strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: V

Hydric soil: No

14B—Minnieville loam, 2 to 7 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands
Position on the landform: Convex summits and shoulders
Elevation: 699 to 1,351 feet
Size of areas: 3 to 120 acres

Map Unit Composition

Minnieville and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Minnieville

Surface layer:
0 to 4 inches—reddish brown loam

Subsoil:
4 to 8 inches—dark red clay loam
8 to 53 inches—red clay
53 to 81 inches—red clay loam

Minor Components

Dissimilar components:
- Spriggs soils, moderately deep to bedrock, on very narrow, strongly convex upland summits

Similar components:
- Clifford soils, in felsic material, on similar positions
- Orenda soils, with slower permeability, on similar positions
- Dyke soils, on high stream terrace treads and risers
- Other soils with thinner sola, on similar positions

Soil Properties and Qualities

Available water capacity: Moderate (about 7.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Mixed mafic residuum

Use and Management Considerations

Cropland

Suitability: Well suited to corn, soybeans, wheat, and grass-legume hay; moderately suited to alfalfa hay

- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland

Suitability: Well suited to pasture

- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak; poorly suited to yellow-poplar

- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope may restrict the use of some mechanical planting equipment.
- The low strength interferes with the construction of haul roads and log landings.
- The low strength may create unsafe conditions for log trucks.

Building sites

- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- These soils are well suited to septic tank absorption fields.

Local roads and streets

- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.
- The low strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: N
Hydric soil: No

14C—Minnieville loam, 7 to 15 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands
Position on the landform: Convex summits, shoulders, backslopes, and footslopes
Elevation: 699 to 1,351 feet
Size of areas: 3 to 465 acres

Map Unit Composition

Minnieville and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Minnieville

Surface layer:
0 to 4 inches—reddish brown loam

Subsoil:
4 to 8 inches—dark red clay loam

8 to 53 inches—red clay
53 to 81 inches—red clay loam

Minor Components

Dissimilar components:
- Spriggs soils, moderately deep to bedrock, on very narrow, strongly convex upland summits

Similar components:
- Clifford soils, in felsic material, on similar positions
- Orenda soils, with slower permeability, on similar positions
- Dyke soils, on high stream terrace treads and risers
- Other soils with thinner sola, on similar positions

Soil Properties and Qualities

Available water capacity: Moderate (about 7.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Mixed mafic residuum

Use and Management Considerations

Cropland
Suitability: Well suited to wheat and grass-legume hay; moderately suited to corn and soybeans
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland
Suitability: Well suited to pasture
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland
Suitability: Moderately suited to northern red oak; poorly suited to yellow-poplar
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The low strength interferes with the construction of haul roads and log landings.
- The low strength may create unsafe conditions for log trucks.

Building sites
- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.
- The low strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: N
Hydric soil: No

14D—Minnieville loam, 15 to 25 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands
Position on the landform: Slightly convex shoulders and backslopes
Elevation: 699 to 1,351 feet
Size of areas: 3 to 120 acres

Map Unit Composition

Minnieville and similar soils: Typically 90 percent, ranging from about 85 to 95 percent

Typical Profile

Minnieville

Surface layer:
0 to 4 inches—reddish brown loam

Subsoil:
4 to 8 inches—dark red clay loam
8 to 53 inches—red clay
53 to 81 inches—red clay loam

Minor Components

Dissimilar components:
- Spriggs soils, moderately deep to bedrock, on very narrow, strongly convex upland summits

Similar components:
- Clifford soils, in felsic material, on similar positions
- Orenda soils, with slower permeability, on similar positions
- Dyke soils, on high stream terrace treads and risers
- Other soils with thinner sola, on similar positions

Soil Properties and Qualities

Available water capacity: Moderate (about 7.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained

Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: None
Parent material: Mixed mafic residuum

Use and Management Considerations

Cropland
Suitability: Moderately suited to corn, soybeans, wheat, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland
Suitability: Well suited to pasture
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland
Suitability: Moderately suited to northern red oak; poorly suited to yellow-poplar
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- The low strength interferes with the construction of haul roads and log landings.
- The low strength may create unsafe conditions for log trucks.

Building sites
- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.
- The low strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: N
Hydric soil: No

15C—Minnieville-Urban land complex, 7 to 15 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands
Position on the landform: Convex summits, shoulders, backslopes, and footslopes
Elevation: 699 to 1,351 feet
Size of areas: 13 to 265 acres
Note: This soil and miscellaneous land type occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Map Unit Composition

Minnieville and similar soils: Typically 55 percent, ranging from about 50 to 60 percent
Urban land: Typically 35 percent, ranging from about 30 to 40 percent

Typical Profile

Minnieville

Surface layer:
0 to 4 inches—reddish brown loam

Subsoil:
4 to 8 inches—dark red clay loam
8 to 53 inches—red clay
53 to 81 inches—red clay loam

Urban Land

This part of the map unit consist of areas covered by asphalt or concrete, such as roadways, or parking lots. Also included are structures, buildings, and other impervious surfaces.

Minor Components

Dissimilar components:
- Spriggs soils, moderately deep to bedrock, on very narrow, strongly convex upland summits

Similar components:
- Clifford soils, in felsic material, on similar positions
- Orenda soils, with slower permeability, on similar positions
- Dyke soils, on high stream terrace treads and risers
- Other soils with thinner sola, on similar positions
- Areas of soils with slopes outside the defined map unit range

Soil Properties and Qualities of the Minnieville series

Available water capacity: Moderate (about 7.9 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium

Surface fragments: None
Parent material: Mixed mafic residuum

Use and Management Considerations

Cropland, pastureland, and woodland
- Because of their proximity to urban development, onsite investigation is necessary to determine the suitability of these areas for cropland, pastureland, or woodland uses.

Building sites
- The slope influences the use of machinery and the amount of excavation required.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.
- The low strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Minnieville—3e; Urban Land—8s
Virginia soil management group: Minnieville—N; Urban Land—None assigned
Hydric soil: Minnieville—No; Urban Land—Unranked

16B—Orenda sandy loam, 2 to 7 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands
Position on the landform: Smooth to slightly convex summits
Elevation: 699 to 1,351 feet
Size of areas: 3 to 35 acres

Map Unit Composition

Orenda and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Orenda

Surface layer:
0 to 6 inches—brown sandy loam with black iron-manganese concretions

Subsoil:
6 to 25 inches—yellowish red clay with black iron-manganese concretions

Substratum:
25 to 62 inches—strong brown, black, yellowish brown, and grayish brown loam

Minor Components

Dissimilar components:
- Spriggs soils, moderately deep to bedrock, on strongly convex summits

- Minnieville soils, moderate permeability, on slightly convex lower portions of the same landscape
- Other clayey soils, moderately well drained, on similar landscape positions
- Areas of soils with stony surfaces on similar landscape positions

Similar components:
- Areas of soils with slopes outside the defined map unit range
- Areas of soils with gravelly surface horizons on similar landscape positions

Soil Properties and Qualities

Available water capacity: Moderate (about 8.1 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.20 in/hr)
Depth class: Very deep (more than 60 inches)
Depth to root-restrictive feature: More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: High
Surface fragments: None
Parent material: Mixed mafic or felsic residuum weathered from igneous and metamorphic rock

Use and Management Considerations

Cropland
Suitability: Moderately suited to grass-legume hay; poorly suited to corn, soybeans, and wheat; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland
Suitability: Moderately suited to pasture
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland
Suitability: Moderately suited to northern red oak
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope may restrict the use of some mechanical planting equipment.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.
- The low strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.
- The low strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: KK
Hydric soil: No

17C—Orenda-Spriggs complex, 7 to 15 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands
Position on the landform: Slightly convex narrow to broad summits and in saddles (Orenda), and strongly convex shoulders and backslopes (Spriggs)
Elevation: 699 to 1,351 feet
Size of areas: 3 to 335 acres
Note: These two soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Map Unit Composition

Orenda and similar soils: Typically 75 percent, ranging from about 70 to 80 percent
Spriggs and similar soils: Typically 15 percent, ranging from about 10 to 20 percent

Typical Profile

Orenda

Surface layer:
0 to 6 inches—brown sandy loam with black iron-manganese concretions

Subsoil:
6 to 25 inches—yellowish red clay with black iron-manganese concretions

Substratum:
25 to 62 inches—strong brown, black, yellowish brown, and grayish brown loam

Spriggs

Surface layer:
0 to 6 inches—dark yellowish brown sandy loam

Subsoil:
6 to 38 inches—strong brown gravelly clay loam

Soft bedrock:
38 to 52 inches—hornblende gneiss bedrock

Hard bedrock:
52 inches—hornblende gneiss bedrock

Minor Components

Dissimilar components:
- Other soils, very deep to bedrock, moderately well drained, on gently sloping areas that are smooth to slightly concave
- Areas of soils that have stony surfaces on similar landscape positions

Similar components:
- Minnieville soils, very deep to bedrock, moderate permeability, on broader slightly convex areas
- Other soils, shallow to bedrock, on similar landscape positions
- Areas of soils with slopes outside the defined map unit range

Soil Properties and Qualities

Available water capacity: Orenda—Moderate (about 8.1 inches); Spriggs—Low (about 4.1 inches)
Slowest saturated hydraulic conductivity: Orenda—Moderately high (about 0.20 in/hr); Spriggs—Moderately high (about 0.57 in/hr)
Depth class: Orenda—Very deep (more than 60 inches); Spriggs—Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: Orenda—More than 60 inches; Spriggs—20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Orenda—Moderate; Spriggs—Low
Runoff class: High
Surface fragments: None
Parent material: Mixed mafic or felsic residuum weathered from igneous and metamorphic rock

Use and Management Considerations

Cropland
Suitability: Moderately suited to grass-legume hay; poorly suited to corn, soybeans, and wheat; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland
Suitability: Moderately suited to pasture
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland
Suitability: Moderately suited to northern red oak
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.

- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.
- The low strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites
- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of proper installation of the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.
- The low strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: Orenda—KK; Spriggs—JJ
Hydric soil: No

17D—Orenda-Spriggs complex, 15 to 25 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands
Position on the landform: Broadly convex shoulders and backslopes (Orenda) and short strongly convex shoulders and backslopes (Spriggs)
Elevation: 699 to 1,351 feet
Size of areas: 3 to 165 acres
Note: These two soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Map Unit Composition

Orenda and similar soils: Typically 55 percent, ranging from about 50 to 60 percent
Spriggs and similar soils: Typically 35 percent, ranging from about 30 to 40 percent

Typical Profile

Orenda

Surface layer:
0 to 6 inches—brown sandy loam with black iron-manganese concretions

Subsoil:
6 to 25 inches—yellowish red clay with black iron-manganese concretions

Substratum:
25 to 62 inches—strong brown, black, yellowish brown, and grayish brown loam

Spriggs

Surface layer:
0 to 6 inches—dark yellowish brown sandy loam

Subsoil:
6 to 38 inches—strong brown gravelly clay loam

Soft bedrock:
38 to 52 inches—hornblende gneiss bedrock

Hard bedrock:
52 inches—hornblende gneiss bedrock

Minor Components

Dissimilar components:
- Areas of soils that have stony surfaces on similar landscape positions

Similar components:
- Minnieville soils, very deep to bedrock, moderate permeability, on broader slightly convex areas
- Other soils, shallow to bedrock, on similar landscape positions
- Areas of soils with slopes outside the defined map unit range

Soil Properties and Qualities

Available water capacity: Orenda—Moderate (about 8.1 inches); Spriggs—Low (about 4.1 inches)
Slowest saturated hydraulic conductivity: Orenda—Moderately high (about 0.20 in/hr); Spriggs—Moderately high (about 0.57 in/hr)
Depth class: Orenda—Very deep (more than 60 inches); Spriggs—Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: Orenda—More than 60 inches; Spriggs—20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Orenda—Moderate; Spriggs—Low
Runoff class: Very high
Surface fragments: None
Parent material: Mixed mafic or felsic residuum weathered from igneous and metamorphic rock

Use and Management Considerations

Cropland
Suitability: Poorly suited to corn, soybeans, wheat, and grass-legume hay; not suited to alfalfa hay

- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland

Suitability: Moderately suited to pasture

- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland

Suitability: Moderately suited to northern red oak

- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse-textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Coarse-textured soil layers increase the maintenance of haul roads and log landings.
- The low strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of proper installation of the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets

- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.
- The low strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e

Virginia soil management group: Orenda—KK; Spriggs—JJ
Hydric soil: No

17E—Orenda-Spriggs complex, 25 to 45 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands
Position on the landform: Broadly convex shoulders and backslopes (Orenda) and short strongly convex shoulders and backslopes (Spriggs)
Elevation: 699 to 1,351 feet
Size of areas: 3 to 550 acres
Note: These two soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Map Unit Composition

Orenda and similar soils: Typically 55 percent, ranging from about 50 to 60 percent
Spriggs and similar soils: Typically 35 percent, ranging from about 30 to 40 percent

Typical Profile

Orenda

Surface layer:
0 to 6 inches—brown sandy loam with black iron-manganese concretions

Subsoil:
6 to 25 inches—yellowish red clay with black iron-manganese concretions

Substratum:
25 to 62 inches—strong brown, black, yellowish brown, and grayish brown loam

Spriggs

Surface layer:
0 to 6 inches—dark yellowish brown sandy loam

Subsoil:
6 to 38 inches—strong brown gravelly clay loam

Soft bedrock:
38 to 52 inches—hornblende gneiss bedrock

Hard bedrock:
52 inches—hornblende gneiss bedrock

Minor Components

Dissimilar components:
- Other soils, very deep to bedrock, moderately well drained, on gently sloping areas that are smooth to slightly concave
- Areas of soils that have stony surfaces on similar landscape positions

Similar components:
- Minnieville soils, very deep to bedrock, moderate permeability, on broader slightly convex areas
- Other soils, shallow to bedrock, on similar landscape positions
- Areas of soils with slopes outside the defined map unit range

Soil Properties and Qualities

Available water capacity: Orenda—Moderate (about 8.1 inches); Spriggs—Low (about 4.1 inches)
Slowest saturated hydraulic conductivity: Orenda—Moderately high (about 0.20 in/hr); Spriggs—Moderately high (about 0.57 in/hr)
Depth class: Orenda—Very deep (more than 60 inches); Spriggs—Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: Orenda—More than 60 inches; Spriggs—20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Orenda—Moderate; Spriggs—Low
Runoff class: Very high
Surface fragments: None
Parent material: Mixed mafic or felsic residuum weathered from igneous and metamorphic rock

Use and Management Considerations

Cropland
- These soils are unsuited to cropland.

Pastureland
- These soils are unsuited to pastureland.

Woodland
Suitability: Moderately suited to northern red oak
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality, especially in areas on steeper slopes. A timber harvest plan should focus on the proper location of haul road and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The slope makes the use of mechanical planting equipment impractical.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse-textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Coarse-textured soil layers increase the maintenance of haul roads and log landings.
- The low strength interferes with the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites
- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.

- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of proper installation of the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.
- The low strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: Orenda—KK; Spriggs—JJ
Hydric soil: No

18B—Stoneville loam, 2 to 7 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands on Triassic basin
Position on the landform: Broad slightly convex summits, shoulders, and backslopes
Elevation: 620 to 738 feet
Size of areas: 2 acres (one delineation for join purposes)

Map Unit Composition

Stoneville and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Stoneville

Surface layer:
0 to 5 inches—dark reddish brown loam

Subsoil:
5 to 13 inches—dark reddish brown loam
13 to 32 inches—dark reddish brown clay
32 to 38 inches—dark reddish brown clay loam

Substratum:
38 to 48 inches—dark reddish brown loam

Soft bedrock:
48 to 72 inches—siltstone bedrock

Minor Components

Dissimilar components:
- Creedmoor soils, very deep to bedrock, moderately well drained, adjacent to intermittent drainageways

- Leaksville soils, moderately deep to bedrock, poorly drained, adjacent to intermittent drainageways

Similar components:
- Ayersville soils, moderately deep to bedrock, on narrow to broadly convex upland summits, shoulders, and backslopes
- Mayodan soils, very deep on to bedrock, on narrow to broadly convex upland summits, shoulders, and backslopes

Soil Properties and Qualities

Available water capacity: Moderate (about 7.0 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Deep (40 to 60 inches)
Depth to root-restrictive feature: 40 to 60 inches to bedrock (paralithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Moderate
Runoff class: Medium
Surface fragments: None
Parent material: Triassic residuum weathered from siltstone, mudstone, fine-grained sandstone, and shale

Use and Management Considerations

Cropland
Suitability: Well suited to wheat; moderately suited to corn and soybeans
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The high clay content restricts the rooting depth of crops.

Pastureland
Suitability: Well suited to pasture
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland
Suitability: Well suited to chestnut oak
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope may restrict the use of some mechanical planting equipment.
- The low strength interferes with the construction of haul roads and log landings.
- The low strength may create unsafe conditions for log trucks.

Building sites
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.

Local roads and streets
- Because of shrinking and swelling, the use of these soils as base material for local roads and streets is restricted.
- The low strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: X
Hydric soil: No

19—Udorthents-Urban land complex, 2 to 15 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands
Position on the landform: Summits, shoulders, and backslopes of the city of Martinsville, Virginia adjacent to Business U.S. 220 Highway and other industrial and commercial business locations
Elevation: 699 to 1,351 feet
Size of areas: 3 to 800 acres
Note: These two components occur as areas so closely intermingled that they could not be separated at the scale selected for mapping

Map Unit Composition

Udorthents and similar soils: Typically 55 percent, ranging from about 50 to 60 percent
Urban land: Typically 30 percent, ranging from about 25 to 35 percent

Typical Profile

Udorthents

Disturbed soil and rock material—The disturbance generally results from surface excavations and subsequent deposits of soil and rock material for construction projects. Udorthents are a variable mixture of soil textures, soil colors, rock fragment content, depth to bedrock, density, and drainage. Differential subsidence can occur in Udorthents.

Urban Land

This part of the map unit consist of areas covered by asphalt or concrete, such as roadways, or parking lots. Also included are structures, buildings, and other impervious surfaces.

Minor Components

Dissimilar components:

- Spriggs soils, shallow to bedrock, on undisturbed adjacent landscape positions
- Orenda soils, very deep to bedrock, on undisturbed adjacent landscape positions
- Clifford soils, very deep to bedrock, on undisturbed adjacent landscape positions
- Woolwine soils, moderately deep to bedrock, on undisturbed adjacent landscape positions
- Minnieville soils, very deep to bedrock, on undisturbed adjacent landscape positions

Similar components:

- None identified

Use and Management Considerations

Onsite investigation is needed to determine the suitability for specific uses.

Interpretive Groups

Prime farmland: Not prime farmland

20—Udorthents, loamy

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands
Position on the landform: Summits, shoulders, and backslopes
Elevation: 699 to 1,351 feet
Size of areas: 5 to 180 acres

Map Unit Composition

Udorthents and similar soils: Typically 85 percent, ranging from about 80 to 90 percent

Typical Profile

Udorthents

Disturbed soil and rock material—The disturbance generally results from surface excavations and subsequent deposits of soil and rock material for construction projects. Udorthents are a variable mixture of soil textures, soil colors, rock fragment content, depth to bedrock, density, and drainage. Differential subsidence can occur in Udorthents.

Minor Components

Dissimilar components:
- Spriggs soils, shallow to bedrock, on undisturbed adjacent landscape positions
- Orenda soils, very deep to bedrock, on undisturbed adjacent landscape positions
- Clifford soils, very deep to bedrock, on undisturbed adjacent landscape positions
- Woolwine soils, moderately deep to bedrock, on undisturbed adjacent landscape positions
- Minnieville soils, very deep to bedrock, on undisturbed adjacent landscape positions

Similar components:
- Highway interchanges consisting of graded cut-and-fill slopes
- Sanitary landfill areas, trench type

Use and Management Considerations

Onsite investigation is needed to determine the suitability for specific uses.

Interpretive Groups

Prime farmland: Not prime farmland

21B—Woolwine-Clifford complex, 2 to 7 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)

Landform: Uplands
Position on the landform: Strongly convex summits and shoulders (Woolwine) and slightly convex summits, shoulders, and saddles (Clifford)
Elevation: 699 to 1,351 feet
Size of areas: 3 to 40 acres
Note: These two soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Map Unit Composition

Woolwine and similar soils: Typically 55 percent, ranging from about 50 to 60 percent
Clifford and similar soils: Typically 40 percent, ranging from about 35 to 45 percent

Typical Profile

Woolwine

Surface layer:
0 to 2 inches—brown sandy loam

Subsoil:
2 to 7 inches—yellowish red clay loam
7 to 13 inches—yellowish red clay
13 to 28 inches—red clay

Soft bedrock:
28 to 42 inches—gneiss bedrock

Hard bedrock:
42 inches—gneiss bedrock

Clifford

Surface layer:
0 to 7 inches—brown sandy loam

Subsoil:
7 to 11 inches—yellowish red clay loam
11 to 54 inches—red clay
54 to 62 inches—red clay loam

Substratum:
62 to 82 inches—strong brown, dark red, and red fine sandy loam

Minor Components

Dissimilar components:
- Areas of Rock outcrop on similar landscape positions

Similar components:
- Minnieville soils, very deep to bedrock, on narrow to broad slightly convex summits
- Clifford soils, very deep to bedrock, on shoulders and back slopes
- Other soils similar to Woolwine, deep to bedrock, on similar positions
- Other soils, very deep to bedrock, with thinner sola, on similar positions
- Areas of soils with slopes outside the defined map unit range
- Areas of soils with gravelly surfaces and/or stony spots on similar landscape positions

Soil Properties and Qualities

Available water capacity: Woolwine—Low (about 3.5 inches); Clifford—Moderate (about 7.4 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)

Depth class: Woolwine—Moderately deep (20 to 40 inches); Clifford—Very deep (more than 60 inches)
Depth to root-restrictive feature: Woolwine—20 to 40 inches to bedrock (paralithic); Clifford—More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Woolwine—High; Clifford—Medium
Surface fragments: None
Parent material: Woolwine—Residuum weathered from granite and gneiss, and hornblende gneiss; Clifford—Residuum weathered from granite and gneiss, and mica schist

Use and Management Considerations

Cropland
Suitability: Well suited to wheat, tobacco, and grass-legume hay; moderately suited to corn and soybeans
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.

Pastureland
Suitability: Moderately suited to pasture
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland
Suitability: Well suited to chestnut oak; moderately suited to northern red oak
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low strength interferes with the construction of haul roads and log landings.
- The low strength may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of proper installation of the effluent distribution lines is increased.

Local roads and streets
- The low strength is unfavorable for supporting heavy loads.

Interpretive Groups

Prime farmland: All areas are prime farmland
Land capability class: 2e
Virginia soil management group: Woolwine—V; Clifford—X
Hydric soil: No

21C—Woolwine-Clifford complex, 7 to 15 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands
Position on the landform: Strongly convex summits, shoulders, and backslopes (Woolwine) and slightly convex summits, shoulders, backslopes, and saddles (Clifford)
Elevation: 699 to 1,351 feet
Size of areas: 3 to 1,620 acres
Note: These two soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Map Unit Composition

Woolwine and similar soils: Typically 55 percent, ranging from about 50 to 60 percent
Clifford and similar soils: Typically 40 percent, ranging from about 35 to 45 percent

Typical Profile

Woolwine

Surface layer:
0 to 2 inches—brown sandy loam

Subsoil:
2 to 7 inches—yellowish red clay loam
7 to 13 inches—yellowish red clay
13 to 28 inches—red clay

Soft bedrock:
28 to 42 inches—gneiss bedrock

Hard bedrock:
42 inches—gneiss bedrock

Clifford

Surface layer:
0 to 7 inches—brown sandy loam

Subsoil:
7 to 11 inches—yellowish red clay loam
11 to 54 inches—red clay
54 to 62 inches—red clay loam

Substratum:
62 to 82 inches—strong brown, dark red, and red fine sandy loam

Minor Components

Dissimilar components:
- Areas of Rock outcrop on similar landscape positions

Similar components:
- Minnieville soils, very deep to bedrock, on narrow to broad slightly convex summits
- Clifford soils, very deep to bedrock, on shoulders and backslopes
- Other soils similar to Woolwine, deep to bedrock, on similar positions
- Other soils, very deep to bedrock, with thinner sola, on similar positions
- Areas of soils with slopes outside the defined map unit range
- Areas of soils with gravelly surfaces and/or stony spots on similar landscape positions

Soil Properties and Qualities

Available water capacity: Woolwine—Low (about 3.5 inches); Clifford—Moderate (about 7.4 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Woolwine—Moderately deep (20 to 40 inches); Clifford—Very deep (more than 60 inches)
Depth to root-restrictive feature: Woolwine—20 to 40 inches to bedrock (paralithic); Clifford—More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: Woolwine—High; Clifford—Medium
Surface fragments: None
Parent material: Woolwine—Residuum weathered from granite and gneiss, and hornblende gneiss; Clifford—Residuum weathered from granite and gneiss, and mica schist

Use and Management Considerations

Cropland
Suitability: Well suited to tobacco; moderately suited to corn, soybeans, and wheat
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.

Pastureland
Suitability: Moderately suited to pasture
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland
Suitability: Well suited to chestnut oak; moderately suited to northern red oak
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low strength interferes with the construction of haul roads and log landings.
- The low strength may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites
- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is

reduced and the difficulty of constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of proper installation of the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- The low strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 3e
Virginia soil management group: Woolwine—V; Clifford—X
Hydric soil: No

21D—Woolwine-Clifford complex, 15 to 25 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands
Position on the landform: Strongly convex shoulders and backslopes (Woolwine) and slightly convex to slightly concave shoulders and backslopes (Clifford), and adjacent to intermittent drainageways
Elevation: 699 to 1,351 feet
Size of areas: 3 to 350 acres
Note: These two soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Map Unit Composition

Woolwine and similar soils: Typically 55 percent, ranging from about 50 to 60 percent
Clifford and similar soils: Typically 40 percent, ranging from about 35 to 45 percent

Typical Profile

Woolwine

Surface layer:
0 to 2 inches—brown sandy loam

Subsoil:
2 to 7 inches—yellowish red clay loam
7 to 13 inches—yellowish red clay
13 to 28 inches—red clay

Soft bedrock:
28 to 42 inches—gneiss bedrock

Hard bedrock:
42 inches—gneiss bedrock

Clifford

Surface layer:
0 to 7 inches—brown sandy loam

Subsoil:
7 to 11 inches—yellowish red clay loam
11 to 54 inches—red clay
54 to 62 inches—red clay loam

Substratum:
62 to 82 inches—strong brown, dark red, and red fine sandy loam

Minor Components

Dissimilar components:
- Areas of Rock outcrop on similar landscape positions

Similar components:
- Minnieville soils, very deep to bedrock, on narrow to broad slightly convex summits
- Other soils similar to Woolwine, deep to bedrock, on similar positions
- Areas of soils with slopes outside the defined map unit range
- Areas of soils with gravelly surfaces and/or stony spots on similar landscape positions

Soil Properties and Qualities

Available water capacity: Woolwine—Low (about 3.5 inches); Clifford—Moderate (about 7.4 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Woolwine—Moderately deep (20 to 40 inches); Clifford—Very deep (more than 60 inches)
Depth to root-restrictive feature: Woolwine—20 to 40 inches to bedrock (paralithic); Clifford—More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Woolwine—Residuum weathered from granite and gneiss, and hornblende gneiss; Clifford—Residuum weathered from granite and gneiss, and mica schist

Use and Management Considerations

Cropland
Suitability: Moderately suited to wheat, grass-legume hay, and alfalfa hay; poorly suited to corn and soybeans
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.

Pastureland
Suitability: Moderately suited to pasture
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.

Woodland
Suitability: Well suited to chestnut oak; moderately suited to northern red oak

- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- The slope may restrict the use of some mechanical planting equipment.
- Bedrock may interfere with the construction of haul roads and log landings.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low strength interferes with the construction of haul roads and log landings.
- The low strength may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites
- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of proper installation of the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- The low strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 4e
Virginia soil management group: Woolwine—V; Clifford—X
Hydric soil: No

21E—Woolwine-Clifford complex, 25 to 45 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands
Position on the landform: Strongly convex backslopes (Woolwine) and slightly convex to slightly concave backslopes (Clifford), and adjacent to intermittent drainageways
Elevation: 699 to 1,351 feet
Size of areas: 3 to 2,900 acres
Note: These two soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Map Unit Composition

Woolwine and similar soils: Typically 55 percent, ranging from about 50 to 60 percent
Clifford and similar soils: Typically 40 percent, ranging from about 35 to 45 percent

Typical Profile

Woolwine

Surface layer:
0 to 2 inches—brown sandy loam

Subsoil:
2 to 7 inches—yellowish red clay loam
7 to 13 inches—yellowish red clay
13 to 28 inches—red clay

Soft bedrock:
28 to 42 inches—gneiss bedrock

Hard bedrock:
42 inches—gneiss bedrock

Clifford

Surface layer:
0 to 7 inches—brown sandy loam

Subsoil:
7 to 11 inches—yellowish red clay loam
11 to 54 inches—red clay
54 to 62 inches—red clay loam

Substratum:
62 to 82 inches—strong brown, dark red, and red fine sandy loam

Minor Components

Dissimilar components:
- Areas of Rock outcrop on similar landscape positions

Similar components:
- Minnieville soils, very deep to bedrock, on narrow to broad slightly convex summits
- Other soils similar to Woolwine, deep to bedrock, on similar positions
- Areas of soils with slopes outside the defined map unit range
- Areas of soils with gravelly surfaces and/or stony spots on similar landscape positions

Soil Properties and Qualities

Available water capacity: Woolwine—Low (about 3.5 inches); Clifford—Moderate (about 7.4 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Woolwine—Moderately deep (20 to 40 inches); Clifford—Very deep (more than 60 inches)
Depth to root-restrictive feature: Woolwine—20 to 40 inches to bedrock (paralithic); Clifford—More than 60 inches
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None
Shrink-swell potential: Low

Runoff class: High
Surface fragments: None
Parent material: Woolwine—Residuum weathered from granite and gneiss, and hornblende gneiss; Clifford—Residuum weathered from granite and gneiss, and mica schist

Use and Management Considerations

Cropland
- These soils are unsuited to cropland.

Pastureland
- These soils are unsuited to pastureland.

Woodland
Suitability: Well suited to chestnut oak; moderately suited to northern red oak
- Proper planning for timber harvesting is essential in order to minimize the potential negative impact to soil and water quality, especially in areas on steeper slopes. A timber harvest plan should focus on the proper location of haul road and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks and harvesting equipment.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The slope makes the use of mechanical planting equipment impractical.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- The low strength interferes with the construction of haul roads and log landings.
- The low strength may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites
- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of proper installation of the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- The low strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: 7e
Virginia soil management group: Woolwine—V; Clifford—X
Hydric soil: No

22C—Woolwine-Urban land complex, 7 to 15 percent slopes

Setting

Major land resource area: Southern Piedmont (MLRA 136)
Landform: Uplands
Position on the landform: Convex summits, shoulders, and backslopes
Elevation: 699 to 1,351 feet
Size of areas: 5 to 145 acres
Note: This soil and miscellaneous land type occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.

Map Unit Composition

Woolwine and similar soils: Typically 50 percent, ranging from about 45 to 55 percent
Urban land: Typically 40 percent, ranging from about 35 to 45 percent

Typical Profile

Woolwine

Surface layer:
0 to 2 inches—brown sandy loam

Subsoil:
2 to 7 inches—yellowish red clay loam
7 to 13 inches—yellowish red clay
13 to 28 inches—red clay

Soft bedrock:
28 to 42 inches—gneiss bedrock

Hard bedrock:
42 inches—gneiss bedrock

Urban Land

This part of the map unit consist of areas covered by asphalt or concrete, such as roadways, or parking lots. Also included are structures, buildings, and other impervious surfaces.

Minor Components

Dissimilar components:
- Clifford soils, on summits and backslopes
- Minnieville soils, on broader slightly convex summits and backslopes
- Areas of Rock outcrop on similar landscape positions

Similar components:
- Areas of slope outside the defined map unit range

Soil Properties and Qualities of the Woolwine series

Available water capacity: Low (about 3.5 inches)
Slowest saturated hydraulic conductivity: Moderately high (about 0.57 in/hr)
Depth class: Moderately deep (20 to 40 inches)
Depth to root-restrictive feature: 20 to 40 inches to bedrock (paralithic)
Drainage class: Well drained
Depth to seasonal water saturation: More than 6 feet
Flooding hazard: None
Ponding hazard: None

Shrink-swell potential: Low
Runoff class: High
Surface fragments: None
Parent material: Residuum weathered from granite and gneiss, and hornblende gneiss

Use and Management Considerations

Cropland, pastureland, and woodland
- Because of their proximity to urban development, onsite investigation is necessary to determine the suitability of these areas for cropland, pastureland, or woodland uses.

Building sites
- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.
- The high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields
- The restricted permeability limits the absorption and proper treatment of the effluent from conventional septic systems.
- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of proper installation of the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.

Local roads and streets
- The low strength is unfavorable for supporting heavy loads.
- Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Prime farmland: Not prime farmland
Land capability class: Woolwine—3e; Urban Land—8s
Virginia soil management group: Woolwine—V; Urban Land—None assigned
Hydric soil: Woolwine—No; Urban Land—Unranked

DAM—Dam

Setting

This map unit is in the Southern Piedmont major land resource area. It consists of barriers of concrete or earth built across rivers or streams to obstruct and control the flow of water.

This map unit is not assigned any interpretive groups.

W—Water

Setting

This map unit is in the Southern Piedmont major land resource area. It includes ponds, lakes, creeks, rivers, and reservoirs.

This map unit is not assigned any interpretive groups.

Use and Management of the Soils

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

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

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

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

Contractors can use this survey to locate sources of gravel, sand, reclamation material, 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.

Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations. The ratings in these tables are both verbal and numerical.

Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by all of the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for the limitation classes are *not limited, somewhat limited,* and *very limited*. The suitability ratings are expressed as *well suited, moderately suited, poorly suited,* and *unsuited* or as *good, fair,* and *poor*.

Numerical Ratings

Numerical ratings in the tables indicate the relative severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation. The limitations appear in order from the most limiting to the least limiting. Thus, if more than one limitation is identified, the most severe limitation is listed first and the least severe one is listed last.

Crops and Pasture

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

Effective pasture management practices include maintaining a mixture of grasses and legumes, rotating pasture, deferring grazing, controlling undesirable vegetation, and using proper stocking rates.

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

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 tables because of variations in rainfall and other climatic factors. The land capability classification and the Virginia Soil Management Group of map units in the survey area are also shown in the tables.

The yields are based on VALUES (Virginia Agronomic Land Use Evaluation System) *(20)*. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

Realistic yield goals can be maintained over a long-term basis through proper nutrient management and other soil amendments such as lime. Applications of nitrogen and phosphorus from organic and inorganic forms should be done according to approved nutrient management practices and regulations.

Pasture yields are expressed in terms of animal unit months. An animal unit month (AUM) is the amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

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

Agriculture of Henry County

According to the Census of Agriculture, about 9,670 acres of cropland were harvested in the survey area in 2002 *(11)*. A small acreage is used for orchards, mainly apples and peaches, or for specialty crops such as strawberries and vegetables. The major row crops are flue-cured tobacco and corn (fig. 4). The majority of acreage in the survey area is in hay.

The climate and many of the soils in the soil survey area are suited to the crops commonly grown. Some of the soils, especially those on the sides of hills and ridges, are not suited to the crops because of the slope.

Very deep, well drained, nearly level and gently sloping soils, such as Clifford, Minnieville, and Elsinboro soils, are some of the most productive soils for cultivated crops and pasture and hay crops. These soils are also well suited to orchards, vegetables, small fruits, and nursery plants.

Most areas of less sloping soils in the survey area are well suited to pasture and hay. The dominant plants in the well managed pastures are tall fescue and orchardgrass. In some pastures, legumes, mainly white clover and ladino clover, are grown with the grasses.

The dominant hay crops are orchardgrass, alfalfa, tall fescue, red clover, and lespedeza. Orchardgrass is the major grass hay crop because it produces better quality hay than tall fescue.

The latest information and suggestions for growing crops, hay, and pasture plants can be obtained from the local offices of the Virginia Cooperative Extension Service or the Natural resources Conservation Service.

Most of the soils in Henry County are highly leached. Consequently, they are strongly acid and generally low in essential plant nutrients. On most of the soils, crops and pasture plants respond well to applications of lime and fertilizer. The amount of

Figure 4.—Planted field of corn in an area of Minnieville loam, 2 to 7 percent slopes.

lime and fertilizer to be applied to any individual area depends on the cropping history, the type of soil, the crops to be grown, and on the desired yield.

Excessive tillage tends to destroy soil structure. This generally results in a lower rate of water infiltration and a seedbed with less favorable tilth. Restricting essential tillage to the period of optimum soil moisture content helps to prevent the formation of clods or of conditions that lead to crusting. Cropping systems that include close-growing crops or grasses and legumes in rotation with row crops help to prevent the deterioration of soil structure by excessive tillage.

Soil compaction and the deterioration of soil structure result if wet soils are trampled by livestock. Soil compaction causes an increase in the rate of surface runoff and a less favorable root zone for pasture plants.

Erosion is the major hazard on about 85 percent of the cropland in the survey area. It reduces soil productivity and contributes to the sedimentation of ponds and streams. Erosion reduces the thickness of the topsoil, or surface layer, which contains most of the organic matter, available water, and nutrients. On soils that have a clayey subsoil, such as Clifford, Minnieville, Woolwine, and Dyke soils, controlling erosion is especially important. Where the original, friable surface layer has been lost through erosion, preparing a good seedbed, tillage, and growing a good stand of some crops are difficult in the remaining clayey spots. These eroded areas are mapped as inclusions in delineations of Clifford and Minnieville soils.

Most of the cultivated soils in the county have a low content of naturally occurring organic matter and generally have weak structure. Organic matter is an important source of nitrogen for crops. It also improves soil structure, the rate of water infiltration, available water capacity, and tilth. Leaving crop residue on the surface or planting green manure crops helps to increase the content of organic matter.

High-intensity rains can cause the formation of a crust on the surface. The crusted surface is hard when dry and somewhat impervious to water, especially in areas where plowing has incorporated some of the clayey subsoil into the surface layer. When the surface is hard and crusted, the rate of surface runoff is increased. Regular additions of livestock manure and other organic material help to improve soil structure and reduce the hazard of surface crusting.

In many areas, soil erosion on farmland causes the pollution of streams by sediments, nutrients, and pesticides. Controlling erosion minimizes this pollution and improves the quality of water for municipal use and for fish and wildlife.

Erosion-control practices provide a protective surface cover, minimize runoff, and increase the rate of water infiltration. A cropping system that keeps a plant cover on the soil for extended periods helps to control erosion and maintain soil productivity. Including forage crops of legumes and grasses in the cropping system helps to control erosion in sloping areas, provides nitrogen for plants, and improves tilth for the next crop in rotation.

Structural practices, such as installing terraces, diversions (fig. 5), or grassed waterways, help to reduce the hazard of erosion by controlling runoff. Cropping systems that rotate grasses or close-growing crops with row crops also help to minimize erosion on cropland.

On soils that have short, irregular slopes, a cropping system that provides abundant plant cover helps to control erosion. Leaving crop residue on the surface, either by minimizing tillage or by stubble-mulching, helps to increase the rate of water infiltration, minimize runoff, and control erosion during seeding and the early growing period of the new crop.

On soils that have smooth, uniform slopes, contour tillage is effective in minimizing surface runoff and can significantly increase the amount of water that soaks into the soil. Soil moisture is commonly a critical factor at certain times during the growing season. Contour tillage is also very effective in controlling erosion.

Figure 5.—A grassed diversion helps to control erosion in a planted field of tobacco in this area of Clifford sandy loam, 2 to 7 percent slopes.

The major limitations of most of the soils used for pasture and hay are high levels of acidity and low levels of natural fertility. Applications of lime help to overcome the acidity. Applications of fertilizer, especially nitrogen, are needed to improve soil fertility for the maximum production of forage.

The major problems in pasture management are establishing and maintaining a mixed stand of grasses and legumes and preventing overgrazing. Overgrazing reduces the amount of desirable grasses and legumes and allows an increase in the amount of weeds. In addition, overgrazing decreases the extent of plant cover and increases erosion. The major concerns in pasture management are proper stocking rates that maintain the stand of desirable grasses and legumes, rotational grazing, deferred grazing, weed control, and applications of lime and fertilizer for the maximum production of forage.

Selecting an appropriate cropping system or resource management system is a major management decision for farmers in the county. The selected cropping system should not cause excessive soil erosion, should meet the needs of the farmer, and should be consistent with the capability of the soil. Cropping systems range from continually growing row crops or small grains to using various kinds of rotations that include grasses or legumes, or both. Conservation tillage, contour stripcropping, and planting cover crops and green manure crops are other farming methods that conserve soil.

Information on erosion-control practices for each kind of soil can be obtained at the local office of the Natural Resources Conservation Service. Information on management practices for cropland, pasture, and hayland can be obtained at the local office of the Virginia Cooperative Extension Service.

Land Capability Classification

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

In the capability system, soils are generally grouped at two levels—capability class and subclass *(17)*.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

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, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w, s,* or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, wildlife habitat, or recreation.

The capability classification of the soils in this survey area is given in the section "Detailed Soil Map Units" and in table 5.

Virginia Soil Management Groups

The Virginia Agronomic Land Use Evaluation System (VALUES) is a system to rank soils for management and productivity *(20)*. VALUES places each soil series in Virginia into one of 43 management groups. The format of the management groups, A through QQ, include the following soil characteristics—regional occurrence; parent material; landscape position or influence; solum thickness; dominant profile features, such as texture; available water capacity for plants; and internal soil drainage. Yields that are both economically and environmentally feasible were assigned to each management group, based on yields of field trial crop data and research. The following paragraphs describe the soil management groups in Henry County.

Group A. The soils of this group formed in alluvium on gently sloping landscapes of flood plains or stream terraces. They are soils with deep sola, medium textures throughout, high water supplying capacities, and are well drained.

Group B. The soils of this group formed in alluvium associated with stream terraces. They are soils with deep sola, loamy textures throughout, high water supplying capacity, and are well drained to moderately well drained.

Group L. The soils of this group formed in old, transported deposits of alluvium or colluvium. They are common on stream terraces, foot slopes, and older, elevated, upland landscapes that were once stream terraces. They are soils with deep sola, medium-textured surfaces, more clayey subsurfaces, and commonly with gravels and rounded stones. They are soils with moderate to high water supplying capacity, and usually are well drained.

Group N. The soils of this group formed in residuum of weathered mafic rocks located on dissected uplands in the Piedmont region. They are soils with deep to moderately deep sola, medium-textured surfaces, reddish brown clayey subsurfaces, moderate water supplying capacity, and are well drained.

Group O. The soils of this group formed in transported materials ranging from mountain colluvium to old alluvium on dissected uplands of the Piedmont and mountainous regions, and as old elevated river terrace deposits. They are soils with deep to shallow sola, very dark red clayey subsurface horizons, and some may have significant coarse fragments. They are soils with moderate water supplying capacity and are well drained.

Group V. The soils of this group formed in saprolite derived from a variety of parent materials ranging from slates, to granites, gneisses, schists, and more basic granitic rocks. They are soils found on upland landscapes in the Piedmont and have moderately deep sola. They are soils with clayey subsurface horizons, moderate water supplying capacity, and are well drained.

Group X. The soils of this group formed in a variety of residual materials including slates, granites, gneisses, and schists located on upland landscapes in the Piedmont region. They are soils with moderately deep sola, clayey subsurface horizons, sometimes with coarse fragments or gravels, moderate water supplying capacity, and are well drained to moderately well drained.

Group FF. The soils of this group formed in residual parent materials ranging from sandstone, shales, and slates, to loamy granitic saprolite, and mountain colluvium. They are on steeply dissected uplands and mountain side slopes and extend across the Piedmont to the mountainous regions. They are soils with moderately shallow sola and mostly with loamy-skeletal subsurface horizons that may contain 80 percent, or more, coarse fragments. As a result, the water supplying capacity of the soils is low to very low. These soils are well drained to moderately well drained.

Group II. The soils of this group formed in sandy parent materials within the Coastal Plain, or from local alluvium or colluvium of sandy origin. They range from soils with deep sola in the Coastal Plain from alluvial materials, to soils with shallow sola in upland positions in the mountainous and Piedmont regions. They are sandy-textured throughout, with little horizonation, have low to very low water supplying capacity, and are well drained to moderately well drained.

Group JJ. The soils of this group formed in a wide variety of residual parent materials ranging from sandstones, shales, and limestones, to triassic materials, phillites, and granite saprolite or schists. The soils in this group are from either the Piedmont or mountainous regions. They are soils with shallow sola, predominantly loamy-skeletal textures throughout, and ranging from 30 to 70 percent coarse fragments. They have very low water supplying capacity and are well drained.

Group KK. The soils of this group formed in a variety of residual materials including triassic sediments, residuum from basic rocks, and other clayey sediments. Soils in this group are located predominantly in the Piedmont region. They are soils with moderately deep sola, clayey-textured subsurface horizons, and commonly with large components of high shrink-swell clays. They have moderate water supplying capacity and range from moderately well drained to somewhat poorly drained.

The management groups for the map units in the survey area are given in the section “Detailed Soil Map Units” and in table 5.

Prime Farmland

Table 6 lists the map units in the survey area that are considered prime farmland. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation’s food supply.

Prime farmland 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, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, 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. The water supply is dependable and of adequate quality. Prime farmland 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. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 7,947 acres in the survey area, or just over 3 percent of the total acreage, meets the requirement for prime farmland. This land is mainly on broad, upland ridge tops and along stream terraces of creeks and rivers.

A recent trend in land use in some areas 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.

For some soils identified in table 6 as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

Hydric Soils

This section lists the map unit components that are rated as hydric soils in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site *(6, 8)*.

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology *(3, 8, 9, 10)*. Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part *(4)*. These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established *(5)*. These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in “Soil Taxonomy” *(15)* and “Keys to Soil Taxonomy” *(14)* and in the “Soil Survey Manual” *(18)*.

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in the “Field Indicators of Hydric Soils in the United States” *(6)*.

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

The following map unit meets the definition of hydric soils and, in addition, has at least one of the hydric soil indicators. This information can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site *(6, 8)*.

11A Leaksville silt loam, 0 to 4 percent slopes

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

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

1B Ayersville gravelly loam, 2 to 7 percent slopes
1C Ayersville gravelly loam, 7 to 15 percent slopes
5A Codorus loam, 0 to 2 percent slopes, frequently flooded
6A Colvard fine sandy loam, 0 to 2 percent slopes, occasionally flooded
7B Creedmoor fine sandy loam, 1 to 4 percent slopes
8A Delanco loam, 0 to 4 percent slopes, rarely flooded
10A Elsinboro fine sandy loam, 0 to 4 percent slopes, rarely flooded
13B Mayodan fine sandy loam, 2 to 7 percent slopes
13C Mayodan fine sandy loam, 7 to 15 percent slopes
18B Stoneville loam, 2 to 7 percent slopes

Agricultural Waste Management

Soil properties are important considerations in areas where soils are used as sites for the treatment and disposal of organic waste and wastewater. Selection of soils with properties that favor waste management can help to prevent environmental damage.

Table 7, parts I, II, and III, show the degree and kind of soil limitations affecting the treatment of agricultural waste, including municipal and food-processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food-processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. In the context of these tables, the effluent in lagoons and storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30 milligrams per liter. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter. When wastewater is applied, checks should be made to ensure that nitrogen, heavy metals, and salts are not added in excessive amounts.

The ratings in the tables are for waste management systems that not only dispose of and treat organic waste or wastewater, but also are beneficial to crops (application of manure and food-processing waste, application of sewage sludge, and disposal of wastewater by irrigation) and for waste management systems that are designed only for the purpose of wastewater disposal and treatment (overland flow of wastewater, rapid infiltration of wastewater, and slow rate treatment of wastewater).

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect agricultural waste management. Not limited indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. Somewhat limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Application of manure and food-processing waste not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. Manure is the excrement of livestock and poultry, and food-processing waste is damaged fruit and vegetables and the peelings, stems, leaves, pits, and soil particles removed in food preparation. The manure and food-processing waste are either solid, slurry, or liquid. Their nitrogen content varies. A high content of nitrogen limits the application rate. Toxic or otherwise dangerous wastes, such as those mixed with the lye used in food processing, are not considered in the ratings.

The ratings are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the waste is applied, and the method by which the waste is applied. The properties that affect absorption include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, and available water capacity. The properties that affect plant growth and microbial activity include reaction, the sodium adsorption ratio, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Application of sewage sludge not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. In the context of this table, sewage sludge is the residual product of the treatment of municipal sewage. The solid component consists mainly of cell mass, primarily bacteria cells that developed during secondary treatment and have incorporated soluble organics into their own bodies. The sludge has small amounts of sand, silt, and other solid debris. The content of nitrogen varies. Some sludge has constituents that are toxic to plants or hazardous to the food chain, such as heavy metals and exotic organic compounds, and should be analyzed chemically prior to use.

The content of water in the sludge ranges from about 98 percent to less than 40 percent. The sludge is considered liquid if it is more than about 90 percent water, slurry if it is about 50 to 90 percent water, and solid if it is less than about 50 percent water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the sludge is applied, and the method by which the sludge is applied. The properties that affect absorption, plant growth, and microbial activity include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, available water capacity, reaction, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of sludge. Permanently frozen soils are unsuitable for waste treatment.

Disposal of wastewater by irrigation not only disposes of municipal wastewater and wastewater from food-processing plants, lagoons, and storage ponds but also can improve crop production by increasing the amount of water available to crops. The ratings in the table are based on the soil properties that affect the design, construction, management, and performance of the irrigation system. The properties that affect design and management include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, slope, and flooding. The properties that affect construction include stones, cobbles, depth to bedrock or a cemented pan, depth to a water table, and ponding. The properties that affect performance include depth to bedrock or a cemented pan, bulk density, the sodium adsorption ratio, salinity, reaction, and the cation-exchange capacity, which is used to estimate the capacity of a soil to adsorb heavy metals. Permanently frozen soils are not suitable for disposal of wastewater by irrigation.

Overland flow of wastewater is a process in which wastewater is applied to the upper reaches of sloped land and allowed to flow across vegetated surfaces, sometimes called terraces, to runoff-collection ditches. The length of the run generally is 150 to 300 feet. The application rate ranges from 2.5 to 16.0 inches per week. It commonly exceeds the rate needed for irrigation of cropland. The wastewater leaves solids and nutrients on the vegetated surfaces as it flows downslope in a thin film. Most of the water reaches the collection ditch, some is lost through evapotranspiration, and a small amount may percolate to the ground water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, and the design and construction of the system. Reaction and the cation-exchange capacity affect absorption. Reaction, salinity, and the sodium adsorption ratio affect plant growth and microbial activity. Slope, permeability, depth to a water table, ponding, flooding, depth to bedrock or a cemented pan, stones, and cobbles affect design and construction. Permanently frozen soils are unsuitable for waste treatment.

Rapid infiltration of wastewater is a process in which wastewater applied in a level basin at a rate of 4 to 120 inches per week percolates through the soil. The wastewater may eventually reach the ground water. The application rate commonly exceeds the rate needed for irrigation of cropland. Vegetation is not a necessary part of the treatment; hence, the basins may or may not be vegetated. The thickness of the soil material needed for proper treatment of the wastewater is more than 72 inches. As a result, geologic and hydrologic investigation is needed to ensure proper design and performance and to determine the risk of ground-water pollution.

The ratings in the table are based on the soil properties that affect the risk of pollution and the design, construction, and performance of the system. Depth to a water table, ponding, flooding, and depth to bedrock or a cemented pan affect the risk of pollution and the design and construction of the system. Slope, stones, and cobbles also affect design and construction. Permeability and reaction affect performance. Permanently frozen soils are unsuitable for waste treatment.

Slow rate treatment of wastewater is a process in which wastewater is applied to land at a rate normally between 0.5 inch and 4.0 inches per week. The application rate commonly exceeds the rate needed for irrigation of cropland. The applied wastewater is treated as it moves through the soil. Much of the treated water may percolate to the ground water, and some enters the atmosphere through evapotranspiration. The applied water generally is not allowed to run off the surface. Waterlogging is prevented either through control of the application rate or through the use of tile drains, or both.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, and the application of waste. The properties that affect absorption include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, depth to bedrock or a cemented pan, reaction, the cation-exchange capacity, and slope. Reaction, the sodium adsorption ratio, salinity, and bulk density affect plant growth and microbial activity. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood of wind erosion or water erosion. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Forestland Productivity and Management

The tables described in this section can help forest owners or managers plan the use of soils for wood crops. They show the potential productivity of the soils for wood crops and rate the soils according to the limitations that affect various aspects of forestland management.

Forestland Productivity

In table 8, the *potential productivity* of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forest managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual" *(12)*, which is available in local offices of the Natural Resources Conservation Service or on the Internet.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Trees to manage are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

Forestland Management

In table 9, parts I through V, interpretive ratings are given for various aspects of forestland management. The ratings are both verbal and numerical.

Some rating class terms indicate the degree to which the soils are suited to a specified aspect of forestland management. *Well suited* indicates that the soil has features that are favorable for the specified management aspect and has no limitations. Good performance can be expected, and little or no maintenance is needed. *Moderately suited* indicates that the soil has features that are moderately favorable for the specified management aspect. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. *Poorly suited* indicates that the soil has one or more properties that are unfavorable for the specified management aspect. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. *Unsuited* indicates that the expected performance of the soil is unacceptable for the specified management aspect or that extreme measures are needed to overcome the undesirable soil properties.

Proper planning for timber harvesting is essential to minimize the potential impact to soil and water quality. A harvest plan should include logging roads, log decks, streamside management zones, stream crossings, skid trails, schedule of activities, and Best Management Practices (BMP's) for each activity. Forests should be managed to increase economic and environmental benefits. A forest stewardship plan should be developed to guide management and utilization of the woodlands.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

Rating class terms for fire damage and seedling mortality are expressed as *low, moderate,* and *high*. Where these terms are used, the numerical ratings indicate gradations between the point at which the potential for fire damage or seedling mortality is highest (1.00) and the point at which the potential is lowest (0.00).

The paragraphs that follow indicate the soil properties considered in rating the soils. More detailed information about the criteria used in the ratings is available in the "National Forestry Manual" *(12)*, which is available in local offices of the Natural Resources Conservation Service or on the Internet.

For *limitations affecting construction of haul roads and log landings*, the ratings are based on slope, flooding, permafrost, plasticity index, the hazard of soil slippage, content of sand, the Unified classification, rock fragments on or below the surface, depth to a restrictive layer that is indurated, depth to a water table, and ponding. The limitations are described as slight, moderate, or severe. A rating of *slight* indicates that no significant limitations affect construction activities, *moderate* indicates that one or more limitations can cause some difficulty in construction, and *severe* indicates that one or more limitations can make construction very difficult or very costly.

The ratings of *suitability for log landings* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The soils are described as well suited, moderately suited, or poorly suited to use as log landings.

Ratings in the column *soil rutting hazard* are based on depth to a water table, rock fragments on or below the surface, the Unified classification, depth to a restrictive layer, and slope. Ruts form as a result of the operation of forest equipment. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that the soil is subject to little or no rutting, *moderate* indicates that rutting is likely, and *severe* indicates that ruts form readily.

Ratings in the column *hazard of off-road or off-trail erosion* are based on slope and on soil erodibility factor K. The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance. The hazard is described as slight, moderate, severe, or very severe. A rating of *slight* indicates that erosion is unlikely under ordinary climatic conditions; *moderate* indicates that some erosion is likely and that erosion-control measures may be needed; *severe* indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and *very severe* indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Ratings in the column *hazard of erosion on roads and trails* are based on the soil erodibility factor K, slope, and content of rock fragments. The ratings apply to unsurfaced roads and trails. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that little or no erosion is likely; *moderate* indicates that some erosion is likely, that the roads or trails may require occasional maintenance, and that simple erosion-control measures are needed; and *severe* indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed.

Ratings in the column *suitability for roads (natural surface)* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the columns *suitability for hand planting* and *suitability for mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately suited, poorly suited, or unsuited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *suitability for use of harvesting equipment* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, and ponding. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the column *suitability for mechanical site preparation (surface)* are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 1 foot is considered in the ratings.

Ratings in the column *suitability for mechanical site preparation (deep)* are based on slope, depth to a restrictive layer, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 3 feet is considered in the ratings.

Ratings in the column *potential for damage to soil by fire* are based on texture of the surface layer, content of rock fragments and organic matter in the surface layer, thickness of the surface layer, and slope. The soils are described as having a low, moderate, or high potential for this kind of damage. The ratings indicate an evaluation of the potential impact of prescribed fires or wildfires that are intense enough to remove the duff layer and consume organic matter in the surface layer.

Ratings in the column *potential for seedling mortality* are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. The soils are described as having a low, moderate, or high potential for seedling mortality.

Silviculture of Henry County

About 178,000 acres in Henry County, or about 71 percent of the survey area is woodland. This acreage includes portions of Fairy Stone State Park in the northwestern part of Henry County and Turkeycock Wildlife Management Area on top of Turkeycock Mountain in the northeastern part, each of which consists of about 1,700 acres. In addition, there are several hundred acres of woodland on Federal lands surrounding Philpott Lake near Fairy Stone State Park. The rest of the woodland in the county is privately owned.

On upland sites, the most common trees are chestnut oak, white oak, hickory, maple, yellow-poplar, and Virginia pine. On bottom lands along streams, the main tree species are maple, yellow-poplar, and sycamore. Most of the stands are composed of hardwoods or mixed hardwoods and pine. Tracts of lands scattered throughout the county have been planted or replanted to loblolly pine (fig. 6).

The forests products industry is an important part of the local economy. According to the Virginia Department of Forestry, more than 8,000 people are employed by industries that rely on forest products, primarily by the several major furniture manufacturers. Several portable sawmills operate in the county.

Most of the existing commercial woodland can be improved by thinning out mature or diseased trees, trees with poor growth form, or undesirable tree species so that potential timber production is increased.

Woodland management practices and related activities include thinning, clearcutting, prescribed burning, reforestation, preventing wildfires restricting grazing by livestock, and controlling diseases and insects. The Virginia Department of Forestry provides a variety of services to private landowners, including forest

Figure 6.—A stand of loblolly pine on Clifford sandy loam, 7 to 15 percent slopes.

management plans. It also provides literature describing the best management practices, which can help landowners and loggers in planning and implementing timber harvesting techniques. These practices are designed to reduce potential soil erosion and to protect water quality and wildlife habitat.

The potential for soil erosion in association with logging activities is greatest in areas of access roads and skid trails. These areas concentrate the overland flow and surface runoff that result from precipitation which does not enter the soil surface. Planning and installing access roads and skid trails on the contour help to reduce the potential for soil erosion by reducing the velocity of the surface runoff and thus its power to erode. Road grades should be less than 10 percent, and side drainage ditches and adequate culverts should be provided to control surface runoff and overland flow. Installing water bars in logging roads and skid trails helps to control erosion by diverting runoff to vegetated areas.

After the completion of logging operations, any unneeded trails and roads should be seeded or planted to a permanent plant cover. This helps to control water runoff and minimize erosion and the sedimentation of streams. Wildlife habitat can be improved by selecting plant species that are preferred wildlife foods for the plant cover used in soil conservation.

Leaving a buffer zone of trees and shrubs in areas adjacent to intermittent and perennial waterways helps improve water quality. These zones help to reduce the sedimentation of streams by intercepting overland flow from the higher slopes.

The Virginia Department of Forestry, the Natural Resources Conservation Service, and the Virginia Cooperative Extension Service can assist woodland owners and managers in determining specific needs in managing woodlands.

Recreational Development

In table 10, parts I and II, the soils of the survey area are rated according to limitations that affect their suitability for recreational development. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the tables are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are 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.

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

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 ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Off-road motorcycle trails require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, slope, depth to a water table, ponding, flooding, and texture of the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

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 data in the tables described under the heading “Soil Properties.”

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 between the surface and a depth of 5 to 7 *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 particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, reclamation material, roadfill, and topsoil; plan structures for water management; 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

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Table 11, parts I and II, show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

The ratings in the tables are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

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 soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

Sanitary Facilities

Table 12, parts I and II, show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

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 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

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. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

A *trench sanitary landfill* is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

In an *area sanitary landfill*, solid 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. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

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. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

Construction Materials

Table 13, parts I and II, give information about the soils as potential sources of gravel, sand, reclamation material, roadfill, and topsoil. Normal compaction, minor processing, and other standard construction practices are assumed.

Gravel and *sand* 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 13, part I, only the likelihood 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 Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand or gravel, the soil is considered a likely source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

The soils are rated *good, fair,* or *poor* as potential sources of sand and gravel. A rating of *good* or *fair* means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of sand or gravel. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

In table 13, part II, the rating class terms are *good, fair,* and *poor*. The features that limit the soils as sources of these materials are specified in the tables. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of reclamation material, roadfill, and topsoil. The lower the number, the greater the limitation.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

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 whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a 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 AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

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. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

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 14 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

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

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. Embankments that have zoned construction (core and shell) are not considered. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

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

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey.

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

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

The estimates of soil properties are shown in tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

Engineering Soil Properties

Table 15 gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. “Loam,” for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, 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 particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-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.

Physical Soil Properties

Table 16 shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In the table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In the table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

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

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

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

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^{1}/_{3}$- or $^{1}/_{10}$-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each 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 linear extensibility, 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. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). The estimates in the table indicate the rate of water movement, in micrometers per second, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. 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.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In the table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. 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) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the “National Soil Survey Handbook” *(13)* which is available in local offices of the Natural Resources Conservation Service or on the Internet.

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Chemical Soil Properties

Table 17 shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable bases 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. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Effective cation-exchange capacity refers to the sum of extractable bases plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil 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.

Water Features

Table 18 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. The table indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The table indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding 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 ponding 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 ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Soil Features

Table 19 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness of the restrictive layer, which significantly affects the ease of excavation.

Depth to top is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes 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 or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete 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 also is expressed as *low, moderate,* or *high*. It is based on soil texture, acidity, and 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 *(14, 15)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 20 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Ultisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udult (*Ud*, meaning humid, plus *ult*, from Ultisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludults (*Hapl*, meaning minimal horizonation, plus *udult*, the suborder of the Ultisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic 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, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine, mixed, subactive, mesic Typic Hapludults.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The Littlejoe series is an example of fine, mixed, subactive, mesic Typic Hapludults.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the “Soil Survey Manual” *(18)* and in the “Field Book for Describing and Sampling Soils” *(16)*. Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” *(15)* and in “Keys to Soil Taxonomy” *(14)*. Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

Ayersville Series

Physiographic province: Piedmont
Landform: Uplands on Triassic basin
Parent material: Residuum from Triassic siltstone, mudstone, and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Moderately deep
Slope range: 2 to 15 percent

Associated Soils

- Creedmoor soils, very deep to bedrock, moderately well drained
- Leaksville soils, moderately deep to bedrock, poorly drained
- Mayodan soils, very deep to bedrock, well drained
- Stoneville soils, deep to bedrock, well drained

Taxonomic Classification

Fine-loamy, mixed, semiactive, mesic Typic Dystrudepts

Typical Pedon

Ayersville gravelly loam; located north of Eden, North Carolina on Secondary Road 1715, about 1,450 feet east of the intersection of Secondary Roads 1797 and 1715, and 30 feet south of Secondary Road 1715 in Virginia pine in Rockingham County, North Carolina; Northeast Eden, Virginia USGS 7.5 Minute Quadrangles, NAD27; lat. 36 degrees 32 minutes 2 seconds N. and long. 79 degrees 43 minutes 30 seconds W.

A—0 to 8 inches; dark reddish brown (5YR 3/2) gravelly loam; weak fine granular structure; very friable, nonsticky, nonplastic; common fine, medium, and coarse roots; 20 percent subangular siltstone and mudstone parachanners; very strongly acid; clear smooth boundary.
Bw—8 to 22 inches; dark reddish brown (2.5YR 3/4) gravelly loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few fine roots; few fine iron-manganese concretions; 30 percent subangular siltstone and mudstone parachanners; strongly acid; gradual wavy boundary.
C—22 to 26 inches; reddish brown (2.5YR 4/4) very gravelly silt loam; massive; friable, nonsticky, nonplastic; few fine roots; 60 percent subangular siltstone and mudstone parachanners; strongly acid; clear irregular boundary.
Cr—26 to 30 inches; moderately cemented siltstone bedrock.
R—30 inches; indurated siltstone bedrock.

Range in Characteristics

Solum thickness: 20 to 40 inches
Depth to soft bedrock: 20 to 40 inches
Depth to hard bedrock: 20 to 40 inches

Rock fragments: 15 to 35 percent in A, 10 to 35 percent in the Bw horizon, and 35 to 85 percent in the C horizon. Fragments are weathered and disintegrate upon sieving
Reaction: Very strongly acid or strongly acid

A or Ap horizon:
Hue—10R to 5YR
Value—3 or less
Chroma—2 to 6
Texture (fine-earth fraction)—loam or silt loam

Bw horizon:
Hue—10R to 5YR
Value—3 or less
Chroma—2 to 6
Texture (fine-earth fraction)—loam, silt loam, clay loam, or silty clay loam

C horizon:
Hue—10R to 5YR
Value—4 or less
Chroma—2 to 4
Texture (fine-earth fraction)—silt loam or loam

Buckhall Series

Physiographic province: Piedmont
Landform: Uplands
Parent material: Residuum from granite and gneiss
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 2 to 15 percent

Associated Soils

- Clifford soils, very deep to bedrock, with redder subsoils

Taxonomic Classification

Fine, mixed, semiactive, mesic Typic Hapludults

Typical Pedon

Buckhall sandy loam; located l3 miles southwest of Monroeton North Carolina on U.S. Highway 158, about 1,350 feet north of Midway on Secondary Road 1001, and 300 feet west of Secondary Road 1001 in a tobacco field in Rockingham County, North Carolina; Bethany, North Carolina USGS 7.5 Minute Quadrangles, NAD27; lat. 36 degrees 16 minutes 35 seconds N. and long. 79 degrees 47 minutes 23 seconds W.

Ap—0 to 9 inches; yellowish brown (10YR 5/4) sandy loam; weak fine granular structure; very friable, nonsticky, nonplastic; common fine and medium roots; 1 percent subrounded quartz gravel; strongly acid; clear smooth boundary.
Bt1—9 to 12 inches; reddish yellow (7.5YR 6/8) sandy clay loam; weak medium subangular blocky structure; friable, slightly sticky, nonplastic; common fine roots; common fine and medium pores; few faint clay films on all faces of peds; 1 percent subrounded quartz gravel; strongly acid; clear smooth boundary.
Bt2—12 to 19 inches; reddish yellow (7.5YR 6/8) clay loam; moderate medium subangular blocky structure; firm, moderately sticky, moderately plastic; few fine roots; common fine and medium pores; common distinct clay films on all faces of

peds; few fine mica flakes; 10 percent subrounded gneiss gravel; strongly acid; gradual smooth boundary.

Bt3—19 to 35 inches; strong brown (7.5YR 5/8) clay; moderate medium subangular blocky structure; firm, moderately sticky, moderately plastic; few fine roots; common fine and medium pores; many distinct clay films on all faces of peds; common fine mica flakes; 10 percent subrounded gneiss gravel; strongly acid; gradual wavy boundary.

BCt—35 to 42 inches; strong brown (7.5YR 5/6) clay loam; weak medium subangular blocky structure; firm, moderately sticky, moderately plastic; few fine pores; few distinct clay films on all faces of peds; common fine mica flakes; 10 percent subrounded gneiss gravel; very strongly acid; gradual wavy boundary.

BC—42 to 46 inches; reddish yellow (5YR 6/8) clay loam; weak medium subangular blocky structure; friable, slightly sticky, nonplastic; common fine mica flakes; 10 percent subrounded gneiss gravel; very strongly acid; gradual wavy boundary.

C—46 to 65 inches; yellow (10YR 8/6), red (2.5YR 5/8), and reddish yellow (7.5YR 7/6) sandy clay loam; massive; friable, nonsticky, nonplastic; common fine mica flakes; very strongly acid.

Range in Characteristics

Solum thickness: 25 to 50 or more inches
Depth to bedrock: Greater than 60 inches
Rock fragments: 0 to 15 percent throughout
Mica content: Few to many in Bt and C horizons
Reaction: Very strongly acid or strongly acid, unless limed

Ap horizon:
Hue—10YR or 2.5Y
Value—5 to 7
Chroma—4 to 6
Texture (fine-earth fraction)—sandy loam or loam

E horizon (where present):
Hue—10YR or 2.5Y
Value—5 or 7
Chroma—3 to 6
Texture (fine-earth fraction)—sandy loam

BE horizon (where present):
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—4 to 8
Texture (fine-earth fraction)—loam or sandy clay loam

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6
Chroma—4 to 8
Texture (fine-earth fraction)—clay loam, sandy clay loam, or clay

BC or BCt horizon:
Hue—5YR to 10YR
Value—5 or 6
Chroma—4 to 8
Texture (fine-earth fraction)—sandy clay loam or clay loam

C horizon:
Hue—multicolored, 2.5YR to 2.5Y
Value—4 to 8
Chroma—1 to 8
Texture (fine-earth fraction)—sandy loam, loam, or sandy clay loam

Buffstat Series

Physiographic province: Piedmont
Landform: Uplands
Parent material: Residuum from graphitic and sericitic schist
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Deep
Slope range: 25 to 60 percent

Associated Soils

- Bugley soils, shallow to bedrock
- Littlejoe soils, deep to bedrock, with redder subsoils

Taxonomic Classification

Fine, mixed, semiactive, mesic Typic Hapludults

Typical Pedon

Buffstat channery silt loam; located 1.8 miles off Virginia State Route 57 going east on Virginia State Route 822, in Fairy Stone Elsinboro Park west of Bassett, Virginia in a deciduous woodland area in Henry County, Virginia; Philpott Reservoir, Virginia USGS 7.5 Minute Quadrangles, NAD27; lat. 36 degrees 46 minutes 47 seconds N. and long. 80 degrees 5 minutes 17 seconds W.

A—0 to 3 inches; brown (7.5YR 5/4) channery silt loam; weak fine granular structure; friable, nonsticky, nonplastic; common fine and many very fine roots; 20 percent subangular graphitic schist channers; very strongly acid; abrupt smooth boundary.
E—3 to 5 inches; strong brown (7.5YR 5/6) silt loam; weak fine subangular blocky structure; friable, nonsticky, nonplastic; many fine and few coarse roots; 10 percent subangular graphitic schist channers; very strongly acid; clear smooth boundary.
Bt1—5 to 22 inches; yellowish red (5YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm, slightly sticky, slightly plastic; common fine roots; common faint clay films on all faces of peds; 10 percent subangular graphitic schist channers; very strongly acid; gradual smooth boundary.
Bt2—22 to 41 inches; yellowish red (5YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm, slightly sticky, slightly plastic; few fine roots; common faint clay films on all faces of peds; 10 percent subangular graphitic schist channers; very strongly acid; gradual wavy boundary.
Cr—41 to 66 inches; weakly cemented graphitic schist bedrock.

Range in Characteristics

Solum thickness: 25 to 50 inches
Depth to soft bedrock: 40 to 60 inches
Depth to hard bedrock: Greater than 40 inches

Rock fragments: 15 to 35 percent in the A horizon, 0 to 35 percent in the E and Bt horizons, 15 to 35 in the BC and C horizons
Reaction: Very strongly acid or strongly acid

A horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—2 or 4
Texture (fine-earth fraction)—silt loam, loam, or fine sandy loam

E horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 6
Texture (fine-earth fraction)—silt loam, loam, or fine sandy loam

Bt horizon:
Hue—5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—silty clay loam, silty clay or clay

BC horizon (where present):
Hue—5YR or 7.5YR
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—silt loam or silty clay loam

C horizon (where present):
Hue—5YR to 10YR
Value—3 or 4
Chroma—4 to 6
Texture (fine-earth fraction)—silt loam

Bugley Series

Physiographic province: Piedmont
Landform: Uplands
Parent material: Residuum from graphitic and sericitic schist
Drainage class: Somewhat excessively drained
Slowest saturated hydraulic conductivity: High
Depth class: Shallow
Slope range: 25 to 60 percent

Associated Soils

- Buffstat soils, deep to bedrock
- Littlejoe soils, deep to bedrock, with redder subsoils

Taxonomic Classification

Loamy-skeletal, mixed, semiactive, mesic Lithic Dystrudepts

Typical Pedon

Bugley channery silt loam; located 1.8 miles northeast from the intersection of Virginia State Routes 57 and 822, 2,500 feet southeast off Virginia State Route 822 in Fairy Stone Elsinboro Park in a mixed woodland area in the northwest part of Henry

County, Virginia; Philpott Reservoir, Virginia USGS 7.5 Minute Quadrangles, NAD27; lat. 36 degrees 46 minutes 30 seconds N. and long. 80 degrees 5 minutes 2 seconds W.

A—0 to 3 inches; dark yellowish brown (10YR 4/4) channery silt loam; weak fine granular structure; friable, nonsticky, nonplastic; many fine and common medium roots; 18 percent subangular graphitic schist channers; very strongly acid; clear smooth boundary.

Bw—3 to 11 inches; strong brown (7.5YR 4/6) very channery silt loam; weak fine subangular blocky structure; friable, nonsticky, nonplastic; common medium and coarse roots; 40 percent subangular graphitic schist channers; very strongly acid; clear wavy boundary.

R—11 inches; indurated graphitic schist bedrock.

Range in Characteristics

Solum thickness: 10 to 20 inches
Depth to hard bedrock: 10 to 20 inches
Rock fragments: 15 to 35 percent in A horizon and 30 to 75 percent in the Bw and C horizon
Reaction: Extremely acid to strongly acid

A horizon:
Hue—10YR or 2.5Y
Value—3 or 4
Chroma—2 to 4
Texture (fine-earth fraction)—silt loam or loam

Bw horizon:
Hue—5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—silt loam

C horizon (where present):
Hue—5YR to 10YR
Value—4 to 6
Chroma—1 to 8
Texture (fine-earth fraction)—silt loam

Clifford Series

Physiographic province: Piedmont
Landform: Uplands
Parent material: Residuum from granite, granite gneiss, gneiss, and mica schist
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 2 to 45 percent

Associated Soils

- Buckhall soils, very deep to bedrock, with strong brown subsoils
- Dyke soils, very deep to bedrock, in old alluvium material
- Minnieville soils, very deep to bedrock, in mafic parent material
- Woolwine soils, moderately deep to bedrock

Taxonomic Classification

Fine, kaolinitic, mesic Typic Kanhapludults

Typical Pedon

Clifford sandy loam; located 2,150 feet south 50 degrees east of the intersection of Virginia State Routes 606 and 607 in the south central part of Franklin County, Virginia; Rocky Mount, Virginia USGS 7.5 Minute Quadrangles, NAD27; lat. 36 degrees 55 minutes 10.70 seconds N. and long. 79 degrees 57 minutes 1.50 seconds W.

A—0 to 7 inches; brown (7.5YR 4/4) sandy loam; weak fine granular structure; very friable, slightly sticky, slightly plastic; common very fine through coarse roots; few fine mica flakes; 10 percent subrounded quartz gravel; very strongly acid; clear smooth boundary.

Bt1—7 to 11 inches; yellowish red (5YR 4/6) clay loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; common very fine and fine and few medium and coarse roots; few faint clay films on all faces of peds; few fine mica flakes; 5 percent subrounded quartz gravel; very strongly acid; clear wavy boundary.

Bt2—11 to 33 inches; red (2.5YR 4/6) clay; moderate fine subangular blocky structure; friable, moderately sticky, slightly plastic; common very fine and fine and few medium and coarse roots; many distinct clay films on all faces of peds; common fine mica flakes; 5 percent subrounded quartz gravel; very strongly acid; gradual wavy boundary.

Bt3—33 to 54 inches; red (2.5YR 4/6) clay; moderate medium subangular blocky structure; friable, moderately sticky, moderately plastic; common very fine and fine roots; many distinct clay films on all faces of peds; many fine mica flakes; 5 percent subrounded quartz gravel; very strongly acid; gradual wavy boundary.

BCt—54 to 62 inches; red (2.5YR 4/6) clay loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; common distinct clay films on all faces of peds; many fine mica flakes; 5 percent subrounded quartz gravel; very strongly acid; gradual wavy boundary.

C—62 to 82 inches; strong brown (7.5YR 4/6), dark red (2.5YR 3/6), and red (2.5YR 4/6) fine sandy loam; massive; very friable, slightly sticky, slightly plastic; many fine mica flakes; very strongly acid.

Range in Characteristics

Solum thickness: 30 to 60 or more inches
Depth to bedrock: Greater than 60 inches
Rock fragments: 0 to 15 percent throughout
Mica content: Few to many throughout
Reaction: Very strongly acid to moderately acid

A or Ap horizon:
Hue—2.5YR to 10YR
Value—3 or 4
Chroma—2 to 4
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

E horizon (where present):
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 8
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

BE horizon (where present):
Hue—5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—loam, sandy clay loam, clay loam

Bt horizon:
Hue—10R or 2.5YR
Value—3 to 5
Chroma—6 or 8
Texture (fine-earth fraction)—clay loam or clay

BC or BCt horizon:
Hue—10R to 5YR
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—loam, sandy clay loam, clay loam

C horizon:
Hue—10R to 7.5YR
Value—4 or 6
Chroma—4 to 8, often multicolored
Texture (fine-earth fraction)—sandy loam or loam

Codorus Series

Physiographic province: Piedmont
Landform: Flood plains
Parent material: Alluvium from metamorphic and igneous materials
Drainage class: Somewhat poorly drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 0 to 2 percent

Associated Soils

- Colvard soils, well drained, in coarse-loamy material
- Delanco soils, moderately well drained, on adjacent stream terraces
- Elsinboro soils, well drained, on adjacent stream terraces

Taxonomic Classification

Fine-loamy, mixed, active, mesic Fluvaquentic Dystrudepts

Typical Pedon

Codorus loam; located 1,250 feet west and 1,625 feet south of the intersection of Virginia State Routes 648 and 967 on the south side of Dyke Creek in an abandoned field in the eastern part of Henry County, Virginia; Martinsville East, Virginia USGS 7.5 Minute Quadrangles, NAD27; lat. 36 degrees 41 minutes 30 seconds N. and long. 79 degrees 45 minutes 47 seconds W.

Ap—0 to 8 inches; brown (7.5YR 4/3) loam; weak fine granular structure; friable, nonsticky, nonplastic; few fine and common very fine roots; few fine tubular pores; common fine and medium mica flakes; slightly acid; abrupt smooth boundary.

Bw1—8 to 12 inches; brown (7.5YR 5/4) loam; weak fine subangular blocky structure; friable, nonsticky, nonplastic; few very fine and fine roots; few fine tubular pores; few organic stains on all faces of peds; common fine mica flakes; slightly acid; abrupt smooth boundary.

Bw2—12 to 22 inches; strong brown (7.5YR 4/6) loam; weak medium subangular blocky structure; friable, nonsticky, nonplastic; few very fine and fine roots; few coarse tubular pores; common fine faint brownish yellow (10YR 6/6) iron depletions; many fine mica flakes; strongly acid; gradual smooth boundary.

Bw3—22 to 36 inches; strong brown (7.5YR 4/6) loam; weak medium subangular blocky structure; friable, nonsticky, nonplastic; few coarse tubular pores; many fine distinct brownish yellow (10YR 6/6) clay depletions; many fine mica flakes; slightly acid; gradual smooth boundary.

Bg—36 to 47 inches; grayish brown (10YR 5/2) loam; weak medium subangular blocky structure; friable, nonsticky, nonplastic; common prominent strong brown (7.5YR 4/6) and yellowish red (5YR 4/6) masses of oxidized iron; many fine mica flakes; slightly acid; clear smooth boundary.

Cg—47 to 62 inches; grayish brown (10YR 5/2) loam; massive; very friable, nonsticky, nonplastic; common prominent yellowish red (5YR 4/6) and strong brown (7.5YR 4/6) masses of oxidized iron; many fine mica flakes; slightly acid.

Range in Characteristics

Solum thickness: 30 to 60 inches
Depth to bedrock: Greater than 60 inches
Rock fragments: 0 to 15 percent throughout
Mica content: Common to many throughout
Reaction: Very strongly acid to moderately acid in the upper solum, strongly acid to slightly acid in lower solum and C horizon
Redoximorphic features: Shades of red, brown, yellow, or gray in the Bw, Bg, C, or Cg horizons

Ap horizon:
Hue—7.5YR to 10YR
Value—3 to 5
Chroma—2 or 3
Texture (fine-earth fraction)—loam or silt loam

Bw horizon:
Hue—7.5YR to 10YR
Value—4 or 5
Chroma—3 to 6
Texture (fine-earth fraction)— loam, silt loam, clay loam, or sity clay loam

Bg horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—1 or 2
Texture (fine-earth fraction)— loam, silt loam, clay loam, or silty clay loam

C horizon (where present):
Hue—7.5YR to 2.5Y
Value—3 to 6
Chroma—3 or 4
Texture (fine-earth fraction)—loam or silt loam with thin strata of sand, loamy sand, or sandy loam below 40 inches

Cg horizon:
Hue—7.5YR to 2.5Y
Value—3 to 6
Chroma—1 or 2
Texture (fine-earth fraction)—loam or silt loam with thin strata of sand, loamy sand, or sandy loam below 40 inches

Colvard Series

Physiographic province: Piedmont
Landform: Flood plains
Parent material: Alluvium from metamorphic and igneous materials
Drainage class: Well drained
Slowest saturated hydraulic conductivity: High
Depth class: Very deep
Slope range: 0 to 2 percent

Associated Soils

- Codorus soils, somewhat poorly drained, in fine-loamy material
- Delanco soils, moderately well drained, on adjacent stream terraces
- Elsinboro soils, well drained, on adjacent stream terraces

Taxonomic Classification

Coarse-loamy, mixed, active, nonacid, mesic Typic Udifluvents

Typical Pedon

Colvard fine sandy loam; located 5,125 feet north and 2,500 feet east of the intersection of Virginia State Routes 622 and the Smyth River on the west side of the river in a hayfield in Henry County, Virginia; Northeast Eden, Virginia USGS 7.5 Minute Quadrangles, NAD27; lat. 36 degrees 34 minutes 24 seconds N. and long. 79 degrees 44 minutes 15 seconds W.

Ap—0 to 12 inches; brown (7.5YR 4/3) fine sandy loam; weak fine granular structure; very friable, nonsticky, nonplastic; common very fine roots; common fine mica flakes; moderately acid; abrupt smooth boundary.

C1—12 to 25 inches; brown (7.5YR 4/4) fine sandy loam; massive; friable, nonsticky, nonplastic; few very fine roots; common fine mica flakes; strongly acid; clear smooth boundary.

C2—25 to 35 inches; brown (7.5YR 4/3) fine sandy loam; massive; very friable, nonsticky, nonplastic; few very fine roots; common fine mica flakes; 5 percent rounded quartz gravel; moderately acid; clear smooth boundary.

C3—35 to 43 inches; brown (10YR 4/3) fine sandy loam; massive; friable, nonsticky, nonplastic; common fine mica flakes; strongly acid; gradual smooth boundary.

C4—43 to 62 inches; dark yellowish brown (10YR 4/4) fine sandy loam; massive; friable, nonsticky, nonplastic; common fine mica flakes; strongly acid.

Range in Characteristics

Thickness of loamy sediments: 40 to 60 or more inches
Depth to bedrock: Greater than 60 inches
Rock fragments: 0 to 15 percent throughout
Mica content: Few to common throughout
Reaction: Strongly acid to slightly alkaline

Ap horizon:
Hue—7.5YR or 10YR
Value—3 or 4 (if value is 3, the horizon is less than 6 inches thick)
Chroma—2 to 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

C horizon:
Hue—7.5YR or 10YR
Value—4 to 6

Chroma—3 to 6
Texture (fine-earth fraction)— sandy loam, fine sandy loam, or loam with thin strata of sand or loamy sand below 40 inches

Comments: Gravelly or very gravelly strata occur in some pedons below a depth of 40 inches. Some pedons have gray iron depletions below a depth of 40 inches

Creedmoor Series

Physiographic province: Piedmont
Landform: Uplands on Triassic basin
Parent material: Residuum from Triassic siltstone, mudstone, fine-grained sandstone, and shale
Drainage class: Moderately well drained
Slowest saturated hydraulic conductivity: Low
Depth class: Very deep
Slope range: 1 to 4 percent

Associated Soils

- Ayersville soils, moderately deep to bedrock, well drained
- Leaksville soils, moderately deep to bedrock, poorly drained
- Mayodan soils, very deep to bedrock, well drained
- Stoneville soils, deep to bedrock, well drained

Taxonomic Classification

Fine, mixed, semiactive, thermic Aquic Hapludults

Typical Pedon

Creedmoor fine sandy loam; located about 6.8 miles southwest of Eden, North Carolina at the intersection of North Carolina State Route 135 and Secondary Road 2145, about 0.8 mile southeast on Secondary Road 2145 to entrance of Shiloh Airport, 1,900 feet southeast from entrance of Shiloh Airport on Secondary Road 2145, and 200 feet southwest of Secondary Road 2145 in an idle field in Rockingham County, North Carolina; Southwest Eden, North Carolina USGS 7.5 Minute Quadrangles, NAD27; lat. 36 degrees 26 minutes 2 seconds N. and long. 79 degrees 51 minutes 7 seconds W.

Ap—0 to 7 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; friable, nonsticky, nonplastic; many fine roots; strongly acid; abrupt smooth boundary.
E—7 to 11 inches; light yellowish brown (10YR 6/4) fine sandy loam; weak coarse platy parting to moderate medium granular structure; friable, nonsticky, nonplastic; common fine roots; very strongly acid; clear smooth boundary.
Bt1—11 to 32 inches; strong brown (7.5YR 5/6) clay; moderate medium prismatic parting to moderate medium angular blocky structure; very firm, very sticky, very plastic; common fine roots; many distinct continuous clay films on all faces of peds; common medium distinct pinkish gray (7.5YR 6/2) clay depletions; extremely acid; clear wavy boundary.
Bt2—32 to 47 inches; brown (7.5YR 4/4) clay; moderate coarse angular blocky structure; very firm, very sticky, very plastic; few fine roots; many distinct continuous clay films on all faces of peds; few fine distinct yellowish red (5YR 4/6) masses of oxidized iron and common medium distinct pinkish gray (7.5YR 7/2) clay depletions; extremely acid; gradual wavy boundary.

C—47 to 67 inches; yellowish red (5YR 5/6), dark reddish brown (2.5YR 3/4), and pinkish gray (7.5YR 7/2) clay loam; massive; firm, moderately sticky, moderately plastic; few fine roots; extremely acid; gradual wavy boundary.
Cr—67 to 77 inches; moderately cemented sandstone bedrock.

Range in Characteristics

Solum thickness: 25 to 60 inches
Depth to bedrock: Greater than 60 inches
Rock fragments: 0 to 5 percent throughout
Reaction: Extremely acid to strongly acid
Redoximorphic features: Shades of red, brown, yellow, or gray in the Bt or C horizons

Ap horizon:
Hue—7.5YR to 2.5Y
Value—3 to 6
Chroma—1 to 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

E horizon:
Hue—7.5YR to 2.5Y
Value—5 or 6
Chroma—2 to 4
Texture (fine-earth fraction)— sandy loam, fine sandy loam, or loam

Bt horizon:
Hue—7.5YR or 10YR
Value—5 to 7
Chroma—3 to 8
Texture (fine-earth fraction)—clay or silty clay loam

C horizon:
Hue— 2.5YR to 2.5Y
Value—3 to 7
Chroma—3 to 8 (includes 1 or 2 if in a multicolored horizon)
Texture (fine-earth fraction)—sandy loam, loam, sandy clay loam, or clay loam saprolite

Delanco Series

Physiographic province: Piedmont
Landform: Low stream terraces on river valleys
Parent material: Alluvium from metamorphic and igneous materials
Drainage class: Somewhat poorly drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 2 to 8 percent

Associated Soils

- Codorus soils, somewhat poorly drained, on adjacent flood plains
- Colvard soils, well drained, on adjacent flood plains
- Elsinboro soils, well drained, on similar and linear low stream terrace positions

Taxonomic Classification

Fine-loamy, mixed, semiactive, mesic Aquic Hapludults

Typical Pedon

Delanco loam; located 8,825 feet east of the intersection of Virginia State Routes 220 and 718 in the southern part of Franklin County, Virginia; Gladehill, Virginia USGS 7.5 Minute Quadrangles, NAD27; lat. 36 degrees 52 minutes 55.80 seconds N. and long. 79 degrees 50 minutes 21.80 seconds W.

Ap—0 to 10 inches; brown (10YR 4/3) loam; weak fine granular structure; friable, nonsticky, nonplastic; many very fine and fine roots; common fine mica flakes; strongly acid; clear smooth boundary.

Bt—10 to 26 inches; light olive brown (2.5Y 5/3) clay loam; moderate fine and medium subangular blocky structure; firm, slightly sticky, slightly plastic; few very fine and fine roots; common distinct clay films on all faces of peds; common medium prominent irregular yellowish brown (10YR 5/8) masses of oxidized iron and common medium faint irregular light brownish gray (10YR 6/2) iron depletions; many fine mica flakes; moderately acid; clear smooth boundary.

Btg—26 to 37 inches; light brownish gray (2.5Y 6/2) clay; moderate fine and medium subangular blocky structure; firm, moderately sticky, moderately plastic; common faint clay films on all faces of peds; many medium and coarse prominent irregular yellowish brown (10YR 5/6) masses of oxidized iron; many fine mica flakes; moderately acid; clear smooth boundary.

Cg1—37 to 50 inches; light gray (2.5Y 7/1) clay loam; massive; firm, slightly sticky, slightly plastic; common medium and coarse prominent irregular light olive brown (2.5Y 5/6) masses of oxidized iron; many fine mica flakes; moderately acid; clear smooth boundary.

Cg2—50 to 57 inches; light gray (5Y 7/1) loamy sand; single grain; very friable, nonsticky, nonplastic; common medium and coarse prominent irregular light olive brown (2.5Y 5/6) masses of oxidized iron; many fine mica flakes; 5 percent subrounded quartz gravel; moderately acid; clear smooth boundary.

2Cg3—57 to 80 inches; light gray (5Y 7/1) very gravelly sand; single grain; very friable, nonsticky, nonplastic; common medium and coarse prominent irregular light olive brown (2.5Y 5/6) masses of oxidized iron; many fine mica flakes; 15 percent subrounded quartz cobbles and 35 percent subrounded quartz gravel; moderately acid.

Range in Characteristics

Solum thickness: 26 to 56 inches

Depth to bedrock: Greater than 60 inches

Rock fragments: 0 to 15 percent in the A, B, and C horizons, and 0 to 50 percent in the 2C horizon

Mica content: Few in the Ap and upper Bt horizons, common in lower Bt and Cg horizons

Reaction: Extremely acid to strongly acid

Redoximorphic features: Shades of red, brown, yellow, or gray in the Bt, Btg, C, Cg or 2Cg horizons

Ap horizon:

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—2 to 4

Texture (fine-earth fraction)—loam or fine sandy loam

Bt horizon:

Hue—7.5YR to 2.5Y

Value—4 to 7

Chroma—4 to 8
Texture (fine-earth fraction)—loam, clay loam or sandy clay loam

Btg horizon:
Hue—7.5YR to 2.5Y
Value—4 to 7
Chroma—1 or 2
Texture (fine-earth fraction)—clay loam, sandy clay loam, or clay

C horizon (where present):
Hue—7.5YR to 2.5Y
Value—4 to 7
Chroma—3 to 6
Texture (fine-earth fraction)—loam, sandy clay loam, clay loam

Cg horizon:
Hue—7.5YR to 5Y
Value—4 to 7
Chroma—1 or 2
Texture (fine-earth fraction)—loamy sand, loam, sandy clay loam, clay loam

2Cg horizon:
Hue—7.5YR to 5Y
Value—4 to 7
Chroma—1 or 2
Texture (fine-earth fraction)—sand, loamy sand, loam, sandy clay loam, clay loam

Dyke Series

Physiographic province: Piedmont
Landform: High stream terraces on river valleys
Parent material: Alluvium from metamorphic and igneous materials
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 2 to 15 percent

Associated Soils

- Clifford soils, very deep to bedrock, in felsic residuum
- Minnieville soils, very deep to bedrock, in mafic residuum

Taxonomic Classification

Fine, mixed, semiactive, mesic Typic Rhodudults

Typical Pedon

Dyke loam; located 4,250 feet south and 1,250 feet east of the intersection of Virginia State Routes 650 and 620, about 50 feet west of Virginia State Route 650 in pine woodland in the central portion of Henry County, Virginia; Martinsville East, Virginia USGS 7.5 Minute Quadrangles, NAD27; lat. 36 degrees 38 minutes 36 seconds N. and long. 79 degrees 49 minutes 10 seconds W.

Ap—0 to 6 inches; dark reddish brown (2.5YR 3/4) loam; weak fine granular structure; friable, slightly sticky, slightly plastic; few very fine through coarse roots; very strongly acid; abrupt smooth boundary.

Bt1—6 to 9 inches; dusky red (10R 3/4) clay loam; weak fine subangular blocky structure; friable, moderately sticky, slightly plastic; few very fine through coarse roots; many distinct clay films on all faces of peds; strongly acid; clear smooth boundary.

Bt2—9 to 48 inches; dusky red (10R 3/4) clay; moderate medium subangular blocky structure; friable, very sticky, very plastic; few very fine and fine roots; many distinct clay films on all faces of peds; strongly acid; clear smooth boundary.

Bt3—48 to 65 inches; dusky red (10R 3/4) clay; moderate fine subangular blocky structure; friable, very sticky, very plastic; common very fine and fine roots; few black (10YR 2/1) organic stains and common faint clay films on all faces of peds; 5 percent rounded quartz gravel; strongly acid; gradual wavy boundary.

Range in Characteristics

Solum thickness: 30 to 60 or more inches
Depth to bedrock: Greater than 60 inches
Rock fragments: 0 to 15 percent throughout the solum, 15 to 35 percent in C horizons, if present
Reaction: Very strongly acid or strongly acid throughout

Ap horizon:
Hue—2.5YR to 7.5YR
Value—2 to 4
Chroma—2 to 6
Texture (fine-earth fraction)—loam or silt loam

Bt horizon:
Hue—10R to 5YR
Value—3 or 4
Chroma—4 to 8
Texture (fine-earth fraction)—clay loam or clay

C horizon (where present):
Hue—multicolored 10R to 10YR
Value—3 to 5
Chroma—4 to 8
Texture (fine-earth fraction)—loam or clay loam saprolite

Elsinboro Series

Physiographic province: Piedmont
Landform: Low stream terraces on river valleys
Parent material: Alluvium from metamorphic and igneous materials
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 0 to 4 percent

Associated Soils

- Colvard soils, well drained, on adjacent flood plains
- Codorus soils, somewhat poorly drained, on adjacent flood plains
- Delanco soils, moderately well drained

Taxonomic Classification

Fine-loamy, mixed, semiactive, mesic Typic Hapludults

Typical Pedon

Elsinboro fine sandy loam; located 9,850 feet south 75 degrees west of the intersection of Virginia State Route 646 and the Pigg River (Fralin Bridge) in the southeastern part of Franklin County, Virginia; Penhook, Virginia USGS 7.5 Minute Quadrangles, NAD27; lat. 36 degrees 55 minutes 36.10 seconds N. and long. 79 degrees 44 minutes 57.50 seconds W.

Ap—0 to 11 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable, slightly sticky, slightly plastic; few fine and common very fine roots; strongly acid; abrupt smooth boundary.

Bt1—11 to 25 inches; strong brown (7.5YR 5/6) clay loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine roots; few faint clay films on all faces of peds; common fine mica flakes; strongly acid; gradual smooth boundary.

Bt2—25 to 38 inches; strong brown (7.5YR 5/6) sandy clay loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine roots; few faint clay films on all faces of peds; common fine mica flakes; strongly acid; gradual smooth boundary.

C—38 to 60 inches; brown (7.5YR 5/4) sandy loam; massive; very friable, slightly sticky, nonplastic; common fine mica flakes; strongly acid.

Range in Characteristics

Solum thickness: 28 to 50 inches
Depth to bedrock: Greater than 60 inches
Rock fragments: 0 to 15 percent throughout
Reaction: Very strongly acid to strongly acid

Ap horizon:
Hue—7.5YR or 10YR
Value—3 or 4
Chroma—2 to 4
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

Bt Horizon (upper):
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 to 8
Texture (fine-earth fraction)—loam, sandy clay loam or clay loam

Bt Horizon (lower):
Hue—2.5YR to 7.5YR
Value—4 or 5
Chroma—4 to 8
Texture (fine-earth fraction)—loam, sandy clay loam or clay loam

BC horizon (where present):
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 to 8
Texture (fine-earth fraction)—sandy loam, loam or sandy clay loam

C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

Leaksville Series

Physiographic province: Piedmont
Landform: Uplands on Triassic basin
Parent material: Residuum from Triassic shale
Drainage class: Poorly drained
Slowest saturated hydraulic conductivity: Low
Depth class: Moderately deep
Slope range: 0 to 4 percent

Associated Soils

- Ayersville soils, moderately deep to bedrock, well drained
- Creedmoor soils, very deep to bedrock, moderately well drained
- Mayodan soils, very deep to bedrock, well drained
- Stoneville soils, deep to bedrock, well drained

Taxonomic Classification

Fine, smectitic, mesic Typic Albaqualfs

Typical Pedon

Leaksville silt loam; located about 1/4 mile east of Eden, North Carolina, 1,000 feet east of Secondary Road 1741, 900 feet north of North Carolina State Route 770 in pasture in Rockingham County, North Carolina; Northeast Eden, Virginia USGS 7.5 Minute Quadrangles, NAD27; lat. 36 degrees 31 minutes 28 seconds N. and long. 79 degrees 41 minutes 18 seconds W.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable, nonsticky, nonplastic; many fine and medium roots; few fine iron-manganese concretions; 10 percent subangular shale channers; slightly acid; clear smooth boundary.

Eg—6 to 9 inches; light brownish gray (2.5Y 6/2) channery silt loam; weak medium granular structure; friable, nonsticky, nonplastic; few medium roots; few fine and medium iron-manganese concretions and common medium distinct irregular light yellowish brown (2.5Y 6/4) masses of oxidized iron and common fine distinct irregular yellowish brown (10YR 5/8) masses of oxidized iron; 30 percent subangular shale channers; moderately acid; abrupt wavy boundary.

Btg—9 to 18 inches; grayish brown (2.5Y 5/2) clay; weak prismatic structure; very firm, very sticky, very plastic; few fine and medium roots; few faint clay films on all faces of peds and common slickensides (pedogenic); few fine iron-manganese concretions and common fine distinct irregular yellowish brown (10YR 5/8) masses of oxidized iron; 10 percent subangular shale channers; slightly acid; clear wavy boundary.

CBg—18 to 24 inches; dark grayish brown (2.5Y 4/2) very channery silty clay loam; weak medium platy structure; firm, moderately sticky, moderately plastic; few fine roots; few patchy clay films on rock fragments; few fine iron-manganese concretions and few fine faint irregular grayish brown (2.5Y 5/2) masses of oxidized iron and common medium distinct irregular yellowish brown (10YR 5/8) masses of oxidized iron; few medium irregular carbonate masses; few medium threadlike carbonate masses; 60 percent subangular shale channers; neutral; abrupt irregular boundary.

Cr—24 to 30 inches; strongly cemented shale bedrock.

R—30 inches; indurated shale bedrock.

Range in Characteristics

Solum thickness: 20 to 40 inches
Depth to soft bedrock: 20 to 40 inches
Depth to hard bedrock: 24 to 60 inches
Rock fragments: 0 to 35 in the Ap and Eg horizon, 0 to 15 in the Btg horizon, and 35 to 85 percent in the CB horizon
Reaction: Strongly acid to slightly acid in the A horizon, moderately acid to moderately alkaline in the Eg, Btg, and CBg
Redoximorphic features: Shades of red, brown, yellow, or gray in the Eg, Btg or CBg horizons

Ap horizon:
Hue—10YR to 5Y
Value—4 to 6
Chroma—1 to 4
Texture (fine-earth fraction)—loam or silt loam

Eg horizon:
Hue—10YR to 5Y
Value—5 to 7
Chroma—2 to 4
Texture (fine-earth fraction)—loam, silt loam, or silty clay loam

Btg horizon:
Hue—10YR to 5Y
Value—4 to 6
Chroma—1 or 2
Texture (fine-earth fraction)—clay, silty clay, or clay loam

CBg horizon:
Hue—10YR to 5Y
Value—4 to 6
Chroma—1 or 2
Texture (fine-earth fraction)—loam, clay loam or silty clay loam

Littlejoe Series

Physiographic province: Piedmont
Landform: Uplands
Parent material: Residuum from graphitic and sericitic schist
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Deep
Slope range: 7 to 25 percent

Associated Soils

- Bugley soils, shallow to bedrock
- Buffstat soils, deep to bedrock, with yellowish red subsoils

Taxonomic Classification

Fine, mixed, subactive, mesic Typic Hapludults

Typical Pedon

Littlejoe silt loam; located 2,300 feet south 76 degrees east of the intersection of Virginia State Routes 40 and 890 in the eastern part of Franklin County, Virginia;

Sandy Level, Virginia USGS 7.5 Minute Quadrangles, NAD27; lat. 36 degrees 58 minutes 39 seconds N. and long. 79 degrees 36 minutes 52.10 seconds W.

Ap—0 to 8 inches; dark yellowish brown (10YR 4/4) silt loam; moderate fine granular structure; friable, nonsticky, nonplastic; common very fine, fine, and medium roots; few very fine mica flakes; 2 percent subangular phyllite channers; very strongly acid; clear smooth boundary.

Bt1—8 to 20 inches; strong brown (7.5YR 5/8) clay loam; moderate fine subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine, fine, and medium roots; common faint clay films on all faces of peds; few very fine mica flakes; 2 percent subangular phyllite channers; very strongly acid; clear smooth boundary.

Bt2—20 to 28 inches; red (2.5YR 4/6) clay; moderate fine subangular blocky structure; firm, slightly sticky, slightly plastic; common distinct clay films on all faces of peds; few very fine mica flakes; 2 percent subangular phyllite channers; very strongly acid; gradual smooth boundary.

Bt3—28 to 45 inches; red (10R 4/6) clay; moderate fine subangular blocky structure; firm, slightly sticky, slightly plastic; common distinct clay films on all faces of peds; few very fine mica flakes; 11 percent subangular phyllite channers; very strongly acid; abrupt smooth boundary.

Cr—45 to 59 inches; moderately cemented phyllite bedrock.

R—59 inches; indurated phyllite bedrock.

Range in Characteristics

Solum thickness: 25 to 50 inches
Depth to soft bedrock: 40 to 60 inches
Depth to hard bedrock: Greater than 60 inches
Rock fragments: 0 to 15 percent throughout
Reaction: Very strongly acid or strongly acid

A or Ap horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 6
Texture (fine-earth fraction)—loam or silt loam

BE horizon (where present):
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—5 to 8
Texture (fine-earth fraction)—loam, silt loam, silty clay loam

Bt horizon:
Hue—10R to 5YR
Value—4 or 5
Chroma—6 or 8
Texture (fine-earth fraction)—clay loam, clay, or silty clay

BC horizon (where present):
Hue—2.5YR to 10YR
Value—4 to 6
Chroma—6 or 8
Texture (fine-earth fraction)—clay loam

C horizon (where present):
Hue—2.5YR to 10YR
Value—4 to 6

Chroma—3 to 8
Texture (fine-earth fraction)—loam

Comments: The Littlejoe series does not allow 7.5YR hues in the Bt horizon. This pedon, which is representative of the survey area, has browner hues in individual subsoil horizons.

Mayodan Series

Physiographic province: Piedmont
Landform: Uplands on Triassic basin
Parent material: Residuum from Triassic siltstone and sandstone
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 2 to 15 percent

Associated Soils

- Ayersville soils, moderately deep to bedrock, well drained
- Leaksville soils, moderately deep to bedrock, poorly drained
- Creedmoor soils, very deep to bedrock, moderately well drained
- Stoneville soils, deep to bedrock, well drained

Taxonomic Classification

Fine, mixed, semiactive, thermic Typic Hapludults

Typical Pedon

Mayodan fine sandy loam; located 125 feet west and 375 feet north of the intersection of Virginia State Routes 610 and 711 in mixed woods in the southeastern part of Henry County, Virginia; Northeast Eden, Virginia USGS 7.5 Minute Quadrangles, NAD27; lat. 36 degrees 32 minutes 58 seconds N. and long. 79 degrees 43 minutes 54 seconds W.

A—0 to 6 inches; brown (7.5YR 5/4) fine sandy loam; weak fine granular structure; very friable, nonsticky, nonplastic; few very fine through coarse roots; 10 percent subrounded quartz gravel; very strongly acid; abrupt smooth boundary.

BE—6 to 10 inches; yellowish red (5YR 5/6) sandy clay loam; weak fine subangular blocky structure; friable, nonsticky, nonplastic; few very fine and fine and common medium and coarse roots; few fine mica flakes; 5 percent subrounded quartz gravel; very strongly acid; abrupt smooth boundary.

Bt1—10 to 23 inches; reddish brown (2.5YR 4/4) clay; moderate medium subangular blocky structure; firm, moderately sticky, moderately plastic; few very fine and fine and common medium and coarse roots; many distinct clay films on all faces of peds; few fine mica flakes; 5 percent subrounded quartz gravel; very strongly acid; gradual wavy boundary.

Bt2—23 to 38 inches; reddish brown (2.5YR 4/4) clay; moderate medium subangular blocky structure; firm, moderately sticky, moderately plastic; few very fine and fine roots; common distinct clay films on all faces of peds; common fine and medium mica flakes; 5 percent subrounded quartz gravel and 15 percent subrounded siltstone channers; very strongly acid; gradual wavy boundary.

Bt3—38 to 48 inches; reddish brown (2.5YR 4/4) clay loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few distinct clay films on all faces of peds; common fine and medium mica flakes; 5 percent subrounded quartz gravel and 30 percent subrounded siltstone channers; very strongly acid; gradual wavy boundary.

C—48 to 63 inches; reddish brown (2.5YR 4/4) loam; massive; friable, nonsticky, nonplastic; few distinct clay films on rock fragments; common fine and medium mica flakes; 5 percent subrounded quartz gravel; very strongly acid.

Range in Characteristics

Solum thickness: 30 to 60 inches
Depth to bedrock: Greater than 60 inches
Rock fragments: 0 to 15 percent in the A, and 0 to 5 percent in the BE, Bt, and C horizons
Mica content: Few to common in the BE, Bt and C horizons
Reaction: Very strongly acid to moderately acid in the A and BE horizons and very strongly acid to strongly acid in the Bt, BC and C horizons

A horizon:
Hue—5YR to 2.5Y
Value—2 to 6
Chroma—2 to 8
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

BE horizon:
Hue—5YR to 10YR
Value—3 to 6
Chroma—2 to 8
Texture (fine-earth fraction)—fine sandy loam, sandy clay loam, clay loam

Bt horizon:
Hue—2.5YR to 7.5YR
Value—4 to 6
Chroma—3 to 8
Texture (fine-earth fraction)—clay loam or clay

BC horizon (where present):
Hue—2.5YR to 10YR
Value—3 to 6
Chroma—2 to 8, may be multicolored
Texture (fine-earth fraction)—loam, sandy clay loam, clay loam

C horizon:
Hue—10R to 10YR
Value—3 to 6
Chroma—2 to 8
Texture (fine-earth fraction)—sandy loam, loam, sandy clay loam, clay loam

Minnieville Series

Physiographic province: Piedmont
Landform: Uplands
Parent material: Residuum from mafic crystalline materials
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 2 to 25 percent

Associated Soils

- Clifford soils, very deep to bedrock, in felsic residuum
- Dyke soils, very deep to bedrock, in old alluvium

- Orenda soils, very deep to bedrock, in mixed mafic and felsic residuum
- Spriggs soils, shallow to bedrock
- Woolwine soils, moderately deep to bedrock

Taxonomic Classification

Fine, kaolinitic, mesic Typic Hapludults

Typical Pedon

Minnieville loam; located 10,100 feet north 21 degrees west of the intersection of Virginia State Routes 618 and 632 in the southern part of Franklin County, Virginia; Snow Creek, Virginia USGS 7.5 Minute Quadrangles, NAD27; lat. 36 degrees 50 minutes 0.60 seconds N. and long. 79 degrees 51 minutes 23.10 seconds W.

A—0 to 4 inches; reddish brown (5YR 4/4) loam; moderate fine granular structure; very friable, nonsticky, nonplastic; many very fine, fine, and medium roots; 5 percent subrounded quartz gravel; strongly acid; clear smooth boundary.

BA—4 to 8 inches; dark red (2.5YR 3/6) clay loam; moderate very fine and fine subangular blocky structure; firm, nonsticky, slightly plastic; many very fine and fine and few very coarse roots; 2 percent subrounded quartz gravel; strongly acid; abrupt smooth boundary.

Bt1—8 to 17 inches; red (10R 4/6) clay; strong fine and medium angular blocky structure; very firm, very sticky, moderately plastic; common very fine, fine, and medium roots; many distinct clay films on all faces of peds; strongly acid; clear smooth boundary.

Bt2—17 to 32 inches; red (10R 4/6) clay; strong fine and medium angular blocky structure; very firm, moderately sticky, moderately plastic; few very fine roots; many distinct clay films on all faces of peds; strongly acid; gradual smooth boundary.

Bt3—32 to 53 inches; red (10R 4/6) clay; moderate fine and medium subangular blocky structure; very firm, moderately sticky, moderately plastic; many distinct clay films on all faces of peds; strongly acid; gradual smooth boundary.

BCt—53 to 64 inches; red (2.5YR 5/6) clay loam; weak fine and medium subangular blocky structure; firm, nonsticky, slightly plastic; common distinct clay films on all faces of peds; few very fine mica flakes; 10 percent subrounded hornblende gneiss gravel; strongly acid; gradual smooth boundary.

BC—64 to 81 inches; red (2.5YR 5/6) clay loam; weak fine subangular blocky structure; firm, nonsticky, slightly plastic; few very fine mica flakes; 10 percent subrounded hornblende gneiss gravel; strongly acid.

Range in Characteristics

Solum thickness: 30 to 60 inches or more
Depth to bedrock: Greater than 60 inches
Rock fragments: 0 to 10 percent throughout
Mica content: None to common in the Bt and C horizons

A or Ap horizon:
Hue—5YR or 7.5YR
Value—3 or 4
Chroma—3 to 6
Texture (fine-earth fraction)—loam or clay loam

AB or BA horizon:
Hue—2.5YR to 7.5YR
Value: 3 or 4
Chroma: 4 or 6
Texture (fine-earth fraction)—loam or clay loam

Bt horizon:
Hue—10R to 5YR, 5YR colors are restricted to individual subhorizons
Value—3 or 4
Chroma—6 or 8
Texture (fine-earth fraction)—clay loam or clay

BC or BCt horizon:
Hue—2.5YR or 5YR
Value—3 to 5
Chroma—6 or 8
Texture (fine-earth fraction)—clay loam

C horizon (where present):
Hue—2.5YR to 7.5YR
Value—4 or 5
Chroma—6 or 8
Texture (fine-earth fraction)—loam or clay loam

Orenda Series

Physiographic province: Piedmont
Landform: Uplands
Parent material: Residuum from mafic and felsic igneous and high-grade metamorphic materials
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Very deep
Slope range: 2 to 45 percent

Associated Soils

- Minnieville soils, very deep to bedrock, in mafic material
- Spriggs soils, shallow to bedrock

Taxonomic Classification

Fine, mixed, active, mesic Ultic Hapludalfs

Typical Pedon

Orenda sandy loam; located 2,325 feet north 33 degrees east of the intersection of Virginia State Routes 903 and 760 in an apple orchard in the southwestern part of Franklin County, Virginia; Philpott Reservoir, Virginia USGS 7.5 Minute Quadrangles, NAD27; lat. 36 degrees 50 minutes 54.80 seconds N. and long. 80 degrees 2 minutes 39 seconds W.

Ap—0 to 6 inches; brown (7.5YR 4/4) sandy loam; weak fine granular structure; very friable, slightly sticky, slightly plastic; common fine and few very fine roots; common fine and medium black (10YR 2/1) iron-manganese concretions; 12 percent subrounded quartz and hornblende gneiss gravel; strongly acid; abrupt smooth boundary.

Bt1—6 to 11 inches; yellowish red (5YR 5/6) clay; moderate medium subangular blocky structure; friable, moderately sticky, slightly plastic; few very fine roots; many distinct clay films on all faces of peds; few fine and medium black (10YR 2/1) iron-manganese concretions; 5 percent subrounded quartz and hornblende gneiss gravel; moderately acid; clear wavy boundary.

Bt2—11 to 25 inches; yellowish red (5YR 4/6) clay; moderate fine subangular blocky structure; firm, moderately sticky, moderately plastic; few very fine roots; common distinct clay films on all faces of peds; few fine and medium black (10YR 2/1) iron-manganese concretions; 4 percent subrounded quartz and hornblende gneiss gravel and 10 percent subrounded hornblende gneiss paragravel; moderately acid; clear wavy boundary.

C—25 to 62 inches; strong brown (7.5YR 5/6), black (10YR 2/1,) yellowish brown (10YR 5/6), and grayish brown (2.5Y 5/2) loam; massive; friable, slightly sticky, slightly plastic; few very fine roots; few fine mica flakes; moderately acid.

Range in Characteristics

Solum thickness: 25 to 50 inches
Depth to hard rock: Greater than 60 inches
Rock fragments: 0 to 15 percent throughout
Reaction: Strongly acid to slightly acid

A or Ap horizon:
Hue—10YR to 5Y
Value—3 to 5
Chroma—2 to 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam or loam

AB or BA horizon (where present):
Hue—5YR to 10YR
Value—3 to 5
Chroma—3 to 6
Texture (fine-earth fraction)—loam or clay loam

Bt horizon:
Hue—5YR to 10YR
Value—4 or 5
Chroma—6 or 8
Texture (fine-earth fraction)—clay loam or clay

BC or BCt horizon (where present):
Hue—5YR to 10YR or multicolored
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—clay loam

C horizon:
Hue—5YR to 10YR or multicolored
Value—4 or 5
Chroma—1 to 8
Texture (fine-earth fraction)—fine sandy loam, loam, or sandy clay loam

Spriggs Series

Physiographic province: Piedmont
Landform: Uplands
Parent material: Residuum from mafic and felsic crystalline materials
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Moderately deep
Slope range: 7 to 45 percent

Associated Soils

- Orenda soils, very deep to bedrock
- Minnieville soils, very deep to bedrock

Taxonomic Classification

Fine-loamy, mixed, active, mesic Ultic Hapludalfs

Typical Pedon

Spriggs sandy loam; located 7,400 feet north 41 degrees east of the intersection of Virginia State Routes 616 and 654 in woodland in the northeastern part of Franklin County, Virginia; Moneta SW, Virginia USGS 7.5 Minute Quadrangles, NAD27; lat. 37 degrees 5 minutes 48.80 seconds N. and long. 79 degrees 40 minutes 20.10 seconds W.

A—0 to 6 inches; dark yellowish brown (10YR 4/4) sandy loam; weak fine granular structure; very friable, slightly sticky, nonplastic; common very fine through coarse roots; 10 percent subangular hornblende gneiss gravel; strongly acid; clear smooth boundary.

Bt—6 to 38 inches; strong brown (7.5YR 4/6) gravelly clay loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; common very fine and fine and few medium and coarse roots; common faint clay films on all faces of peds; 25 percent subangular hornblende gneiss gravel; strongly acid; gradual wavy boundary.

Cr—38 to 52 inches; moderately cemented hornblende gneiss bedrock.

R—52 inches; indurated hornblende gneiss bedrock.

Range in Characteristics

Solum thickness: 12 to 38 inches
Depth to soft bedrock: 20 to 40 inches
Depth to hard bedrock: 40 to 60 inches
Rock fragments: 0 to 15 percent in the A and BE horizons, 0 to 35 percent in the Bt, BC, and C horizons
Reaction: Very strongly acid to moderately acid throughout

A horizon:
Hue—7.5YR to 2.5Y
Value—3 to 5
Chroma—2 to 4
Texture (fine-earth fraction)— sandy loam, fine sandy loam or loam

AB or BA horizon (where present):
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—3 to 8
Texture (fine-earth fraction)—fine sandy loam or loam

Bt horizon:
Hue—5YR to 10YR
Value—4 or 5
Chroma—4 or 6
Texture (fine-earth fraction)—loam or clay loam

C horizon (where present):
Hue—7.5YR or 10YR
Value—4 or 5

Chroma—6
Texture (fine-earth fraction)—fine sandy loam or loam

Stoneville Series

Physiographic province: Piedmont
Landform: Uplands on Triassic basin
Parent material: Residuum from Triassic siltstone, mudstone, fine-grained sandstone, and shale
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Deep
Slope range: 2 to 7 percent

Associated Soils

- Ayersville soils, moderately deep to bedrock, well drained
- Creedmoor soils, very deep to bedrock, moderately well drained
- Mayodan soils, very deep to bedrock, well drained
- Leaksville soils, moderately deep to bedrock, poorly drained

Taxonomic Classification

Fine, mixed, semiactive, mesic Typic Rhodudults

Typical Pedon

Stoneville loam; located about 0.75 mile south of intersection of U.S. Highway 220 Business and U.S. Highway 220 Bypass and the Stoneville city limits, 600 feet west of U.S. Highway 220 Bypass in woodland in Rockingham County, North Carolina; Mayodan, North Carolina USGS 7.5 Minute Quadrangles, NAD27; lat. 36 degrees 29 minutes 29 seconds N. and long. 79 degrees 55 minutes 37 seconds W.

A—0 to 5 inches; dark reddish brown (5YR 3/3) loam, reddish brown (5YR 4/3), dry; moderate fine granular structure; friable, moderately sticky, slightly plastic; common fine, medium, and coarse roots; 3 percent subangular siltstone channers; strongly acid; clear smooth boundary.
BA—5 to 13 inches; dark reddish brown (5YR 3/3) loam, reddish brown (5YR 4/3), dry; weak fine subangular blocky structure; friable, moderately sticky, slightly plastic; few fine and medium roots; strongly acid; gradual wavy boundary.
Bt1—13 to 32 inches; dark reddish brown (2.5YR 3/4) clay, reddish brown (2.5YR 4/4), dry; moderate medium subangular blocky structure; firm, moderately sticky, moderately plastic; few fine and medium roots; few faint continuous clay films on all faces of peds; few fine mica flakes; very strongly acid; gradual wavy boundary.
Bt2—32 to 38 inches; dark reddish brown (2.5YR 3/4) clay loam, reddish brown (2.5YR 4/4), dry; weak fine subangular blocky structure; friable, moderately sticky, slightly plastic; few fine roots; few faint continuous clay films on all faces of peds; common fine mica flakes; very strongly acid; gradual wavy boundary.
C—38 to 48 inches; dark reddish brown (5YR 3/4) loam; massive; friable, nonsticky, nonplastic; common fine mica flakes; very strongly acid; gradual wavy boundary.
Cr—48 to 72 inches; strongly cemented siltstone bedrock.

Range in Characteristics

Solum thickness: 30 to 60 inches
Depth to soft bedrock: 40 to 60 inches
Depth to hard bedrock: 40 to 60 or more inches

Rock fragments: 0 to 10 percent throughout
Reaction: Very strongly acid to moderately acid

A horizon:
Hue—10R to 7.5YR
Value—3 or less
Chroma—2 to 4
Texture (fine-earth fraction)—loam or silt loam

BA horizon:
Hue—10R to 5YR
Value—3 or less
Chroma—2 to 6
Texture (fine-earth fraction)—loam or silt loam

Bt horizon:
Hue—10R or 2.5YR
Value—3 or less
Chroma—3 to 6
Texture (fine-earth fraction)—clay, silty clay, clay loam or silty clay loam

BC horizon (where present):
Hue—10R or 2.5YR
Value—3 or less
Chroma—3 to 6
Texture (fine-earth fraction)—clay loam or silty clay loam

C horizon:
Hue—10R to 5YR
Value—2 to 4
Chroma—2 to 6
Texture (fine-earth fraction)—silt loam or loam saprolite

Comments: Some pedons contain yellowish, brownish, gray, or dark red mottles in the B and C horizons.

Udorthents

Physiographic province: Piedmont
Landform: Cut and fill areas on uplands
Parent material: Soil and non-soil fill material
Drainage class: Variable
Slowest saturated hydraulic conductivity: Variable
Depth class: Variable
Slope range: 2 to 15 percent

Associated Soils

- Udorthents are associated with many soils. Included are any soils that are adjacent to the areas excavated or filled. Associated soils generally have not been covered by more than 20 inches of fill material or have not been deeply mixed by earth moving equipment.

Taxonomic Classification

Udorthents

Typical Pedon

Because of the variability of Udorthents, a typical pedon is not given. Udorthents formed when soils were disturbed by land-leveling, excavation, or filling. They consist of loamy and clayey soil material and varying amounts of rock fragments. Depth to hard bedrock varies from a few inches to more than five feet. Areas range from slightly compacted to severely compacted. Unvegetated areas are susceptible to severe erosion. Generally, they are along highways, rail yards and tracks, and other areas that have been excavated or filled.

Woolwine Series

Physiographic province: Piedmont
Landform: Uplands
Parent material: Residuum from granite, granite gneiss, or hornblende gneiss
Drainage class: Well drained
Slowest saturated hydraulic conductivity: Moderately high
Depth class: Moderately deep
Slope range: 2 to 45 percent

Associated Soils

- Clifford soils, very deep to bedrock
- Minnieville soils, very deep to bedrock

Taxonomic Classification

Fine, kaolinitic, mesic Typic Kanhapludults

Typical Pedon

Woolwine sandy loam; located 8,000 feet south 45 degrees east of the intersection of Virginia State Routes 890 and 652 in woodland in the southern part of Franklin County, Virginia; Mountain Valley, Virginia USGS 7.5 Minute Quadrangles, NAD27; lat. 36 degrees 49 minutes 39.40 seconds N. and long. 79 degrees 42 minutes 56.50 seconds W.

A—0 to 2 inches; brown (10YR 4/3) sandy loam; weak fine granular structure; very friable, nonsticky, nonplastic; common very fine through very coarse roots; few fine mica flakes; 13 percent subrounded mica gneiss gravel; very strongly acid; abrupt smooth boundary.

Bt1—2 to 7 inches; yellowish red (5YR 4/6) clay loam; weak fine subangular blocky structure; friable, slightly sticky, slightly plastic; common through very coarse roots; few faint clay films on all faces of peds; few fine mica flakes; 10 percent subrounded mica gneiss gravel; very strongly acid; clear smooth boundary.

Bt2—7 to 13 inches; yellowish red (5YR 4/6) clay; moderate fine subangular blocky structure; firm, slightly sticky, slightly plastic; common very fine through very coarse roots; common distinct clay films on all faces of peds; few fine mica flakes; 10 percent subrounded mica gneiss gravel; very strongly acid; clear smooth boundary.

Bt3—13 to 28 inches; red (2.5YR 4/8) clay; moderate fine subangular blocky structure; firm, moderately sticky, moderately plastic; few very fine through coarse roots; common distinct clay films on all faces of peds; few fine mica flakes; 13 percent subrounded mica gneiss gravel; very strongly acid; gradual smooth boundary.

Cr—28 to 42 inches; moderately cemented gneiss bedrock.

R—42 inches; indurated gneiss bedrock.

Range in Characteristics

Solum thickness: 20 to 40 inches
Depth to soft bedrock: 20 to 40 inches

Depth to hard bedrock: 40 to 60 inches
Rock fragments: 0 to 15 percent in the A, BA, and Bt, 0 to 35 in the BC and C
Mica content: Few to common in the Bt and BC horizons
Reaction: Extremely acid to moderately acid

A or Ap horizon:
Hue—5YR to 10YR
Value—3 to 5
Chroma—3 to 6
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

BA horizon (where present):
Hue—5YR to 10YR
Value—4 or 5
Chroma—4 or 6
Texture (fine-earth fraction): fine sandy loam, loam, or clay loam

Bt horizon:
Hue—2.5YR to 7.5YR
Value—4 or 5
Chroma—6 or 8
Texture (fine-earth fraction)—clay loam or clay

BC horizon (where present):
Hue—2.5YR or 5YR
Value—4 or 5
Chroma—6 or 8
Texture (fine-earth fraction)—clay loam or sandy clay loam

C horizon (where present):
Hue—2.5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Texture (fine-earth fraction)—sandy loam, fine sandy loam, or loam

Formation of the Soils

In this section, the factors and processes that have affected the formation and morphology of the soils in Henry County are described.

Factors of Soil Formation

Soils are intimate mixtures of broken and partly or completely weathered rock, minerals, organic matter, living plants and animals, water, and air. They occur as part of the natural landscape and differ from place to place. Some of the ways in which they differ are in occurrence and degree of development of various horizons, in mineral content, in depth over bedrock, and in texture, color, and slope. The characteristics of the soils at any given area depend on the interaction of five soil-forming factors—parent material, climate, living organisms, topography, and time. Over time, topography modifies the effect of climate and living organisms on parent material *(7)*.

In this section, the five major factors of soil formation are identified and their influence on the soils is described. Also described, are the morphology of the soils as related to horizon development.

In theory, if all of the soil-forming factors were identical at different sites, the soils at these sites would be identical. These factors influence the genesis of every soil, but their relative importance varies from place to place. One factor may outweigh others in the formation of a soil and may determine most of its properties. For example, a very young flood plain soil may have only faint soil horizonation because of the short time the soil-forming factors have had to work. In contrast, a soil formed in residuum from bedrock on a stable landscape may have distinct horizons. The horizons of this soil are distinct because the soil material has remained largely in place and all soil-forming factors have been active for a long time. In general, however, the combined action of the five factors determines the character of each soil. The interaction of the five factors of soil formation is more complex for some soils than for others.

Parent Material

Parent material is the unconsolidated mass in which a soil forms. It is a product of weathering, or decomposition, of underlying bedrock or transported materials. Parent material influences the chemical, mineral, and textural composition of the soil. In the early stages of soil formation, a soil has properties similar to those of the parent material. As weathering takes place, the soil properties are modified and each soil develops its own characteristics. In Clifford and Littlejoe soils, parent material determines their mineral and textural composition. Clifford soils formed in materials weathered mainly from granite and gneiss. Littlejoe soils formed in material weathered mainly from schist. Although both Clifford and Littlejoe soils are fine-textured, Clifford soils have kaolinitic mineralogy and a higher percentage of sand-sized particles. Littlejoe soils have a higher percentage of silt-sized particles and mixed mineralogy. These differences are the result of having different parent materials.

The two general types of parent materials in Henry County are residuum and alluvium. Residual materials weathered in place from the underlying bedrock. Alluvial materials were deposited on flood plains and terraces by streams. The table at the end of this section shows the relationship of geologic systems, formations, and rock types to soil series.

Residual material

Most of the soils in the county have formed in residual material weathered from felsic rocks such as granite, gneiss, and schist. Clifford, Woolwine, and Littlejoe soils are examples. Other soils, such as Orenda and Spriggs, formed in residual material weathered from mafic rocks such as amphibolite or diorite. Felsic and mafic rock types are subdivided based on the nature and amount of specific minerals that are present. Mafic rocks are generally richer in calcium and magnesium than felsic rocks. Both felsic and mafic rock types formed from igneous and metamorphic materials that have undergone varying degrees of transformation due to heat and pressure. Granite and other igneous rocks form deep within the earth's crust from cooling magma. Metamorphic rocks, such as gneiss and schist, have undergone a lesser degree of transformation than igneous rocks.

Some of the soils in the county formed in residual material weathered from sedimentary rocks. The Triassic Basin, located in the extreme southeastern corner of the county, consists of interbedded sandstone, siltstone, and shale. These rocks formed by sediments deposited during the Triassic Period. Residual soils that have formed in these materials include the Ayersville, Creedmoor, Leaksville, Mayodan, and Stoneville series.

Alluvial material

The alluvial materials on terraces and flood plains have been washed from soils that formed in residual material. Although small in acreage, these soils are significant agriculturally. The soils on the terraces, such as those of the Elsinboro and Dyke series, are older than the soils on the flood plains and have a moderately to strongly developed profile. The soils on the flood plains, such as those of the Codorus and Colvard series, are the youngest soils in the county and exhibit a weakly developed profile.

Climate

Climate affects the physical, chemical, and biological relationships in soils, mainly through the influence of precipitation and temperature. Water dissolves minerals, supports biological activity, and transports minerals and organic residue through the soil. Temperature determines the type and rate of physical, chemical, and biological activities occurring in the soil. Weathering is more rapid in a warm, humid climate than in a cold or dry climate.

Because precipitation in Henry County exceeds evapotranspiration, the soils have been intensively leached. Much of the soluble materials that originally were present or were released through weathering have been removed, except in alluvial areas, which were recharged with eroded sediments from surrounding uplands. Most of the soils in the survey area are acid.

Precipitation is the main factor in the formation of the subsoil that characterizes most of the soils in Henry County. In addition to leaching soluble materials, water that percolates through the soil moved clay from the surface layer to the subsoil. Except for soils that formed in recent alluvium, all the soils in the county typically are more clayey in the subsoil than in the surface layer.

The formation of blocky structure in the subsoil of well developed soils, such as Clifford or Woolwine soils, is also influenced by climate. The development of peds, or aggregates, in the subsoil is caused partly by changes in volume of the soil mass resulting mainly from alternating periods of wetting and drying. Plentiful moisture also supports a productive forest. A moderate content of humus in the surface layer develops after large amounts of organic material have been returned to the soil.

Climate varies locally with differences in the degree and direction of slope and elevation. Generally, soils on steep uplands facing south are drier than soils on similar landscapes facing north. Soils that form in these areas may differ even if they both have the same parent material. At the higher elevations in more rugged areas, the climate may be cooler; the precipitation, particularly snowfall, is greater, and fogs are more common. In these higher, cooler areas, soils may be slightly darker and contain slightly more organic matter than soils at the lower elevations. In the higher areas, the weathering of parent materials is slower and the soils generally are thinner than soils at the lower elevations.

Precipitation and temperature are relatively uniform throughout most of the county. However, small areas located at the highest elevations, such as along Turkeycock Mountain, in the northeastern part of the survey areas, have a lower mean temperature than the rest of the county. Mesic soils, or those that have a mean annual soil temperature of 47 to 58 degrees F, are mapped throughout the majority of the county. Thermic soils, or those that have a mean annual soil temperature of 59 to 72 degrees F, are mapped in the Triassic Basin area in the southeastern part of the county. A detailed description of the climate is given in the section “General Nature of the County”.

Living Organisms

Biologic forces are important in the formation of soils in Henry County. Trees, shrubs, grasses, and other herbaceous plants, as well as microorganisms, earthworms, and other plant and animal life, are active agents in the soil-forming process. Climate, parent material, relief, age of the soil, and other environmental factors determine the kinds of plants and animals that live on and in the soil. Where climate or vegetation varies significantly, the soils vary accordingly.

Plants supply organic matter and transfer moisture and plant nutrients from the lower horizons to the upper horizons. Organic matter decomposes and is mixed into the soil by microorganisms and earthworms or by chemical reactions. In Henry County, the rate of decomposition is fairly rapid because of favorable temperatures, the generally abundant soil moisture, and the kinds of microorganisms in the soil. Organic matter content in the soil is low or moderate and generally ranges from 1 to 3 percent, by volume, in the surface layer.

Originally, the vegetation in Henry County was dense forest of hardwoods or mixed hardwoods and pine. The density of the stands, the proportion of different species, and the kinds of ground cover varied to some extent. The forests are not likely the reason for all differences in soil properties throughout the county. The leaves of deep-rooted deciduous trees vary in content of plant nutrients, but they generally return more bases and phosphorus to the soils than coniferous trees. The litter of conifers, rhododendron, and mountain laurel produces more organic acids than that of maple and oak. Soils that form under layers of acid-forming leaf litter tend to be more highly leached than other soils, and they commonly have a very low base saturation. The layer of leaf litter also helps to recycle nutrients, reduces the depth of frost penetration, increases moisture retention, and reduces the hazard of erosion on steep slopes.

As agriculture developed in Henry County, human activities, such as the clearing of forests and the introduction of new kinds of plants, influenced soil formation. Cultivation, artificial drainage, and liming and fertilizing changed some soil characteristics. Human activities have also caused accelerated erosion. Because of this erosion, the soil in many areas is thinner and vegetation is difficult to establish. Some soil material has been washed from sloping areas down to depressions and flood plains. Young, or immature, soils, such as Codorus or Colvard soils, formed in this washed material.

Topography

Topography, or lay of the land, affects the formation of soils by causing differences in internal drainage, surface runoff, soil temperature, and geologic erosion. Topography also affects the rate at which the soils absorb radiant energy. This absorption rate, in turn, affects native vegetation. Topography alters the effect of parent material on soil formation; thus, several different kinds of soils can form from the same kind of parent material.

Slopes in Henry County range from nearly level to very steep. In the steeper areas, runoff is more rapid, less water percolates through the soil, the movement of clay and the translocation of bases are less, and some soil material erodes. Aspect varies greatly in these areas, affecting vegetation and soil formation. South-facing slopes are generally drier than north-facing slopes, and soils on these slopes retain less moisture.

In the gently sloping and strongly sloping areas, the soils are generally well drained and only slightly eroded. The soils in such areas are mature, having well defined horizons. Minnieville and Orenda soils are examples. Low-lying, flat areas or depressions are wetter and often ponded because of restricted drainage. Soils on less steep slopes or within drainageways often receive runoff from nearby uplands. Lateral underground seepage from the higher areas is fairly common. The soils on convex slopes are generally better drained. The soils on concave slopes tend to accumulate both runoff and water from internal drainage.

Time

The length of time that the parent material has been exposed to soil-forming processes influences the kind of soil that forms. The youngest soils in Henry County, such as Colvard soils, formed in recent alluvium on flood plains. These soils may be stratified and have weakly expressed horizons because the soil-forming processes are interrupted by each new deposition during flooding.

Old, strongly developed soils show well defined genetic horizons. Young, less developed soils show only faint or weakly developed horizons. The soils of Henry County range from young soils on flood plains to old soils on smooth uplands.

In steep and very steep areas, either creep and washing move soil material or solifluction mixes soil material before it has had sufficient time to develop a deep soil profile. As a result, shallow and weakly developed soils, such as Bugley soils, are common on steeper slopes.

Morphology of the Soils

The interaction of soil-forming factors results in distinguishable layers, or horizons, in a soil profile. The soil profile extends from the surface of the soil down to materials that are little altered by the soil-forming processes. The five major horizons that occur in the soil in the survey area are the O, A, E, B, and C horizons.

The *O horizon* is a very dark, organic horizon that forms above the mineral soil. In Henry County, O horizons are almost found exclusively on forested soils. They result mainly from the decomposition of hardwood and pine leaf litter and are quickly destroyed by activities such as land clearing and plowing.

The *A horizon* is a mineral surface layer which has been darkened by the accumulation of organic matter. Codorus soils have thick, dark A horizons.

The *E horizon* is an eluvial horizon which has been leached of clay, iron, and aluminum. Typically, it is a light-colored layer composed of resistant materials such as sand- and silt-sized quartz. While not present in all soils, they are more distinct in sandy or silty forest soils.

The *B horizon* is an illuvial horizon which has an accumulation of clay, iron, aluminum, and other compounds leached from the A and E horizons. In Henry County, soils with layers of clay accumulation, or Bt horizons, are common. Soils of the Clifford and Littlejoe series have well developed Bt horizons. On younger flood plains, less developed layers, or Bw horizons, usually form. These horizons generally have weak blocky structure and are brighter in color than the overlying horizons. Soils of the Codorus series have Bw horizons.

The *C horizon* is the parent material of the soil. It consists of material that has been modified by weathering but has been only slightly altered by the soil-forming processes. It generally lacks structure and contains few, if any, roots.

Many processes have been involved in the formation of soil horizons in the survey area. These include the accumulation of organic matter, the leaching of soluble salts, the reduction and transfer of iron, the formation and translocation of clay minerals, and the formation of soil structure. In most soils, these processes have been taking place for thousands of years.

Most of the well drained and moderately well drained soils on uplands have a yellowish brown to red B horizon. These colors are mainly caused by the presence of iron oxides. Zones of gray colors where iron has been reduced and transferred are present in the B horizons of moderately well drained soils. Reoxidized iron will form red, yellowish red, strong brown, or yellowish brown colors in areas that are oxygenated. Creedmoor soils exhibit this mottled pattern of color.

Somewhat poorly drained to very poorly drained soils commonly have layers of gray colors. These colors are the result of gleying, a process of intense reduction of iron during soil formation. Leaksville soils exhibit these colors.

The weathering of primary minerals to form silicate clay minerals, largely through hydrolysis, commonly occurs in the soils of Henry County. Through this process, different clay minerals such as kaolinite, vermiculite and, to a lesser extent, smectite form. These clay minerals are translocated through the soil profile, often resulting in heavy, clayey subsoils. In the most extensively mapped soils of the survey area, kaolinitic minerals dominate. The soils, Clifford, Woolwine, and Minnieville have kaolinitic mineralogy and make up approximately 84 percent of the survey area. Other soils in the survey area contain a mixture of clay minerals with no one type being dominant.

Processes of Horizon Differentiation

Soils are formed as the result of the physical and chemical weathering of parent rocks and organic material, the transfer of materials, the transformation of materials, and the gains and losses of organic matter and minerals.

Soil formation begins with physical weathering of rocks. Frost action, expansion, contraction, and other forces break large pieces of rock into smaller pieces. The rocks and rock fragments are further reduced to sand-, silt-, and clay-sized particles. These particles form the unconsolidated material in which plants can grow. When plants and animals die, organic matter is added to the mineral material.

It is common for materials to transfer from one part of the soil to another. Organic matter in suspension moves from the surface layer to the subsoil. Calcium and other elements are leached from the surface layer. To some extent, the clay in the subsoil or in the substratum hold these elements, but percolating ground water also leaches some elements from the soil. Also, percolating water transfers clay from the upper horizons to the lower horizons.

The roots of plants absorb bases and store them in stems, leaves, and twigs. When plants die and decay, they return to the soil the elements they had absorbed from it. In most soils in the county, the translocation and development in place of clay minerals have strongly influenced the development of soil horizons. As the soil develops, horizons gradually develop recognizable characteristics that make one horizon distinguishable from another.

The accumulation and incorporation of organic matter takes place with the decomposition of plant residue. Organic matter darkens the surface layer and helps to form the A horizon. In many places much of the surface layer has been eroded away or has been mixed with materials from underlying layers through cultivation. Replacing lost organic matter normally takes a long time. In Henry County, the organic matter content of the surface layer is low in Dyke soils, medium in Clifford soils, and high in Codurus soils.

Some lime and soluble salts must be leached from soils before both the translocation of clay minerals and the formation of a distinct subsoil can occur. Factors that affect leaching include the kind of original salts present in the soils, the depth to which the soil solution percolates, and the texture of the soils.

One transformation is the reduction and solubilization of ferrous iron. This change takes place under wet, saturated conditions in which water replaces molecular oxygen. It mainly occurs in soils that are not well drained. Gleying, or the reduction of iron, is evident in Leaksville soils, which have a dominantly gray subsoil. The gray color indicates the transformation of iron to the ferrous form and implies wetness. Reduced iron, which is soluble and mobile, commonly has been moved short distances in the soils in Henry County. It has stopped either in the horizon where it originated or in an underlying horizon. It can be partly reoxidized and segregated in the form of stains, concretions, or bright yellow and red redoxiomorphic features.

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Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the "National Soil Survey Handbook" (available in local offices of the Natural Resources Conservation Service or on the Internet).

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvial fan. A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.

Alluvium. Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Alpha,alpha-dipyridyl. A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

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.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction toward which a slope faces. Also called slope aspect.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Backswamp. A flood-plain landform. Extensive, marshy or swampy, depressed areas of floodplains between natural levees and valley sides or terraces.

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.

Base slope (geomorphology). A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Bedding plane. A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology) from the preceding or following layer; a plane of deposition. It commonly marks a change in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.

Bedding system. A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

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.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Bottom land. An informal term loosely applied to various portions of a floodplain.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks. A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Cement rock. Shaly limestone used in the manufacture of cement.

Channery soil material. Soil material that has, 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.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. See Redoximorphic features.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A dense, compact, slowly permeable subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. A claypan is commonly hard when dry and plastic and sticky when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Concretions. See Redoximorphic features.

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 has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility). See Linear extensibility.

Colluvium. Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conglomerate. A coarse grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

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 (geomorphology). A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations). 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.

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.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Crusts, soil. Relatively thin, somewhat continuous layers of the soil surface that often restrict water movement, air entry, and seedling emergence from the soil. They generally are less than 2 inches thick and are massive.

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. The walls of excavations tend to cave in or slough.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Dense layer. A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth, 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.

Dip slope. A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming. A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized— *excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

Drainage, surface. Runoff, or surface flow of water, from an area.

Drainageway. A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Draw. A small stream valley that generally is shallower and more open than a ravine or gulch and that has a broader bottom. The present stream channel may appear inadequate to have cut the drainageway that it occupies.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Earthy fill. See Mine spoil.

Ecological site. An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

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.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as floodplains 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 pavement. A surficial lag concentration or layer of gravel and other rock fragments that remains on the soil surface after sheet or rill erosion or wind has removed the finer soil particles and that tends to protect the underlying soil from further erosion.

Erosion surface. A land surface shaped by the action of erosion, especially by running water.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan (alluvial). A generic term for constructional landforms that are built of stratified alluvium with or without debris-flow deposits and that occur on the pediment slope, downslope from their source of alluvium.

Fan remnant. A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, that have been either dissected or partially buried.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom. An obsolete, informal term loosely applied to the lowest flood-plain steps that are subject to regular flooding.

Flaggy soil material. Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flooding frequency class. Flooding frequency class is the number of times flooding occurs over a period of time and expressed as a class. The classes of flooding are defined as follows:

None. No reasonable possibility of flooding; near 0 percent chance of flooding in any year or less than 1 time in 500 years.

Very Rare. Flooding is very unlikely but possible under extremely unusual weather conditions; less than 1 percent chance of flooding in any year or less than 1 time in 100 years but at least 1 time in 500 years.

Rare. Flooding unlikely but possible under unusual weather conditions; 1 to 5 percent chance of flooding in any year or nearly 1 to 5 times in 100 years.

Occasional. Flooding is expected infrequently under usual weather conditions; 5 to 50 percent chance of flooding in any year or >5 to 50 times in 100 years.

Frequent. Flooding is likely to occur often under usual weather conditions; more than a 50 percent chance of flooding in any year or more than 50 times in 100 years, but less than a 50 percent chance of flooding in all months in any year.

Very Frequent. Flooding is likely to occur very often under usual weather conditions; more than a 50 percent chance of flooding in all months of any year.

Flood plain. The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Low level flood plains. A flood plain that is susceptible to frequent flooding

Low to intermediate level flood plains. A flood plain that is susceptible to occasional flooding

High level flood plains. A flood plain that is susceptible to rare flooding

Flood-plain landforms. A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

Flood-plain splay. A fan-shaped deposit or other outspread deposit formed where an overloaded stream breaks through a levee (natural or artificial) and deposits its material (commonly coarse grained) on the floodplain.

Flood-plain step. An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.

Fluvial. Of or pertaining to rivers or streams; produced by stream or river action.

Foothills. A region of steeply sloping hills that fringes a mountain range or high-plateau escarpment. The hills have relief of as much as 1,000 feet (300 meters).

Footslope. The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 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 small channel with steep sides caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. 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.

Hard to reclaim (in tables). Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head slope (geomorphology). A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A generic term for an elevated area 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. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

Hillslope. A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., 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.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low

0.75 to 1.25 .... moderate
1.25 to 1.75 .... moderately high
1.75 to 2.5 .... high
More than 2.5 .... very high

Interfluve. A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology). A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream. A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions. See Redoximorphic features.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Karst (topography). A kind of topography that formed in limestone, gypsum, or other soluble rocks by dissolution and that is characterized by closed depressions, sinkholes, caves, and underground drainage.

Knoll. A small, low, rounded hill rising above adjacent landforms.

K_{sat}. Saturated hydraulic conductivity. (See Permeability.)

Landslide. A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

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.

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. The soil is not strong enough to support loads.

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.

Mass movement. A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.

Masses. See Redoximorphic features.

Meander belt. The zone within which migration of a meandering channel occurs; the flood-plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.

Meander scar. A crescent-shaped, concave or linear mark on the face of a bluff or valley wall, produced by the lateral erosion of a meandering stream that impinged upon and undercut the bluff.

Meander scroll. One of a series of long, parallel, close-fitting, crescent-shaped ridges and troughs formed along the inner bank of a stream meander as the channel migrated laterally down-valley and toward the outer bank.

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 at depth in the earth's crust. Nearly all such rocks are crystalline.

Mine spoil. An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

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. A kind of map unit 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.

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).

Mountain. A generic term for an elevated area of the land surface, rising more than 1,000 feet (300 meters) above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range. Mountains are formed primarily by tectonic activity and/or volcanic action but can also be formed by differential erosion.

Mudstone. A blocky or massive, fine grained sedimentary rock in which the proportions of clay and silt are approximately equal. Also, a general term for such material as clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.

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. See Redoximorphic features.

Nose slope (geomorphology). A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).

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

Paleoterrace. An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment. A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on and is being (or was) transported across a gently sloping erosional surface at the foot of a receding hill or mountain slope.

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 movement of water through the soil.

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:

Impermeable	less than 0.0015 inch
Very slow	0.0015 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

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting (in tables). Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plateau (geomorphology). A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

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.

Pore linings. See Redoximorphic features.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed as 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

Red beds. Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations. See Redoximorphic features.

Redoximorphic depletions. See Redoximorphic features.

Redoximorphic features. Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:

   A. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; *and*

   B. Masses, which are noncemented concentrations of substances within the soil matrix; *and*

   C. Pore linings, i.e., zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.

2. Redoximorphic depletions.—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:

A. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix; *and*

B. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).

3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix. See Redoximorphic features.

Regolith. All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief. The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Rill. A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riser. The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

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.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Saturated hydraulic conductivity (K_{sat}). The amount of water that would move vertically through a unit area of saturated soil in unit time under unit hydraulic gradient. Terms describing saturated hydraulic conductivity, measured in inches per hour (micrometers per second), are as follows:

Very low	0.0 to 0.001417 (0.0 to 0.01)
Low	0.001417 to 0.01417 (0.01 to 0.1)
Moderately low	0.01417 to 0.1417 (0.1 to 1.0)
Moderately high	0.1417 to 1.417 (1.0 to 10)
High	1.417 to 14.7 (10 to 100)
Very high	more than 14.7 (more than 100)

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Sedimentary rock. A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shoulder. The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.

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 (geomorphology). A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole. A closed, circular or elliptical depression, commonly funnel shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock (e.g., limestone, gypsum, or salt) or by collapse of underlying caves within bedrock. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.

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.

Slickensides (pedogenic). Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

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 slopes are as follows:

Nearly level	0 to 2 percent
Gently sloping	2 to 7 percent
Strongly sloping	7 to 15 percent
Moderately steep	15 to 25 percent
Steep	25 to 45 percent
Very steep	45 percent and higher

Slope alluvium. Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in 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 and by the passage of time.

Soil crusts. Relatively thin, somewhat continuous layers of the soil surface that often restrict water movement, air entry, and seedling emergence from the soil. They generally are less than 2 inches thick and are massive.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum (plural, sola). 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.

Stone line. In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

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.

Strath terrace. A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).

Stream terrace. One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents the remnants of an abandoned floodplain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit. The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Talus. Rock fragments of any size or shape (commonly coarse and angular) derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose broken rock formed chiefly by falling, rolling, or sliding.

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 (conservation). 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 (geomorphology). A steplike surface, bordering a valley floor or shoreline, that represents the former position of a floodplain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion. Terrace susceptible to flooding is subdivided as follows:

Low stream terrace.—A terrace that is susceptible to flooding.

High stream terrace.—A terrace that is not susceptible to flooding.

Terracettes. Small, irregular steplike forms on steep hillslopes, especially in pasture, formed by creep or erosion of surficial materials that may be induced or enhanced by trampling of livestock, such as sheep or cattle.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread. The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Upland. An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the floodplain or low stream terrace; land above the footslope zone of the hillslope continuum.

Valley fill. The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering. All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.—Temperature and Precipitation

(Recorded for the period 1971-2000 at PHILPOTT DAM 2, VA6692)

Month	Temperature (Degrees F.)					Precipitation (Inches)					
	Average daily maximum	Average daily minimum	Average	2 yrs in 10 will have-- maximum temp. higher than--	2 yrs in 10 will have-- minimum temp. lower than--	Average number of growing degree days*	Average	2 yrs in 10 will have-- Less than	2 yrs in 10 will have-- More than	Average number of days with 0.10 inch or more	Average total snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January	46.0	25.2	35.6	71	2	60	3.91	1.88	5.83	6	0.6
February	50.3	26.9	38.6	76	8	91	3.54	1.51	5.54	6	2.2
March	58.4	33.7	46.0	83	15	230	4.54	2.50	6.29	6	1.2
April	68.4	41.7	55.1	89	25	454	3.82	1.81	5.64	6	0.1
May	76.0	50.8	63.4	91	34	725	4.99	2.75	7.06	8	0.0
June	83.0	59.8	71.4	95	43	941	4.46	1.99	6.77	7	0.0
July	86.8	64.6	75.7	97	52	1104	5.09	2.78	7.29	7	0.0
August	85.5	63.3	74.4	96	50	1062	4.65	2.39	6.42	6	0.0
September	79.4	56.7	68.0	93	41	835	4.69	1.32	7.54	5	0.0
October	70.1	44.1	57.1	87	27	529	3.95	1.43	6.08	5	0.0
November	59.9	36.0	47.9	80	18	262	3.38	1.82	4.71	5	0.0
December	49.7	28.4	39.1	73	8	101	3.30	1.21	5.31	5	0.5
Yearly :											
Average	67.8	44.3	56.0	---	---	---	----	----	----	---	---
Extreme	102	-10	---	98	0	---	----	----	----	---	---
Total	---	---	---	---	---	6394	50.32	39.61	60.71	72	4.7

Average # of days per year with at least 1 inch of snow on the ground: 7

*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 (Threshold: 40.0 deg. F)

Table 2.—Freeze Dates in Spring and Fall

(Recorded for the period 1971-2000 at PHILPOTT DAM 2, VA6692)

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--	April 4	April 16	May 5
2 year in 10 later than--	March 30	April 11	April 30
5 year in 10 later than--	March 20	April 2	April 20
First freezing temperature in fall:			
1 yr in 10 earlier than--	November 2	October 16	October 7
2 yr in 10 earlier than--	November 8	October 22	October 12
5 yr in 10 earlier than--	November 20	November 2	October 21

Table 3.—Growing Season

(Recorded for the period 1971-2000 at PHILPOTT DAM 2, VA6692)

Probability	Daily Minimum Temperature		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	223	194	171
8 years in 10	232	201	177
5 years in 10	251	215	190
2 years in 10	269	229	202
1 year in 10	278	236	208

Table 4.—Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
1B	Ayersville gravelly loam, 2 to 7 percent slopes	55	*
1C	Ayersville gravelly loam, 7 to 15 percent slopes	190	*
2B	Buckhall sandy loam, 2 to 7 percent slopes	43	*
2C	Buckhall sandy loam, 7 to 15 percent slopes	23	*
3E	Buffstat-Bugley complex, 25 to 60 percent slopes	2,307	0.9
4B	Clifford sandy loam, 2 to 7 percent slopes	3,521	1.4
4C	Clifford sandy loam, 7 to 15 percent slopes	51,655	20.4
4D	Clifford sandy loam, 15 to 25 percent slopes	35,783	14.2
4E	Clifford sandy loam, 25 to 45 percent slopes	34,914	13.8
5A	Codorus loam, 0 to 2 percent slopes, frequently flooded	2,792	1.1
6A	Colvard fine sandy loam, 0 to 2 percent slopes, occasionally flooded	6,740	2.7
7B	Creedmoor fine sandy loam, 1 to 4 percent slopes	17	*
8A	Delanco loam, 0 to 4 percent slopes, rarely flooded	707	0.3
9B	Dyke loam, 2 to 7 percent slopes	408	0.2
9C	Dyke loam, 7 to 15 percent slopes	911	0.4
10A	Elsinboro fine sandy loam, 0 to 4 percent slopes, rarely flooded	900	0.4
11A	Leaksville silt loam, 0 to 4 percent slopes	23	*
12C	Littlejoe silt loam, 7 to 15 percent slopes	1,139	0.5
12D	Littlejoe silt loam, 15 to 25 percent slopes	812	0.3
13B	Mayodan fine sandy loam, 2 to 7 percent slopes	541	0.2
13C	Mayodan fine sandy loam, 7 to 15 percent slopes	148	*
14B	Minnieville loam, 2 to 7 percent slopes	1,437	0.6
14C	Minnieville loam, 7 to 15 percent slopes	8,209	3.2
14D	Minnieville loam, 15 to 25 percent slopes	3,152	1.2
15C	Minnieville-Urban land complex, 7 to 15 percent slopes	879	0.3
16B	Orenda sandy loam, 2 to 7 percent slopes	283	0.1
17C	Orenda-Spriggs complex, 7 to 15 percent slopes	4,404	1.7
17D	Orenda-Spriggs complex, 15 to 25 percent slopes	4,925	1.9
17E	Orenda-Spriggs complex, 25 to 45 percent slopes	5,583	2.2
18B	Stoneville loam, 2 to 7 percent slopes	1	*
19	Udorthents-Urban land complex, 2 to 15 percent slopes	3,217	1.3
20	Udorthents, loamy	832	0.3
21B	Woolwine-Clifford complex, 2 to 7 percent slopes	389	0.2
21C	Woolwine-Clifford complex, 7 to 15 percent slopes	21,761	8.6
21D	Woolwine-Clifford complex, 15 to 25 percent slopes	18,019	7.1
21E	Woolwine-Clifford complex, 25 to 45 percent slopes	32,318	12.8
22C	Woolwine-Urban land complex, 7 to 15 percent slopes	1,338	0.5
DAM	Dam	3	*
W	Water	2,321	0.9
	Total	252,700	100.0

* Less than 0.1 percent.

Table 5.—Land Capability Class, Virginia Soil Management Group, and Non-Irrigated Yields

Yields are those that can be expected under a high level of management. They are for nonirrigated areas. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil.

Map symbol and soil name	Land capability	Virginia Soil Management Group	Alfalfa hay	Barley	Corn	Corn silage	Grass-legume hay	Pasture	Soybeans	Tobacco	Wheat
			Tons	Bu	Bu	Tons	Tons	AUM	Bu	Lbs	Bu
1B:											
Ayersville----	2e	FF	---	54	77	16.0	3.1	5.0	23	---	43
1C:											
Ayersville----	3e	FF	---	48	67	14.0	2.8	4.6	20	---	38
2B:											
Buckhall------	2e	V	4.0	70	100	20.0	3.5	7.0	35	---	56
2C:											
Buckhall------	3e	V	3.5	62	88	18.0	3.1	6.6	31	---	49
3E:											
Buffstat------	7e	V	---	---	---	---	---	4.0	---	---	---
Bugley--------	7e	JJ	---	---	---	---	---	3.0	---	---	---
4B:											
Clifford------	2e	X	4.0	70	100	---	3.5	4.5	35	2400	56
4C:											
Clifford------	3e	X	3.5	62	88	---	3.1	4.1	31	2200	49
4D:											
Clifford------	4e	X	3.2	56	80	---	2.8	3.8	28	---	45
4E:											
Clifford------	7e	X	---	---	---	---	---	3.5	---	---	---
5A:											
Codorus-------	2w	A	6.0	80	160	26.0	5.0	8.1	50	---	64
6A:											
Colvard-------	2s	II	---	60	65	25.0	---	1.0	20	---	48
7B:											
Creedmoor-----	2e	KK	---	40	65	---	3.0	5.0	20	2200	32
8A:											
Delanco-------	2w	B	5.5	90	160	24.0	5.0	8.5	50	---	64

Table 5.—Land Capability Class, Virginia Soil Management Group, and Non-Irrigated Yields—Continued

Map symbol and soil name	Land capability	Virginia Soil Management Group	Alfalfa hay	Barley	Corn	Corn silage	Grass-legume hay	Pasture	Soybeans	Tobacco	Wheat
			Tons	Bu	Bu	Tons	Tons	AUM	Bu	Lbs	Bu
9B:											
Dyke----------	2e	O	5.5	80	130	25.0	4.0	7.5	40	---	64
9C:											
Dyke----------	3e	O	4.8	70	114	22.0	3.5	7.0	35	---	56
10A:											
Elsinboro-----	2s	L	4.0	80	130	26.0	4.0	9.5	40	---	64
11A:											
Leaksville----	4w	KK	---	40	65	---	3.0	5.5	20	---	32
12C:											
Littlejoe-----	3e	V	3.5	62	88	17.0	3.1	6.5	31	---	49
12D:											
Littlejoe-----	4e	V	3.2	56	80	14.0	2.8	6.0	28	---	45
13B:											
Mayodan-------	2e	V	4.0	70	100	---	3.5	8.0	35	2100	56
13C:											
Mayodan-------	3e	V	3.5	62	88	---	3.1	7.0	31	1900	49
14B:											
Minnieville---	2e	N	5.5	80	130	27.0	4.0	9.1	40	---	64
14C:											
Minnieville---	3e	N	4.8	70	114	26.0	3.5	8.7	35	---	56
14D:											
Minnieville---	4e	N	4.4	64	104	18.0	3.2	8.0	32	---	51
15C:											
Minnieville---	3e	N	4.8	70	114	26.0	3.5	8.7	35	---	56
Urban land----	8s		---	---	---	---	---	---	---	---	---
16B:											
Orenda--------	2e	KK	---	40	65	27.0	3.0	4.5	20	---	32
17C:											
Orenda--------	3e	KK	---	35	57	26.0	2.6	4.1	18	---	28
Spriggs-------	3e	JJ	---	44	57	10.0	2.6	4.1	18	---	35

Table 5.—Land Capability Class, Virginia Soil Management Group, and Non-Irrigated Yields—Continued

Map symbol and soil name	Land capability	Virginia Soil Management Group	Alfalfa hay	Barley	Corn	Corn silage	Grass-legume hay	Pasture	Soybeans	Tobacco	Wheat
			Tons	Bu	Bu	Tons	Tons	AUM	Bu	Lbs	Bu
17D:											
Orenda--------	4e	KK	---	32	52	24.0	2.4	3.8	16	---	26
Spriggs-------	4e	JJ	---	40	52	8.0	2.4	3.8	16	---	32
17E:											
Orenda--------	7e	KK	---	---	---	---	---	3.6	---	---	---
Spriggs-------	7e	JJ	---	---	---	---	---	3.5	---	---	---
18B:											
Stoneville----	2e	X	4.0	70	100	---	3.5	7.5	35	1600	56
19:											
Udorthents----	---		---	---	---	---	---	---	---	---	---
Urban land----	8s		---	---	---	---	---	---	---	---	---
20:											
Udorthents----	---		---	---	---	---	---	---	---	---	---
21B:											
Woolwine------	2e	V	4.0	70	100	---	3.5	5.0	35	2400	56
Clifford------	2e	X	4.0	70	100	---	3.5	5.0	35	2400	56
21C:											
Woolwine------	3e	V	3.5	62	88	---	3.1	4.7	31	2200	49
Clifford------	3e	X	3.5	62	88	---	3.1	4.7	31	2200	49
21D:											
Woolwine------	4e	V	3.5	56	80	---	2.8	4.4	28	---	45
Clifford------	4e	X	3.5	56	80	---	2.8	4.4	28	---	45
21E:											
Woolwine------	7e	V	---	---	---	---	---	4.1	---	---	---
Clifford------	7e	X	---	---	---	---	---	4.1	---	---	---
22C:											
Woolwine------	3e	V	3.5	62	88	---	3.1	4.7	31	---	49
Urban land----	8s		---	---	---	---	---	---	---	---	---

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.)

Map Symbol	Map unit name
2B	Buckhall sandy loam, 2 to 7 percent slopes
4B	Clifford sandy loam, 2 to 7 percent slopes
8A	Delanco loam, 0 to 4 percent slopes, rarely flooded
9B	Dyke loam, 2 to 7 percent slopes
10A	Elsinboro fine sandy loam, 0 to 4 percent slopes, rarely flooded
13B	Mayodan fine sandy loam, 2 to 7 percent slopes
14B	Minnieville loam, 2 to 7 percent slopes
16B	Orenda sandy loam, 2 to 7 percent slopes
18B	Stoneville loam, 2 to 7 percent slopes
21B	Woolwine-Clifford complex, 2 to 7 percent slopes

Table 7.—Agricultural Waste Management, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
1B:					
Ayersville----------	85	Very limited		Very limited	
		Droughty	1.00	Low adsorption	1.00
		Depth to bedrock	0.80	Droughty	1.00
		Too acid	0.32	Too acid	0.91
1C:					
Ayersville----------	85	Very limited		Very limited	
		Droughty	1.00	Low adsorption	1.00
		Depth to bedrock	0.80	Droughty	1.00
		Slope	0.37	Too acid	0.91
2B:					
Buckhall------------	95	Somewhat limited		Very limited	
		Too acid	0.50	Too acid	0.99
2C:					
Buckhall------------	95	Somewhat limited		Very limited	
		Too acid	0.50	Too acid	0.99
		Slope	0.37	Slope	0.37
3E:					
Buffstat------------	55	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.39	Slope	1.00
		Too acid	0.22	Too acid	0.77
Bugley--------------	40	Very limited		Very limited	
		Slope	1.00	Droughty	1.00
		Droughty	1.00	Low adsorption	1.00
		Depth to bedrock	1.00	Slope	1.00
4B:					
Clifford------------	90	Somewhat limited		Very limited	
		Too acid	0.62	Too acid	1.00
		Low adsorption	0.31		
4C:					
Clifford------------	90	Somewhat limited		Very limited	
		Too acid	0.62	Too acid	1.00
		Slope	0.37	Slope	0.37
		Low adsorption	0.31		
4D:					
Clifford------------	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.62	Too acid	1.00
		Low adsorption	0.31		
4E:					
Clifford------------	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.62	Too acid	1.00
		Low adsorption	0.31		

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
5A:					
Codorus	85	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Flooding	1.00
		Too acid	0.32	Too acid	0.91
6A:					
Colvard	85	Somewhat limited		Very limited	
		Flooding	0.60	Flooding	1.00
		Droughty	0.03	Droughty	0.03
7B:					
Creedmoor	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too acid	0.78	Low adsorption	1.00
8A:					
Delanco	85	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	0.64	Too acid	0.99
		Too acid	0.50	Slow water movement	0.50
9B:					
Dyke	95	Somewhat limited		Very limited	
		Too acid	0.50	Too acid	0.99
9C:					
Dyke	95	Somewhat limited		Very limited	
		Too acid	0.50	Too acid	0.99
		Slope	0.37	Slope	0.37
10A:					
Elsinboro	85	Somewhat limited		Very limited	
		Too acid	0.50	Too acid	0.99
				Flooding	0.40
11A:					
Leaksville	85	Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Droughty	1.00	Low adsorption	1.00
12C:					
Littlejoe	95	Somewhat limited		Very limited	
		Too acid	0.50	Low adsorption	1.00
		Droughty	0.45	Too acid	0.99
		Slope	0.37	Droughty	0.45

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
12D:					
Littlejoe	95	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Too acid	0.50	Slope	1.00
		Droughty	0.45	Too acid	0.99
13B:					
Mayodan	85	Somewhat limited		Somewhat limited	
		Too acid	0.32	Too acid	0.91
13C:					
Mayodan	85	Somewhat limited		Somewhat limited	
		Slope	0.37	Too acid	0.91
		Too acid	0.32	Slope	0.37
14B:					
Minnieville	90	Somewhat limited		Somewhat limited	
		Low adsorption	0.61	Too acid	0.67
		Too acid	0.18	Low adsorption	0.13
14C:					
Minnieville	90	Somewhat limited		Somewhat limited	
		Low adsorption	0.61	Too acid	0.67
		Slope	0.37	Slope	0.37
		Too acid	0.18	Low adsorption	0.13
14D:					
Minnieville	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Low adsorption	0.61	Too acid	0.67
		Too acid	0.18	Low adsorption	0.13
15C:					
Minnieville	55	Somewhat limited		Somewhat limited	
		Low adsorption	0.61	Too acid	0.67
		Slope	0.37	Slope	0.37
		Too acid	0.18	Low adsorption	0.13
Urban land	35	Not rated		Not rated	
16B:					
Orenda	85	Somewhat limited		Somewhat limited	
		Slow water movement	0.30	Too acid	0.67
		Too acid	0.18	Slow water movement	0.22
17C:					
Orenda	75	Somewhat limited		Somewhat limited	
		Slope	0.37	Too acid	0.67
		Slow water movement	0.30	Slope	0.37
		Too acid	0.18	Slow water movement	0.22
Spriggs	15	Somewhat limited		Very limited	
		Droughty	0.71	Low adsorption	1.00
		Slope	0.37	Too acid	0.91
		Too acid	0.32	Droughty	0.71

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value
17D:					
Orenda	55	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.30	Too acid	0.67
		Too acid	0.18	Slow water movement	0.22
Spriggs	35	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.71	Slope	1.00
		Too acid	0.32	Too acid	0.91
17E:					
Orenda	55	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.30	Too acid	0.67
		Too acid	0.18	Slow water movement	0.22
Spriggs	35	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.71	Slope	1.00
		Too acid	0.32	Too acid	0.91
18B:					
Stoneville	85	Somewhat limited		Very limited	
		Too acid	0.32	Low adsorption	1.00
				Too acid	0.91
19:					
Udorthents	55	Not rated		Not rated	
Urban land	30	Not rated		Not rated	
20:					
Udorthents	85	Not rated		Not rated	
21B:					
Woolwine	55	Somewhat limited		Very limited	
		Droughty	0.92	Low adsorption	1.00
		Depth to bedrock	0.65	Too acid	1.00
		Too acid	0.62	Droughty	0.92
Clifford	40	Somewhat limited		Very limited	
		Too acid	0.62	Too acid	1.00
		Low adsorption	0.31		
21C:					
Woolwine	55	Somewhat limited		Very limited	
		Droughty	0.92	Low adsorption	1.00
		Depth to bedrock	0.65	Too acid	1.00
		Too acid	0.62	Droughty	0.92
Clifford	40	Somewhat limited		Very limited	
		Too acid	0.62	Too acid	1.00
		Slope	0.37	Slope	0.37
		Low adsorption	0.31		

Table 7.—Agricultural Waste Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge	
		Rating class and limiting features	Value	Rating class and limiting features	Value
21D:					
Woolwine	55	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.92	Slope	1.00
		Depth to bedrock	0.65	Too acid	1.00
Clifford	40	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.62	Too acid	1.00
		Low adsorption	0.31		
21E:					
Woolwine	55	Very limited		Very limited	
		Slope	1.00	Low adsorption	1.00
		Droughty	0.92	Slope	1.00
		Depth to bedrock	0.65	Too acid	1.00
Clifford	40	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Too acid	0.62	Too acid	1.00
		Low adsorption	0.31		
22C:					
Woolwine	50	Somewhat limited		Very limited	
		Droughty	0.92	Low adsorption	1.00
		Depth to bedrock	0.65	Too acid	1.00
		Too acid	0.62	Droughty	0.92
Urban land	40	Not rated		Not rated	
DAM:					
Dam	100	Not rated		Not rated	
W:					
Water	100	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation		Overland flow of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
1B:					
Ayersville----------	85	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Too acid	0.91	Depth to bedrock	1.00
		Depth to bedrock	0.80	Too acid	0.91
1C:					
Ayersville----------	85	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too acid	0.91	Too steep for surface application	0.94
2B:					
Buckhall------------	95	Very limited		Very limited	
		Too acid	0.99	Seepage	1.00
		Too steep for surface application	0.32	Too acid	0.99
2C:					
Buckhall------------	95	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.99	Too acid	0.99
		Too steep for sprinkler application	0.60	Too steep for surface application	0.94
3E:					
Buffstat------------	55	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.77	Depth to bedrock	0.99
Bugley--------------	40	Very limited		Very limited	
		Droughty	1.00	Seepage	1.00
		Too steep for surface application	1.00	Depth to bedrock	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
4B:					
Clifford------------	90	Very limited		Very limited	
		Too acid	1.00	Seepage	1.00
		Too steep for surface application	0.32	Too acid	1.00
		Low adsorption	0.31	Low adsorption	0.31
4C:					
Clifford------------	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	1.00	Too acid	1.00
		Too steep for sprinkler application	0.60	Too steep for surface application	0.94
4D:					
Clifford------------	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	1.00	Too acid	1.00
4E:					
Clifford------------	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	1.00	Too acid	1.00
5A:					
Codorus-------------	85	Very limited		Very limited	
		Depth to saturated zone	1.00	Flooding	1.00
		Flooding	1.00	Depth to saturated zone	1.00
		Too acid	0.91	Seepage	1.00
6A:					
Colvard-------------	85	Somewhat limited		Very limited	
		Flooding	0.60	Flooding	1.00
		Droughty	0.03	Seepage	1.00
7B:					
Creedmoor-----------	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too acid	1.00	Too acid	1.00

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
8A:					
Delanco	85	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too acid	0.99	Seepage	1.00
		Slow water movement	0.50	Too acid	0.99
9B:					
Dyke	95	Very limited		Very limited	
		Too acid	0.99	Seepage	1.00
		Too steep for surface application	0.32	Too acid	0.99
9C:					
Dyke	95	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.99	Too acid	0.99
		Too steep for sprinkler application	0.60	Too steep for surface application	0.94
10A:					
Elsinboro	85	Very limited		Very limited	
		Too acid	0.99	Seepage	1.00
				Too acid	0.99
				Flooding	0.40
11A:					
Leaksville	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Seepage	1.00
		Droughty	1.00	Depth to bedrock	1.00
12C:					
Littlejoe	95	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.99	Too acid	0.99
		Too steep for sprinkler application	0.60	Too steep for surface application	0.94
12D:					
Littlejoe	95	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.99	Too acid	0.99

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation		Overland flow of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
13B:					
Mayodan	85	Somewhat limited		Very limited	
		Too acid	0.91	Seepage	1.00
		Too steep for surface application	0.32	Too acid	0.91
13C:					
Mayodan	85	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.91	Too steep for surface application	0.94
		Too steep for sprinkler application	0.60	Too acid	0.91
14B:					
Minnieville	90	Somewhat limited		Very limited	
		Too acid	0.67	Seepage	1.00
		Low adsorption	0.61	Too acid	0.67
		Too steep for surface application	0.32	Low adsorption	0.61
14C:					
Minnieville	90	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.67	Too steep for surface application	0.94
		Low adsorption	0.61	Too acid	0.67
14D:					
Minnieville	90	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.67	Too acid	0.67
15C:					
Minnieville	55	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.67	Too steep for surface application	0.94
		Low adsorption	0.61	Too acid	0.67
Urban land	35	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
16B:					
Orenda	85	Somewhat limited		Very limited	
		Too acid	0.67	Seepage	1.00
		Too steep for surface application	0.32	Too acid	0.67
		Slow water movement	0.22		
17C:					
Orenda	75	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.67	Too steep for surface application	0.94
		Too steep for sprinkler application	0.60	Too acid	0.67
Spriggs	15	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	0.91	Depth to bedrock	1.00
		Droughty	0.71	Too steep for surface application	0.94
17D:					
Orenda	55	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.67	Too acid	0.67
Spriggs	35	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.91	Depth to bedrock	1.00
17E:					
Orenda	55	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.67	Too acid	0.67

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
17E:					
Spriggs	35	Very limited		Very limited	
		Too steep for surface application	1.00	Too steep for surface application	1.00
		Too steep for sprinkler application	1.00	Seepage	1.00
		Too acid	0.91	Depth to bedrock	1.00
18B:					
Stoneville	85	Somewhat limited		Very limited	
		Too acid	0.91	Seepage	1.00
		Too steep for surface application	0.32	Too acid	0.91
				Depth to bedrock	0.61
19:					
Udorthents	55	Not rated		Not rated	
Urban land	30	Not rated		Not rated	
20:					
Udorthents	85	Not rated		Not rated	
21B:					
Woolwine	55	Very limited		Very limited	
		Too acid	1.00	Seepage	1.00
		Droughty	0.92	Depth to bedrock	1.00
		Depth to bedrock	0.65	Too acid	1.00
Clifford	40	Very limited		Very limited	
		Too acid	1.00	Seepage	1.00
		Too steep for surface application	0.32	Too acid	1.00
		Low adsorption	0.31	Low adsorption	0.31
21C:					
Woolwine	55	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	1.00	Depth to bedrock	1.00
		Droughty	0.92	Too acid	1.00
Clifford	40	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	1.00	Too acid	1.00
		Too steep for sprinkler application	0.60	Too steep for surface application	0.94

Table 7.—Agricultural Waste Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Disposal of wastewater by irrigation: Rating class and limiting features	Value	Overland flow of wastewater: Rating class and limiting features	Value
21D:					
Woolwine	55	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	1.00	Depth to bedrock	1.00
Clifford	40	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	1.00	Too acid	1.00
21E:					
Woolwine	55	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	1.00	Depth to bedrock	1.00
Clifford	40	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too steep for sprinkler application	1.00	Too steep for surface application	1.00
		Too acid	1.00	Too acid	1.00
22C:					
Woolwine	50	Very limited		Very limited	
		Too steep for surface application	1.00	Seepage	1.00
		Too acid	1.00	Depth to bedrock	1.00
		Droughty	0.92	Too acid	1.00
Urban land	40	Not rated		Not rated	
DAM:					
Dam	100	Not rated		Not rated	
W:					
Water	100	Not rated		Not rated	

Table 7.—Agricultural Waste Management, Part III

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
1B:					
Ayersville	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too acid	0.91
		Slope	0.12	Too steep for surface application	0.32
1C:					
Ayersville	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too steep for sprinkler irrigation	0.94
2B:					
Buckhall	95	Very limited		Very limited	
		Slow water movement	1.00	Too acid	0.99
		Slope	0.12	Too steep for surface application	0.32
2C:					
Buckhall	95	Very limited		Very limited	
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too acid	0.99
				Too steep for sprinkler irrigation	0.94
3E:					
Buffstat	55	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
		Slow water movement	1.00	Depth to bedrock	0.99

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
3E:					
Bugley	40	Very limited		Very limited	
		Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	0.32	Too steep for sprinkler irrigation	1.00
4B:					
Clifford	90	Very limited		Very limited	
		Slow water movement	1.00	Too acid	1.00
		Slope	0.12	Too steep for surface application	0.32
		Too acid	0.03	Low adsorption	0.31
4C:					
Clifford	90	Very limited		Very limited	
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too acid	1.00
		Too acid	0.03	Too steep for sprinkler irrigation	0.94
4D:					
Clifford	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Too acid	0.03	Too acid	1.00
4E:					
Clifford	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Too acid	0.03	Too acid	1.00
5A:					
Codorus	85	Very limited		Very limited	
		Flooding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Flooding	1.00
		Slow water movement	1.00	Too acid	0.91

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
6A:					
Colvard	85	Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Flooding	0.60
		Flooding	0.60		
		Slow water movement	0.32		
7B:					
Creedmoor	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slow water movement	1.00
		Depth to bedrock	1.00	Too acid	1.00
8A:					
Delanco	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Too acid	0.99
				Slow water movement	0.34
9B:					
Dyke	95	Very limited		Very limited	
		Slow water movement	1.00	Too acid	0.99
		Slope	0.12	Too steep for surface application	0.32
9C:					
Dyke	95	Very limited		Very limited	
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too acid	0.99
				Too steep for sprinkler irrigation	0.94
10A:					
Elsinboro	85	Very limited		Very limited	
		Depth to saturated zone	1.00	Too acid	0.99
		Slow water movement	1.00		
11A:					
Leaksville	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Slow water movement	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
12C:					
Littlejoe-----------	95	Very limited		Very limited	
		Depth to bedrock	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too acid	0.99
		Slope	1.00	Too steep for sprinkler irrigation	0.94
12D:					
Littlejoe-----------	95	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
		Slow water movement	1.00	Too acid	0.99
13B:					
Mayodan-------------	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Too acid	0.91
		Slope	0.12	Too steep for surface application	0.32
13C:					
Mayodan-------------	85	Very limited		Very limited	
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too steep for sprinkler irrigation	0.94
				Too acid	0.91
14B:					
Minnieville---------	90	Very limited		Somewhat limited	
		Slow water movement	1.00	Too acid	0.67
		Slope	0.12	Low adsorption	0.61
				Too steep for surface application	0.32
14C:					
Minnieville---------	90	Very limited		Very limited	
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too steep for sprinkler irrigation	0.94
				Too acid	0.67

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
14D:					
Minnieville	90	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Too acid	0.67
15C:					
Minnieville	55	Very limited		Very limited	
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too steep for sprinkler irrigation	0.94
				Too acid	0.67
Urban land	35	Not rated		Not rated	
16B:					
Orenda	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Too acid	0.67
		Slope	0.12	Too steep for surface application	0.32
				Slow water movement	0.15
17C:					
Orenda	75	Very limited		Very limited	
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too steep for sprinkler irrigation	0.94
				Too acid	0.67
Spriggs	15	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too steep for sprinkler irrigation	0.94
17D:					
Orenda	55	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Too acid	0.67

Table 7.—Agricultural Waste Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
17D:					
Spriggs	35	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
		Slow water movement	1.00	Depth to bedrock	1.00
17E:					
Orenda	55	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
				Too acid	0.67
Spriggs	35	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
		Slow water movement	1.00	Depth to bedrock	1.00
18B:					
Stoneville	85	Very limited		Somewhat limited	
		Depth to bedrock	1.00	Too acid	0.91
		Slow water movement	1.00	Depth to bedrock	0.61
		Slope	0.12	Too steep for surface application	0.32
19:					
Udorthents	55	Not rated		Not rated	
Urban land	30	Not rated		Not rated	
20:					
Udorthents	85	Not rated		Not rated	
21B:					
Woolwine	55	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too acid	1.00
		Slope	0.12	Low adsorption	0.53

Table 7.—Agricultural Waste Management, Part III

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater: Rating class and limiting features	Value	Slow rate treatment of wastewater: Rating class and limiting features	Value
21B:					
Clifford	40	Very limited		Very limited	
		Slow water movement	1.00	Too acid	1.00
		Slope	0.12	Too steep for surface application	0.32
		Too acid	0.03	Low adsorption	0.31
21C:					
Woolwine	55	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too acid	1.00
Clifford	40	Very limited		Very limited	
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too acid	1.00
		Too acid	0.03	Too steep for sprinkler irrigation	0.94
21D:					
Woolwine	55	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
		Slow water movement	1.00	Depth to bedrock	1.00
Clifford	40	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Too acid	0.03	Too acid	1.00
21E:					
Woolwine	55	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
		Slow water movement	1.00	Depth to bedrock	1.00

Table 7.—Agricultural Waste Management, Part III

Map symbol and soil name	Pct. of map unit	Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value
21E:					
Clifford	40	Very limited		Very limited	
		Slope	1.00	Too steep for surface application	1.00
		Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Too acid	0.03	Too acid	1.00
22C:					
Woolwine	50	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00
		Slow water movement	1.00	Too steep for surface application	1.00
		Slope	1.00	Too acid	1.00
Urban land	40	Not rated		Not rated	
DAM:					
Dam	100	Not rated		Not rated	
W:					
Water	100	Not rated		Not rated	

Table 8.—Forestland Productivity

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
1B:				
Ayersville	chestnut oak	45	29	loblolly pine, shortleaf pine
	Virginia pine	64	100	
1C:				
Ayersville	chestnut oak	45	29	loblolly pine, shortleaf pine
	Virginia pine	64	100	
2B:				
Buckhall	loblolly pine	80	114	eastern white pine, loblolly pine
	northern red oak	70	57	
	Virginia pine	70	114	
	white oak	70	57	
	yellow-poplar	85	86	
2C:				
Buckhall	loblolly pine	80	114	eastern white pine, loblolly pine
	northern red oak	70	57	
	Virginia pine	70	114	
	white oak	70	57	
	yellow-poplar	85	86	
3E:				
Buffstat	loblolly pine	80	114	eastern white pine, loblolly pine
	northern red oak	66	43	
	shortleaf pine	66	100	
	Virginia pine	69	114	
Bugley	loblolly pine	70	86	loblolly pine, shortleaf pine
	northern red oak	65	43	
	shortleaf pine	60	86	
	Virginia pine	65	100	
4B:				
Clifford	eastern white pine	85	157	eastern white pine, loblolly pine, shortleaf pine, yellow-poplar
	northern red oak	81	72	
	shortleaf pine	70	114	
	yellow-poplar	93	100	
4C:				
Clifford	eastern white pine	85	157	eastern white pine, loblolly pine, shortleaf pine, yellow-poplar
	northern red oak	81	72	
	shortleaf pine	70	114	
	yellow-poplar	93	100	
4D:				
Clifford	eastern white pine	77	143	eastern white pine, loblolly pine, shortleaf pine, yellow-poplar
	northern red oak	84	57	
	shortleaf pine	68	100	
	yellow-poplar	85	86	
4E:				
Clifford	eastern white pine	77	143	eastern white pine, loblolly pine, shortleaf pine, yellow-poplar
	northern red oak	84	57	
	shortleaf pine	68	100	
	yellow-poplar	85	86	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
5A:				
Codorus	black walnut	100	96	American sycamore, black walnut, eastern white pine, sugar maple, white ash, yellow-poplar
	eastern white pine	100	143	
	northern red oak	90	72	
	sugar maple	90	57	
	white ash	90	72	
	yellow-poplar	100	114	
6A:				
Colvard	eastern white pine	83	157	American sycamore, eastern white pine, yellow-poplar
	shortleaf pine	75	114	
	Virginia pine	75	114	
	yellow-poplar	102	114	
7B:				
Creedmoor	loblolly pine	87	129	loblolly pine
	Virginia pine	64	100	
	yellow-poplar	97	100	
8A:				
Delanco	black oak	80	57	eastern white pine, yellow-poplar
	yellow-poplar	90	86	
9B:				
Dyke	northern red oak	85	57	black walnut, eastern white pine, loblolly pine, northern red oak, yellow-poplar
	shortleaf pine	80	129	
	Virginia pine	80	114	
	yellow-poplar	95	100	
9C:				
Dyke	northern red oak	85	57	black walnut, eastern white pine, loblolly pine, northern red oak, yellow-poplar
	shortleaf pine	80	129	
	Virginia pine	80	114	
	yellow-poplar	95	100	
10A:				
Elsinboro	black oak	80	57	eastern white pine, loblolly pine, yellow-poplar
	Virginia pine	80	114	
	yellow-poplar	90	86	
11A:				
Leaksville	willow oak	60	43	loblolly pine, shortleaf pine
12C:				
Littlejoe	loblolly pine	78	114	eastern white pine, loblolly pine, yellow-poplar
	northern red oak	78	57	
	Virginia pine	68	100	
	yellow-poplar	83	72	
12D:				
Littlejoe	loblolly pine	78	114	eastern white pine, loblolly pine, yellow-poplar
	northern red oak	78	57	
	Virginia pine	68	100	
	yellow-poplar	83	72	
13B:				
Mayodan	loblolly pine	87	129	loblolly pine
	shortleaf pine	70	114	
	Virginia pine	60	86	
	white oak	54	43	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
13C:				
Mayodan	loblolly pine	87	129	loblolly pine
	shortleaf pine	70	114	
	Virginia pine	60	86	
	white oak	54	43	
14B:				
Minnieville	northern red oak	70	57	eastern white pine, loblolly pine, yellow-poplar
	shortleaf pine	70	114	
	Virginia pine	80	114	
	white oak	70	57	
	yellow-poplar	70	57	
14C:				
Minnieville	northern red oak	70	57	eastern white pine, loblolly pine, yellow-poplar
	shortleaf pine	70	114	
	Virginia pine	80	114	
	white oak	70	57	
	yellow-poplar	70	57	
14D:				
Minnieville	northern red oak	70	57	eastern white pine, loblolly pine, yellow-poplar
	shortleaf pine	70	114	
	Virginia pine	80	114	
	white oak	70	57	
	yellow-poplar	70	57	
15C:				
Minnieville	northern red oak	70	57	eastern white pine, loblolly pine, yellow-poplar
	shortleaf pine	70	114	
	Virginia pine	80	114	
	white oak	70	57	
	yellow-poplar	70	57	
Urban land	---	---	---	---
16B:				
Orenda	northern red oak	70	57	eastern white pine, loblolly pine, yellow-poplar
	shortleaf pine	63	100	
	Virginia pine	74	114	
17C:				
Orenda	northern red oak	70	57	eastern white pine, loblolly pine, yellow-poplar
	shortleaf pine	63	100	
	Virginia pine	74	114	
Spriggs	northern red oak	60	86	eastern white pine, loblolly pine, yellow-poplar
	shortleaf pine	65	100	
	Virginia pine	60	43	
17D:				
Orenda	northern red oak	70	57	eastern white pine, loblolly pine, yellow-poplar
	shortleaf pine	63	100	
	Virginia pine	74	114	
Spriggs	northern red oak	60	86	eastern white pine, loblolly pine, yellow-poplar
	shortleaf pine	65	100	
	Virginia pine	60	43	
17E:				
Orenda	northern red oak	70	57	eastern white pine, loblolly pine, yellow-poplar
	shortleaf pine	63	100	
	Virginia pine	74	114	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
17E:				
Spriggs	northern red oak	60	86	eastern white pine,
	shortleaf pine	65	100	loblolly pine,
	Virginia pine	60	43	yellow-poplar
18B:				
Stoneville	chestnut oak	76	57	loblolly pine,
	scarlet oak	76	57	shortleaf pine
	shortleaf pine	59	86	
	Virginia pine	63	100	
	white oak	79	57	
19:				
Udorthents	---	---	---	---
Urban land	---	---	---	---
20:				
Udorthents	---	---	---	---
21B:				
Woolwine	chestnut oak	68	57	eastern white pine,
	northern red oak	78	57	loblolly pine,
	scarlet oak	73	57	shortleaf pine,
	Virginia pine	68	100	yellow-poplar
	white oak	68	57	
	yellow-poplar	83	72	
Clifford	eastern white pine	85	157	eastern white pine,
	northern red oak	81	72	loblolly pine,
	shortleaf pine	70	114	shortleaf pine
	yellow-poplar	93	100	
21C:				
Woolwine	chestnut oak	68	57	eastern white pine,
	northern red oak	78	57	loblolly pine,
	scarlet oak	73	57	shortleaf pine,
	Virginia pine	68	100	yellow-poplar
	white oak	68	57	
	yellow-poplar	83	72	
Clifford	eastern white pine	85	157	eastern white pine,
	northern red oak	81	72	loblolly pine,
	shortleaf pine	70	114	shortleaf pine
	yellow-poplar	93	100	
21D:				
Woolwine	chestnut oak	68	57	eastern white pine,
	northern red oak	78	57	loblolly pine,
	scarlet oak	73	57	shortleaf pine,
	Virginia pine	68	100	yellow-poplar
	white oak	68	57	
	yellow-poplar	83	72	
Clifford	eastern white pine	77	143	eastern white pine,
	northern red oak	84	57	loblolly pine,
	shortleaf pine	68	100	shortleaf pine
	yellow-poplar	85	86	

Table 8.—Forestland Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
21E:				
Woolwine----------------	chestnut oak--------	68	57	eastern white pine,
	northern red oak----	78	57	loblolly pine,
	scarlet oak---------	73	57	shortleaf pine,
	Virginia pine-------	68	100	yellow-poplar
	white oak-----------	68	57	
	yellow-poplar-------	83	72	
Clifford----------------	eastern white pine--	77	143	eastern white pine,
	northern red oak----	84	57	loblolly pine,
	shortleaf pine------	68	100	shortleaf pine
	yellow-poplar-------	85	86	
22C:				
Woolwine----------------	chestnut oak--------	68	57	eastern white pine,
	northern red oak----	78	57	loblolly pine,
	scarlet oak---------	73	57	shortleaf pine,
	Virginia pine-------	68	100	yellow-poplar
	white oak-----------	68	57	
	yellow-poplar-------	83	72	
Urban land--------------	---	---	---	---
DAM:				
Dam---------------------	---	---	---	---
W:				
Water-------------------	---	---	---	---

Table 9.—Forestland Management, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
1B:							
Ayersville----------	85	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
		Restrictive layer	0.50				
1C:							
Ayersville----------	85	Moderate		Moderately suited		Severe	
		Restrictive layer	0.50	Slope	0.50	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
2B:							
Buckhall------------	95	Slight		Well suited		Moderate	
						Low strength	0.50
2C:							
Buckhall------------	95	Slight		Moderately suited		Moderate	
				Slope	0.50	Low strength	0.50
3E:							
Buffstat------------	55	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
Bugley--------------	40	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
4B:							
Clifford------------	90	Slight		Well suited		Moderate	
						Low strength	0.50
4C:							
Clifford------------	90	Slight		Moderately suited		Moderate	
				Slope	0.50	Low strength	0.50
4D:							
Clifford------------	90	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Low strength	0.50
4E:							
Clifford------------	90	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Low strength	0.50				
5A:							
Codorus-------------	85	Severe		Poorly suited		Severe	
		Flooding	1.00	Flooding	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
				Wetness	0.50		
6A:							
Colvard-------------	85	Severe		Poorly suited		Moderate	
		Flooding	1.00	Flooding	1.00	Low strength	0.50

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
7B:							
Creedmoor-----------	85	Slight		Moderately suited		Moderate	
				Wetness	0.50	Low strength	0.50
8A:							
Delanco-------------	85	Moderate		Moderately suited		Severe	
		Low strength	0.50	Sandiness	0.50	Low strength	1.00
		Sandiness	0.50	Low strength	0.50		
				Wetness	0.50		
9B:							
Dyke----------------	95	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
9C:							
Dyke----------------	95	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
10A:							
Elsinboro-----------	85	Slight		Well suited		Moderate	
						Low strength	0.50
11A:							
Leaksville----------	85	Moderate		Poorly suited		Severe	
		Low strength	0.50	Wetness	1.00	Low strength	1.00
		Restrictive layer	0.50	Low strength	0.50		
12C:							
Littlejoe-----------	95	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
12D:							
Littlejoe-----------	95	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Restrictive layer	0.50	Low strength	0.50		
13B:							
Mayodan-------------	85	Slight		Well suited		Moderate	
						Low strength	0.50
13C:							
Mayodan-------------	85	Slight		Moderately suited		Moderate	
				Slope	0.50	Low strength	0.50
14B:							
Minnieville---------	90	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
14C:							
Minnieville---------	90	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
14D:							
Minnieville---------	90	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
15C:							
Minnieville----------	55	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
Urban land----------	35	Not rated		Not rated		Not rated	
16B:							
Orenda--------------	85	Moderate		Well suited		Moderate	
		Low strength	0.50			Low strength	0.50
17C:							
Orenda--------------	75	Moderate		Moderately suited		Moderate	
		Low strength	0.50	Slope	0.50	Low strength	0.50
Spriggs-------------	15	Slight		Moderately suited		Moderate	
				Slope	0.50	Low strength	0.50
17D:							
Orenda--------------	55	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Low strength	0.50
Spriggs-------------	35	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Low strength	0.50
		Restrictive layer	0.50				
17E:							
Orenda--------------	55	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Low strength	0.50				
Spriggs-------------	35	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
18B:							
Stoneville----------	85	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
19:							
Udorthents----------	55	Not rated		Not rated		Not rated	
Urban land----------	30	Not rated		Not rated		Not rated	
20:							
Udorthents----------	85	Not rated		Not rated		Not rated	
21B:							
Woolwine------------	55	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
Clifford------------	40	Slight		Well suited		Moderate	
						Low strength	0.50

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
21C:							
Woolwine	55	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
Clifford	40	Slight		Moderately suited		Moderate	
				Slope	0.50	Low strength	0.50
21D:							
Woolwine	55	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Restrictive layer	0.50	Low strength	0.50		
Clifford	40	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Low strength	0.50
21E:							
Woolwine	55	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
Clifford	40	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Low strength	0.50				
22C:							
Woolwine	50	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
Urban land	40	Not rated		Not rated		Not rated	
DAM:							
Dam	100	Not rated		Not rated		Not rated	
W:							
Water	100	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1B:							
Ayersville----------	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
1C:							
Ayersville----------	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
						Low strength	0.50
2B:							
Buckhall------------	95	Slight		Moderate		Well suited	
				Slope/erodibility	0.50		
2C:							
Buckhall------------	95	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
3E:							
Buffstat------------	55	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Bugley--------------	40	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
4B:							
Clifford------------	90	Slight		Moderate		Well suited	
				Slope/erodibility	0.50		
4C:							
Clifford------------	90	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
4D:							
Clifford------------	90	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
4E:							
Clifford------------	90	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
5A:							
Codorus-------------	85	Slight		Slight		Poorly suited	
						Flooding	1.00
						Low strength	0.50
						Wetness	0.50
6A:							
Colvard-------------	85	Slight		Slight		Poorly suited	
						Flooding	1.00
7B:							
Creedmoor-----------	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Wetness	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
8A:							
Delanco-------------	85	Slight		Slight		Moderately suited	
						Sandiness	0.50
						Low strength	0.50
						Wetness	0.50
9B:							
Dyke----------------	95	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
9C:							
Dyke----------------	95	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
10A:							
Elsinboro-----------	85	Slight		Slight		Well suited	
11A:							
Leaksville----------	85	Slight		Slight		Poorly suited	
						Wetness	1.00
						Low strength	0.50
12C:							
Littlejoe-----------	95	Moderate		Severe		Moderately suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
12D:							
Littlejoe-----------	95	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
13B:							
Mayodan-------------	85	Slight		Moderate		Well suited	
				Slope/erodibility	0.50		
13C:							
Mayodan-------------	85	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
14B:							
Minnieville---------	90	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
14C:							
Minnieville---------	90	Moderate		Severe		Moderately suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
14D:							
Minnieville---------	90	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
15C:							
Minnieville---------	55	Moderate		Severe		Moderately suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
15C:							
Urban land	35	Not rated		Not rated		Not rated	
16B:							
Orenda	85	Slight		Moderate		Well suited	
				Slope/erodibility	0.50		
17C:							
Orenda	75	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
Spriggs	15	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
17D:							
Orenda	55	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
Spriggs	35	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
17E:							
Orenda	55	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
Spriggs	35	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
18B:							
Stoneville	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
19:							
Udorthents	55	Not rated		Not rated		Not rated	
Urban land	30	Not rated		Not rated		Not rated	
20:							
Udorthents	85	Not rated		Not rated		Not rated	
21B:							
Woolwine	55	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
Clifford	40	Slight		Moderate		Well suited	
				Slope/erodibility	0.50		
21C:							
Woolwine	55	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
Clifford	40	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
21B:							
Woolwine-----------	55	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
Clifford-----------	40	Slight		Moderate		Well suited	
				Slope/erodibility	0.50		
21C:							
Woolwine-----------	55	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
Clifford-----------	40	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
21D:							
Woolwine-----------	55	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Clifford-----------	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
21E:							
Woolwine-----------	55	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Clifford-----------	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
22C:							
Woolwine-----------	50	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
Urban land----------	40	Not rated		Not rated		Not rated	
DAM:							
Dam-----------------	100	Not rated		Not rated		Not rated	
W:							
Water---------------	100	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part III

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
1B:							
Ayersville----------	85	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Low strength	0.50
				Slope	0.50		
1C:							
Ayersville----------	85	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
				Rock fragments	0.50		
2B:							
Buckhall------------	95	Well suited		Moderately suited		Well suited	
				Slope	0.50		
2C:							
Buckhall------------	95	Well suited		Moderately suited		Well suited	
				Slope	0.50		
3E:							
Buffstat------------	55	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Low strength	0.50
Bugley--------------	40	Unsuited		Unsuited		Poorly suited	
		Restrictive layer	1.00	Slope	1.00	Slope	1.00
		Slope	0.50	Restrictive layer	1.00	Low strength	0.50
		Rock fragments	0.50	Rock fragments	0.50		
4B:							
Clifford------------	90	Well suited		Moderately suited		Well suited	
				Slope	0.50		
4C:							
Clifford------------	90	Well suited		Moderately suited		Well suited	
				Slope	0.50		
4D:							
Clifford------------	90	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Slope	0.50
4E:							
Clifford------------	90	Moderately suited		Unsuited		Moderately suited	
		Slope	0.50	Slope	1.00	Slope	0.50
5A:							
Codorus-------------	85	Well suited		Well suited		Moderately suited	
						Low strength	0.50
6A:							
Colvard-------------	85	Well suited		Well suited		Well suited	

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
7B:							
Creedmoor	85	Moderately suited		Moderately suited		Well suited	
		Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50		
8A:							
Delanco	85	Well suited		Well suited		Moderately suited	
						Low strength	0.50
						Sandiness	0.50
9B:							
Dyke	95	Moderately suited		Moderately suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.50	Low strength	0.50
				Stickiness; high plasticity index	0.50		
9C:							
Dyke	95	Moderately suited		Moderately suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.50	Low strength	0.50
				Stickiness; high plasticity index	0.50		
10A:							
Elsinboro	85	Well suited		Well suited		Well suited	
11A:							
Leaksville	85	Poorly suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.75	Stickiness; high plasticity index	0.75	Low strength	0.50
12C:							
Littlejoe	95	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
12D:							
Littlejoe	95	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
						Slope	0.50
13B:							
Mayodan	85	Moderately suited		Moderately suited		Well suited	
		Stickiness; high plasticity index	0.50	Slope	0.50		
				Stickiness; high plasticity index	0.50		
13C:							
Mayodan	85	Moderately suited		Moderately suited		Well suited	
		Stickiness; high plasticity index	0.50	Slope	0.50		
				Stickiness; high plasticity index	0.50		
14B:							
Minnieville	90	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
14C:							
Minnieville---------	90	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
14D:							
Minnieville---------	90	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
						Slope	0.50
15C:							
Minnieville---------	55	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
Urban land----------	35	Not rated		Not rated		Not rated	
16B:							
Orenda--------------	85	Moderately suited		Moderately suited		Well suited	
		Stickiness; high plasticity index	0.50	Slope	0.50		
				Stickiness; high plasticity index	0.50		
17C:							
Orenda--------------	75	Moderately suited		Moderately suited		Well suited	
		Stickiness; high plasticity index	0.50	Slope	0.50		
				Stickiness; high plasticity index	0.50		
Spriggs-------------	15	Well suited		Moderately suited		Well suited	
				Slope	0.50		
				Rock fragments	0.50		
17D:							
Orenda--------------	55	Moderately suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.75	Slope	0.50
				Stickiness; high plasticity index	0.50		
Spriggs-------------	35	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Slope	0.50
				Rock fragments	0.50		
17E:							
Orenda--------------	55	Moderately suited		Unsuited		Moderately suited	
		Slope	0.50	Slope	1.00	Slope	0.50
		Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50		
Spriggs-------------	35	Moderately suited		Unsuited		Moderately suited	
		Slope	0.50	Slope	1.00	Slope	0.50
				Rock fragments	0.50		
18B:							
Stoneville----------	85	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
19:							
Udorthents	55	Not rated		Not rated		Not rated	
Urban land	30	Not rated		Not rated		Not rated	
20:							
Udorthents	85	Not rated		Not rated		Not rated	
21B:							
Woolwine	55	Moderately suited		Moderately suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.50	Low strength	0.50
				Stickiness; high plasticity index	0.50		
Clifford	40	Well suited		Moderately suited		Well suited	
				Slope	0.50		
21C:							
Woolwine	55	Moderately suited		Moderately suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.50	Low strength	0.50
				Stickiness; high plasticity index	0.50		
Clifford	40	Well suited		Moderately suited		Well suited	
				Slope	0.50		
21D:							
Woolwine	55	Moderately suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.75	Low strength	0.50
				Stickiness; high plasticity index	0.50	Slope	0.50
Clifford	40	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Slope	0.50
21E:							
Woolwine	55	Moderately suited		Unsuited		Moderately suited	
		Slope	0.50	Slope	1.00	Slope	0.50
		Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
Clifford	40	Moderately suited		Unsuited		Moderately suited	
		Slope	0.50	Slope	1.00	Slope	0.50
22C:							
Woolwine	50	Moderately suited		Moderately suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.50	Low strength	0.50
				Stickiness; high plasticity index	0.50		

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
22C:							
Urban land	40	Not rated		Not rated		Not rated	
DAM:							
Dam	100	Not rated		Not rated		Not rated	
W:							
Water	100	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part IV

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
1B:					
Ayersville----------	85	Well suited		Poorly suited	
				Restrictive layer	0.50
1C:					
Ayersville----------	85	Well suited		Poorly suited	
				Restrictive layer	0.50
2B:					
Buckhall------------	95	Well suited		Well suited	
2C:					
Buckhall------------	95	Well suited		Well suited	
3E:					
Buffstat------------	55	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
Bugley--------------	40	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Restrictive layer	1.00	Restrictive layer	1.00
		Rock fragments	0.50		
4B:					
Clifford------------	90	Well suited		Well suited	
4C:					
Clifford------------	90	Well suited		Well suited	
4D:					
Clifford------------	90	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
4E:					
Clifford------------	90	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
5A:					
Codorus-------------	85	Well suited		Well suited	
6A:					
Colvard-------------	85	Well suited		Well suited	
7B:					
Creedmoor-----------	85	Well suited		Well suited	
8A:					
Delanco-------------	85	Well suited		Well suited	
9B:					
Dyke----------------	95	Well suited		Well suited	
9C:					
Dyke----------------	95	Well suited		Well suited	

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
10A:					
Elsinboro	85	Well suited		Well suited	
11A:					
Leaksville	85	Poorly suited		Poorly suited	
		Stickiness; high plasticity index	0.50	Restrictive layer	0.50
12C:					
Littlejoe	95	Well suited		Well suited	
12D:					
Littlejoe	95	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
13B:					
Mayodan	85	Well suited		Well suited	
13C:					
Mayodan	85	Well suited		Well suited	
14B:					
Minnieville	90	Well suited		Well suited	
14C:					
Minnieville	90	Well suited		Well suited	
14D:					
Minnieville	90	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
15C:					
Minnieville	55	Well suited		Well suited	
Urban land	35	Not rated		Not rated	
16B:					
Orenda	85	Well suited		Well suited	
17C:					
Orenda	75	Well suited		Well suited	
Spriggs	15	Well suited		Well suited	
17D:					
Orenda	55	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
Spriggs	35	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
17E:					
Orenda	55	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
Spriggs	35	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
18B:					
Stoneville	85	Well suited		Well suited	

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
19:					
Udorthents	55	Not rated		Not rated	
Urban land	30	Not rated		Not rated	
20:					
Udorthents	85	Not rated		Not rated	
21B:					
Woolwine	55	Well suited		Well suited	
Clifford	40	Well suited		Well suited	
21C:					
Woolwine	55	Well suited		Well suited	
Clifford	40	Well suited		Well suited	
21D:					
Woolwine	55	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
Clifford	40	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
21E:					
Woolwine	55	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
Clifford	40	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
22C:					
Woolwine	50	Well suited		Well suited	
Urban land	40	Not rated		Not rated	
DAM:					
Dam	100	Not rated		Not rated	
W:					
Water	100	Not rated		Not rated	

Table 9.—Forestland Management, Part V

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
1B:					
Ayersville	85	Moderate		Low	
		Texture/rock fragments	0.50		
1C:					
Ayersville	85	Moderate		Low	
		Texture/rock fragments	0.50		
2B:					
Buckhall	95	Moderate		Low	
		Texture/rock fragments	0.50		
2C:					
Buckhall	95	Moderate		Low	
		Texture/rock fragments	0.50		
3E:					
Buffstat	55	Moderate		Low	
		Texture/slope/rock fragments	0.50		
Bugley	40	High		Low	
		Texture/slope/surface depth/rock fragments	1.00		
4B:					
Clifford	90	Low		Low	
		Texture/rock fragments	0.10		
4C:					
Clifford	90	Low		Low	
		Texture/rock fragments	0.10		
4D:					
Clifford	90	Low		Low	
		Texture/rock fragments	0.10		
4E:					
Clifford	90	Low		Low	
		Texture/slope/rock fragments	0.10		
5A:					
Codorus	85	Low		Low	
		Texture/rock fragments	0.10		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
6A:					
Colvard	85	Moderate		Low	
		Texture/rock fragments	0.50		
7B:					
Creedmoor	85	Moderate		Low	
		Texture/rock fragments	0.50		
8A:					
Delanco	85	Low		Low	
		Texture/rock fragments	0.10		
9B:					
Dyke	95	Moderate		Low	
		Texture/rock fragments	0.50		
9C:					
Dyke	95	Moderate		Low	
		Texture/rock fragments	0.50		
10A:					
Elsinboro	85	Low		Low	
		Texture/rock fragments	0.10		
11A:					
Leaksville	85	Moderate		High	
		Texture/rock fragments	0.50	Wetness	1.00
12C:					
Littlejoe	95	Moderate		Low	
		Texture/rock fragments	0.50		
12D:					
Littlejoe	95	Moderate		Low	
		Texture/rock fragments	0.50		
13B:					
Mayodan	85	Moderate		Low	
		Texture/rock fragments	0.50		
13C:					
Mayodan	85	Moderate		Low	
		Texture/rock fragments	0.50		
14B:					
Minnieville	90	Moderate		Low	
		Texture/rock fragments	0.50		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
14C:					
Minnieville----------	90	Moderate		Low	
		Texture/rock fragments	0.50		
14D:					
Minnieville----------	90	Moderate		Low	
		Texture/rock fragments	0.50		
15C:					
Minnieville----------	55	Moderate		Low	
		Texture/rock fragments	0.50		
Urban land----------	35	Not rated		Not rated	
16B:					
Orenda--------------	85	Moderate		Low	
		Texture/rock fragments	0.50		
17C:					
Orenda--------------	75	Moderate		Low	
		Texture/rock fragments	0.50		
Spriggs-------------	15	Moderate		Low	
		Texture/rock fragments	0.50		
17D:					
Orenda--------------	55	Moderate		Low	
		Texture/rock fragments	0.50		
Spriggs-------------	35	Moderate		Low	
		Texture/rock fragments	0.50		
17E:					
Orenda--------------	55	Moderate		Low	
		Texture/slope/rock fragments	0.50		
Spriggs-------------	35	Moderate		Low	
		Texture/slope/rock fragments	0.50		
18B:					
Stoneville----------	85	Moderate		Low	
		Texture/rock fragments	0.50		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
19:					
Udorthents----------	55	Not rated		Not rated	
Urban land----------	30	Not rated		Not rated	
20:					
Udorthents----------	85	Not rated		Not rated	
21B:					
Woolwine------------	55	Low		Low	
		Texture/surface depth/rock fragments	0.10		
Clifford------------	40	Low		Low	
		Texture/rock fragments	0.10		
21C:					
Woolwine------------	55	Low		Low	
		Texture/surface depth/rock fragments	0.10		
Clifford------------	40	Low		Low	
		Texture/rock fragments	0.10		
21D:					
Woolwine------------	55	Low		Low	
		Texture/surface depth/rock fragments	0.10		
Clifford------------	40	Low		Low	
		Texture/rock fragments	0.10		
21E:					
Woolwine------------	55	Moderate		Low	
		Texture/slope/surface depth/rock fragments	0.50		
Clifford------------	40	Low		Low	
		Texture/slope/rock fragments	0.10		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
22C:					
Woolwine	50	Low		Low	
		Texture/surface depth/rock fragments	0.10		
Urban land	40	Not rated		Not rated	
DAM:					
Dam	100	Not rated		Not rated	
W:					
Water	100	Not rated		Not rated	

Table 10.—Recreational Development, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
1B:							
Ayersville----------	85	Not limited		Not limited		Somewhat limited	
						Slope	0.88
						Depth to bedrock	0.80
1C:							
Ayersville----------	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
						Depth to bedrock	0.80
2B:							
Buckhall------------	95	Not limited		Not limited		Somewhat limited	
						Slope	0.88
2C:							
Buckhall------------	95	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
3E:							
Buffstat------------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.25
Bugley--------------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Gravel content	0.13
4B:							
Clifford------------	90	Not limited		Not limited		Somewhat limited	
						Slope	0.88
						Gravel content	0.32
4C:							
Clifford------------	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
						Gravel content	0.32
4D:							
Clifford------------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.32
4E:							
Clifford------------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.32
5A:							
Codorus-------------	85	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Depth to saturated zone	0.75	Flooding	1.00
		Depth to saturated zone	0.98	Flooding	0.40	Depth to saturated zone	0.98

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
6A:							
Colvard	85	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Too sandy	0.01	Flooding	0.60
		Too sandy	0.01			Too sandy	0.01
7B:							
Creedmoor	85	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
		Depth to saturated zone	0.81	Depth to saturated zone	0.48	Depth to saturated zone	0.81
						Slope	0.12
8A:							
Delanco	85	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Depth to saturated zone	0.48	Depth to saturated zone	0.81
		Depth to saturated zone	0.81	Slow water movement	0.35	Slow water movement	0.35
		Slow water movement	0.35				
9B:							
Dyke	95	Not limited		Not limited		Somewhat limited	
						Slope	0.88
9C:							
Dyke	95	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
10A:							
Elsinboro	85	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Too sandy	0.01	Too sandy	0.01
		Too sandy	0.01				
11A:							
Leaksville	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
12C:							
Littlejoe	95	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
12D:							
Littlejoe	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
13B:							
Mayodan	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.01	Too sandy	0.01	Slope	0.88
						Gravel content	0.32
						Too sandy	0.01
13C:							
Mayodan	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
		Too sandy	0.01	Too sandy	0.01	Gravel content	0.32
						Too sandy	0.01

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
14B:							
Minnieville	90	Not limited		Not limited		Somewhat limited	
						Slope	0.88
14C:							
Minnieville	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
14D:							
Minnieville	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
15C:							
Minnieville	55	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
Urban land	35	Not rated		Not rated		Not rated	
16B:							
Orenda	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.15	Slow water movement	0.15	Slope	0.88
						Gravel content	0.68
						Slow water movement	0.15
17C:							
Orenda	75	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
		Slow water movement	0.15	Slow water movement	0.15	Gravel content	0.68
						Slow water movement	0.15
Spriggs	15	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
						Gravel content	0.32
						Depth to bedrock	0.01
17D:							
Orenda	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.15	Slow water movement	0.15	Gravel content	0.68
						Slow water movement	0.15
Spriggs	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.32
						Depth to bedrock	0.01
17E:							
Orenda	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Slow water movement	0.15	Slow water movement	0.15	Gravel content	0.68
						Slow water movement	0.15

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
17E:							
Spriggs-------------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.32
						Depth to bedrock	0.01
18B:							
Stoneville----------	85	Not limited		Not limited		Somewhat limited	
						Slope	0.88
19:							
Udorthents----------	55	Not rated		Not rated		Not rated	
Urban land----------	30	Not rated		Not rated		Not rated	
20:							
Udorthents----------	85	Not rated		Not rated		Not rated	
21B:							
Woolwine------------	55	Not limited		Not limited		Somewhat limited	
						Slope	0.88
						Gravel content	0.86
						Depth to bedrock	0.65
Clifford------------	40	Not limited		Not limited		Somewhat limited	
						Slope	0.88
						Gravel content	0.32
21C:							
Woolwine------------	55	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
						Gravel content	0.86
						Depth to bedrock	0.65
Clifford------------	40	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
						Gravel content	0.32
21D:							
Woolwine------------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.86
						Depth to bedrock	0.65
Clifford------------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.32
21E:							
Woolwine------------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.86
						Depth to bedrock	0.65
Clifford------------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.32

Table 10.—Recreational Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
22C:							
Woolwine------------	50	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
						Gravel content	0.86
						Depth to bedrock	0.65
Urban land----------	40	Not rated		Not rated		Not rated	
DAM:							
Dam-----------------	100	Not rated		Not rated		Not rated	
W:							
Water---------------	100	Not rated		Not rated		Not rated	

Table 10.—Recreational Development, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Paths and trails: Value	Off-road motorcycle trails: Rating class and limiting features	Off-road motorcycle trails: Value	Golf fairways: Rating class and limiting features	Golf fairways: Value
1B:							
Ayersville----------	85	Not limited		Not limited		Somewhat limited	
						Droughty	0.80
						Depth to bedrock	0.80
1C:							
Ayersville----------	85	Not limited		Not limited		Somewhat limited	
						Droughty	0.80
						Depth to bedrock	0.80
						Slope	0.37
2B:							
Buckhall------------	95	Not limited		Not limited		Not limited	
2C:							
Buckhall------------	95	Not limited		Not limited		Somewhat limited	
						Slope	0.37
3E:							
Buffstat------------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Large stones content	0.32
Bugley--------------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Droughty	1.00
						Depth to bedrock	1.00
4B:							
Clifford------------	90	Not limited		Not limited		Not limited	
4C:							
Clifford------------	90	Not limited		Not limited		Somewhat limited	
						Slope	0.37
4D:							
Clifford------------	90	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
4E:							
Clifford------------	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.78	Slope	1.00
5A:							
Codorus-------------	85	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.44	Depth to saturated zone	0.44	Flooding	1.00
		Flooding	0.40	Flooding	0.40	Depth to saturated zone	0.75
6A:							
Colvard-------------	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.01	Too sandy	0.01	Flooding	0.60
						Droughty	0.09

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
7B:							
Creedmoor	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.11	Depth to saturated zone	0.11	Depth to saturated zone	0.48
8A:							
Delanco	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.11	Depth to saturated zone	0.11	Depth to saturated zone	0.48
9B:							
Dyke	95	Not limited		Not limited		Not limited	
9C:							
Dyke	95	Not limited		Not limited		Somewhat limited	
						Slope	0.37
10A:							
Elsinboro	85	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.01	Too sandy	0.01		
11A:							
Leaksville	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
						Depth to bedrock	0.90
						Droughty	0.79
12C:							
Littlejoe	95	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Slope	0.37
12D:							
Littlejoe	95	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	0.50				
13B:							
Mayodan	85	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.01	Too sandy	0.01		
13C:							
Mayodan	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.01	Too sandy	0.01	Slope	0.37
14B:							
Minnieville	90	Not limited		Not limited		Not limited	
14C:							
Minnieville	90	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Slope	0.37
14D:							
Minnieville	90	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	0.50				
15C:							
Minnieville	55	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Slope	0.37

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
15C:							
Urban land	35	Not rated		Not rated		Not rated	
16B:							
Orenda	85	Not limited		Not limited		Not limited	
17C:							
Orenda	75	Not limited		Not limited		Somewhat limited	
						Slope	0.37
Spriggs	15	Not limited		Not limited		Somewhat limited	
						Slope	0.37
						Depth to bedrock	0.01
17D:							
Orenda	55	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
Spriggs	35	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Depth to bedrock	0.01
17E:							
Orenda	55	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.78	Slope	1.00
Spriggs	35	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.78	Slope	1.00
						Depth to bedrock	0.01
18B:							
Stoneville	85	Not limited		Not limited		Not limited	
19:							
Udorthents	55	Not rated		Not rated		Not rated	
Urban land	30	Not rated		Not rated		Not rated	
20:							
Udorthents	85	Not rated		Not rated		Not rated	
21B:							
Woolwine	55	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.65
						Droughty	0.10
Clifford	40	Not limited		Not limited		Not limited	
21C:							
Woolwine	55	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.65
						Slope	0.37
						Droughty	0.10
Clifford	40	Not limited		Not limited		Somewhat limited	
						Slope	0.37

Table 10.—Recreational Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
21D:							
Woolwine------------	55	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
						Depth to bedrock	0.65
						Droughty	0.10
Clifford------------	40	Somewhat limited		Not limited		Very limited	
		Slope	0.50			Slope	1.00
21E:							
Woolwine------------	55	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.78	Slope	1.00
						Depth to bedrock	0.65
						Droughty	0.10
Clifford------------	40	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Slope	0.78	Slope	1.00
22C:							
Woolwine------------	50	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.65
						Slope	0.37
						Droughty	0.10
Urban land----------	40	Not rated		Not rated		Not rated	
DAM:							
Dam-----------------	100	Not rated		Not rated		Not rated	
W:							
Water---------------	100	Not rated		Not rated		Not rated	

Table 11.—Building Site Development, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1B:							
Ayersville----------	85	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.46	Depth to hard bedrock	1.00	Depth to hard bedrock	0.46
				Depth to soft bedrock	0.79	Slope	0.12
1C:							
Ayersville----------	85	Somewhat limited		Very limited		Very limited	
		Depth to hard bedrock	0.46	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.37	Depth to soft bedrock	0.79	Depth to hard bedrock	0.46
				Slope	0.37		
2B:							
Buckhall------------	95	Somewhat limited		Not limited		Somewhat limited	
		Shrink-swell	0.50			Shrink-swell	0.50
						Slope	0.12
2C:							
Buckhall------------	95	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Slope	0.37	Slope	1.00
		Slope	0.37			Shrink-swell	0.50
3E:							
Buffstat------------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Bugley--------------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
4B:							
Clifford------------	90	Not limited		Not limited		Somewhat limited	
						Slope	0.12
4C:							
Clifford------------	90	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
4D:							
Clifford------------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
4E:							
Clifford------------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
5A:							
Codorus	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	0.98	Depth to saturated zone	1.00	Depth to saturated zone	0.98
6A:							
Colvard	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Depth to saturated zone	0.15		
7B:							
Creedmoor	85	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Depth to saturated zone	1.00	Shrink-swell	1.00
		Depth to saturated zone	0.81	Shrink-swell	1.00	Depth to saturated zone	0.81
8A:							
Delanco	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	0.81	Depth to saturated zone	1.00	Depth to saturated zone	0.81
		Shrink-swell	0.50			Shrink-swell	0.50
9B:							
Dyke	95	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
						Slope	0.12
9C:							
Dyke	95	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.37	Slope	0.37	Shrink-swell	0.50
10A:							
Elsinboro	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Depth to saturated zone	0.16		
11A:							
Leaksville	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Depth to hard bedrock	0.46	Depth to hard bedrock	1.00	Depth to hard bedrock	0.46
12C:							
Littlejoe	95	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.37	Slope	0.37	Shrink-swell	0.50
12D:							
Littlejoe	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
13B:							
Mayodan	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
						Slope	0.12
13C:							
Mayodan	85	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.37	Slope	0.37	Shrink-swell	0.50
14B:							
Minnieville	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
						Slope	0.12
14C:							
Minnieville	90	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.37	Slope	0.37	Shrink-swell	0.50
14D:							
Minnieville	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
15C:							
Minnieville	55	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.37	Slope	0.37	Shrink-swell	0.50
Urban land	35	Not rated		Not rated		Not rated	
16B:							
Orenda	85	Somewhat limited		Not limited		Somewhat limited	
		Shrink-swell	0.50			Shrink-swell	0.50
						Slope	0.12
17C:							
Orenda	75	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Slope	0.37	Slope	1.00
		Slope	0.37			Shrink-swell	0.50
Spriggs	15	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
				Depth to hard bedrock	0.26		
				Depth to soft bedrock	0.01		
17D:							
Orenda	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50			Shrink-swell	0.50
Spriggs	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to hard bedrock	0.26		
				Depth to soft bedrock	0.01		

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
17E:							
Orenda	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50			Shrink-swell	0.50
Spriggs	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to hard bedrock	0.26		
				Depth to soft bedrock	0.01		
18B:							
Stoneville	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
						Slope	0.12
19:							
Udorthents	55	Not rated		Not rated		Not rated	
Urban land	30	Not rated		Not rated		Not rated	
20:							
Udorthents	85	Not rated		Not rated		Not rated	
21B:							
Woolwine	55	Not limited		Somewhat limited		Somewhat limited	
				Depth to hard bedrock	0.96	Slope	0.12
				Depth to soft bedrock	0.64		
Clifford	40	Not limited		Not limited		Somewhat limited	
						Slope	0.12
21C:							
Woolwine	55	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Depth to hard bedrock	0.96	Slope	1.00
				Depth to soft bedrock	0.64		
				Slope	0.37		
Clifford	40	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Slope	1.00
21D:							
Woolwine	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to hard bedrock	0.96		
				Depth to soft bedrock	0.64		
Clifford	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00

Table 11.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
21E:							
Woolwine	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to hard bedrock	0.96		
				Depth to soft bedrock	0.64		
Clifford	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
22C:							
Woolwine	50	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Depth to hard bedrock	0.96	Slope	1.00
				Depth to soft bedrock	0.64		
				Slope	0.37		
Urban land	40	Not rated		Not rated		Not rated	
DAM:							
Dam	100	Not rated		Not rated		Not rated	
W:							
Water	100	Not rated		Not rated		Not rated	

Table 11.—Building Site Development, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1B:							
Ayersville	85	Somewhat limited		Very limited		Somewhat limited	
		Low strength	0.78	Depth to hard bedrock	1.00	Droughty	0.80
		Depth to hard bedrock	0.46	Depth to soft bedrock	0.79	Depth to bedrock	0.80
				Cutbanks cave	0.10		
1C:							
Ayersville	85	Somewhat limited		Very limited		Somewhat limited	
		Low strength	0.78	Depth to hard bedrock	1.00	Droughty	0.80
		Depth to hard bedrock	0.46	Depth to soft bedrock	0.79	Depth to bedrock	0.80
		Slope	0.37	Slope	0.37	Slope	0.37
2B:							
Buckhall	95	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Too clayey	0.12		
		Frost action	0.50	Cutbanks cave	0.10		
2C:							
Buckhall	95	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Slope	0.37	Slope	0.37
		Frost action	0.50	Too clayey	0.12		
		Slope	0.37	Cutbanks cave	0.10		
3E:							
Buffstat	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Cutbanks cave	0.10	Large stones content	0.32
		Shrink-swell	0.50				
Bugley	40	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Droughty	1.00
				Cutbanks cave	0.10	Depth to bedrock	1.00
4B:							
Clifford	90	Somewhat limited		Somewhat limited		Not limited	
		Frost action	0.50	Too clayey	0.12		
		Low strength	0.10	Cutbanks cave	0.10		
4C:							
Clifford	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Frost action	0.50	Slope	0.37	Slope	0.37
		Slope	0.37	Too clayey	0.12		
		Low strength	0.10	Cutbanks cave	0.10		

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
4D:							
Clifford	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Too clayey	0.12		
		Low strength	0.10	Cutbanks cave	0.10		
4E:							
Clifford	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Too clayey	0.12		
		Low strength	0.10	Cutbanks cave	0.10		
5A:							
Codorus	85	Very limited		Very limited		Very limited	
		Frost action	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Flooding	1.00	Flooding	0.80	Depth to saturated zone	0.75
		Depth to saturated zone	0.75	Cutbanks cave	0.10		
6A:							
Colvard	85	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Flooding	0.60	Flooding	0.60
		Frost action	0.50	Depth to saturated zone	0.15	Droughty	0.09
				Cutbanks cave	0.10		
7B:							
Creedmoor	85	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.48
		Shrink-swell	1.00	Too clayey	0.32		
		Depth to saturated zone	0.48	Cutbanks cave	0.10		
8A:							
Delanco	85	Very limited		Very limited		Somewhat limited	
		Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.48
		Low strength	0.78	Cutbanks cave	1.00		
		Shrink-swell	0.50				
9B:							
Dyke	95	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.76		
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Frost action	0.50				
9C:							
Dyke	95	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.76	Slope	0.37
		Shrink-swell	0.50	Slope	0.37		
		Frost action	0.50	Cutbanks cave	0.10		
10A:							
Elsinboro	85	Somewhat limited		Somewhat limited		Not limited	
		Low strength	0.78	Depth to saturated zone	0.16		
		Frost action	0.50	Cutbanks cave	0.10		
		Flooding	0.40				

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
11A:							
Leaksville	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to hard bedrock	1.00	Depth to saturated zone	1.00
		Low strength	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.90
		Shrink-swell	1.00	Depth to soft bedrock	0.90	Droughty	0.79
12C:							
Littlejoe	95	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.50	Slope	0.37
		Shrink-swell	0.50	Slope	0.37		
		Slope	0.37	Cutbanks cave	0.10		
12D:							
Littlejoe	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	0.50		
		Shrink-swell	0.50	Cutbanks cave	0.10		
13B:							
Mayodan	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.50		
		Shrink-swell	0.50	Cutbanks cave	0.10		
13C:							
Mayodan	85	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.50	Slope	0.37
		Shrink-swell	0.50	Slope	0.37		
		Slope	0.37	Cutbanks cave	0.10		
14B:							
Minnieville	90	Somewhat limited		Somewhat limited		Not limited	
		Shrink-swell	0.50	Too clayey	0.50		
		Frost action	0.50	Cutbanks cave	0.10		
		Low strength	0.10				
14C:							
Minnieville	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Too clayey	0.50	Slope	0.37
		Frost action	0.50	Slope	0.37		
		Slope	0.37	Cutbanks cave	0.10		
14D:							
Minnieville	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Too clayey	0.50		
		Frost action	0.50	Cutbanks cave	0.10		
15C:							
Minnieville	55	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Too clayey	0.50	Slope	0.37
		Frost action	0.50	Slope	0.37		
		Slope	0.37	Cutbanks cave	0.10		
Urban land	35	Not rated		Not rated		Not rated	

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
16B:							
Orenda--------------	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.12		
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Frost action	0.50				
17C:							
Orenda--------------	75	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Slope	0.37	Slope	0.37
		Shrink-swell	0.50	Too clayey	0.12		
		Frost action	0.50	Cutbanks cave	0.10		
Spriggs-------------	15	Somewhat limited		Very limited		Somewhat limited	
		Frost action	0.50	Cutbanks cave	1.00	Slope	0.37
		Slope	0.37	Slope	0.37	Depth to bedrock	0.01
				Depth to hard bedrock	0.26		
17D:							
Orenda--------------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	0.12		
		Shrink-swell	0.50	Cutbanks cave	0.10		
Spriggs-------------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Depth to bedrock	0.01
				Depth to hard bedrock	0.26		
17E:							
Orenda--------------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Too clayey	0.12		
		Shrink-swell	0.50	Cutbanks cave	0.10		
Spriggs-------------	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Cutbanks cave	1.00	Depth to bedrock	0.01
				Depth to hard bedrock	0.26		
18B:							
Stoneville----------	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.32		
		Shrink-swell	0.50	Cutbanks cave	0.10		
19:							
Udorthents----------	55	Not rated		Not rated		Not rated	
Urban land----------	30	Not rated		Not rated		Not rated	
20:							
Udorthents----------	85	Not rated		Not rated		Not rated	

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
21B:							
Woolwine	55	Somewhat limited		Somewhat limited		Somewhat limited	
		Frost action	0.50	Depth to hard bedrock	0.96	Depth to bedrock	0.65
		Low strength	0.10	Depth to soft bedrock	0.64	Droughty	0.10
				Too clayey	0.12		
Clifford	40	Somewhat limited		Somewhat limited		Not limited	
		Frost action	0.50	Too clayey	0.12		
		Low strength	0.10	Cutbanks cave	0.10		
21C:							
Woolwine	55	Somewhat limited		Somewhat limited		Somewhat limited	
		Frost action	0.50	Depth to hard bedrock	0.96	Depth to bedrock	0.65
		Slope	0.37	Depth to soft bedrock	0.64	Slope	0.37
		Low strength	0.10	Slope	0.37	Droughty	0.10
Clifford	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Frost action	0.50	Slope	0.37	Slope	0.37
		Slope	0.37	Too clayey	0.12		
		Low strength	0.10	Cutbanks cave	0.10		
21D:							
Woolwine	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Depth to hard bedrock	0.96	Depth to bedrock	0.65
		Low strength	0.10	Depth to soft bedrock	0.64	Droughty	0.10
Clifford	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Too clayey	0.12		
		Low strength	0.10	Cutbanks cave	0.10		
21E:							
Woolwine	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Depth to hard bedrock	0.96	Depth to bedrock	0.65
		Low strength	0.10	Depth to soft bedrock	0.64	Droughty	0.10
Clifford	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Frost action	0.50	Too clayey	0.12		
		Low strength	0.10	Cutbanks cave	0.10		
22C:							
Woolwine	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Frost action	0.50	Depth to hard bedrock	0.96	Depth to bedrock	0.65
		Slope	0.37	Depth to soft bedrock	0.64	Slope	0.37
		Low strength	0.10	Slope	0.37	Droughty	0.10
Urban land	40	Not rated		Not rated		Not rated	

Table 11.—Building Site Development, Part II—Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
DAM:							
Dam	100	Not rated		Not rated		Not rated	
W:							
Water	100	Not rated		Not rated		Not rated	

Table 12.—Sanitary Facilities, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
1B:					
Ayersville	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slow water movement	0.50	Depth to soft bedrock	1.00
				Slope	0.68
1C:					
Ayersville	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slow water movement	0.50	Depth to soft bedrock	1.00
		Slope	0.37	Slope	1.00
2B:					
Buckhall	95	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Slope	0.68
				Seepage	0.50
2C:					
Buckhall	95	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
		Slope	0.37	Seepage	0.50
3E:					
Buffstat	55	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Depth to bedrock	0.99	Depth to soft bedrock	0.99
		Slow water movement	0.50	Seepage	0.50
Bugley	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Seepage, bottom layer	1.00		
4B:					
Clifford	90	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Slope	0.68
				Seepage	0.68
4C:					
Clifford	90	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
		Slope	0.37	Seepage	0.68

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
4D:					
Clifford	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.68
4E:					
Clifford	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.68
5A:					
Codorus	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	0.50	Seepage	0.50
6A:					
Colvard	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
		Depth to saturated zone	0.40		
7B:					
Creedmoor	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Depth to saturated zone	0.94
		Depth to saturated zone	1.00	Slope	0.08
		Depth to bedrock	0.04		
8A:					
Delanco	85	Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00	Seepage	0.50
		Flooding	0.40	Flooding	0.40
9B:					
Dyke	95	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Slope	0.68
				Seepage	0.50
9C:					
Dyke	95	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
		Slope	0.37	Seepage	0.50

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
10A:					
Elsinboro-----------	85	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
		Slow water movement	0.50	Flooding	0.40
		Depth to saturated zone	0.43		
11A:					
Leaksville----------	85	Very limited		Very limited	
		Slow water movement	1.00	Depth to hard bedrock	1.00
		Depth to saturated zone	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Depth to saturated zone	1.00
12C:					
Littlejoe-----------	95	Somewhat limited		Very limited	
		Depth to bedrock	0.94	Slope	1.00
		Slow water movement	0.50	Depth to soft bedrock	0.84
		Slope	0.37	Seepage	0.50
12D:					
Littlejoe-----------	95	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Depth to bedrock	0.94	Depth to soft bedrock	0.84
		Slow water movement	0.50	Seepage	0.50
13B:					
Mayodan-------------	85	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Slope	0.68
				Seepage	0.50
13C:					
Mayodan-------------	85	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
		Slope	0.37	Seepage	0.50
14B:					
Minnieville---------	90	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Slope	0.68
				Seepage	0.50
14C:					
Minnieville---------	90	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
		Slope	0.37	Seepage	0.50

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
14D:					
Minnieville---------	90	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
15C:					
Minnieville---------	55	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
		Slope	0.37	Seepage	0.50
Urban land----------	35	Not rated		Not rated	
16B:					
Orenda--------------	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.68
				Seepage	0.50
17C:					
Orenda--------------	75	Very limited		Very limited	
		Slow water movement	1.00	Slope	1.00
		Slope	0.37	Seepage	0.50
Spriggs-------------	15	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slow water movement	0.50	Slope	1.00
		Slope	0.37	Seepage	0.50
17D:					
Orenda--------------	55	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	1.00	Seepage	0.50
Spriggs-------------	35	Very limited		Very limited	
		Slope	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
17E:					
Orenda--------------	55	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	1.00	Seepage	0.50
Spriggs-------------	35	Very limited		Very limited	
		Slope	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
18B:					
Stoneville----------	85	Somewhat limited		Somewhat limited	
		Depth to bedrock	0.86	Slope	0.68
		Slow water movement	0.50	Depth to soft bedrock	0.61
				Seepage	0.50
19:					
Udorthents----------	55	Not rated		Not rated	
Urban land----------	30	Not rated		Not rated	
20:					
Udorthents----------	85	Not rated		Not rated	
21B:					
Woolwine------------	55	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slow water movement	0.50	Depth to hard bedrock	0.96
				Slope	0.68
Clifford------------	40	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Slope	0.68
				Seepage	0.68
21C:					
Woolwine------------	55	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slow water movement	0.50	Slope	1.00
		Slope	0.37	Depth to hard bedrock	0.96
Clifford------------	40	Somewhat limited		Very limited	
		Slow water movement	0.50	Slope	1.00
		Slope	0.37	Seepage	0.68
21D:					
Woolwine------------	55	Very limited		Very limited	
		Slope	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slow water movement	0.50	Depth to hard bedrock	0.96
Clifford------------	40	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.68

Table 12.—Sanitary Facilities, Part I—Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
21E:					
Woolwine------------	55	Very limited		Very limited	
		Slope	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slow water movement	0.50	Depth to hard bedrock	0.96
Clifford------------	40	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.68
22C:					
Woolwine------------	50	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slow water movement	0.50	Slope	1.00
		Slope	0.37	Depth to hard bedrock	0.96
Urban land----------	40	Not rated		Not rated	
DAM:					
Dam-----------------	100	Not rated		Not rated	
W:					
Water---------------	100	Not rated		Not rated	

Table 12.—Sanitary Facilities, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1B:							
Ayersville----------	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
1C:							
Ayersville----------	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.37	Slope	0.37	Slope	0.37
2B:							
Buckhall------------	95	Not limited		Not limited		Very limited	
						Too clayey	1.00
2C:							
Buckhall------------	95	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.37	Slope	0.37	Too clayey	1.00
						Slope	0.37
3E:							
Buffstat------------	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	0.99	Depth to bedrock	0.99
		Too clayey	0.50			Too clayey	0.50
Bugley--------------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage, bottom layer	1.00			Seepage	0.50
4B:							
Clifford------------	90	Somewhat limited		Not limited		Somewhat limited	
		Too clayey	0.50			Too clayey	0.50
4C:							
Clifford------------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Slope	0.37	Too clayey	0.50
		Slope	0.37			Slope	0.37
4D:							
Clifford------------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50
4E:							
Clifford------------	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50
5A:							
Codorus-------------	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.99
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Trench sanitary landfill: Value	Area sanitary landfill: Rating class and limiting features	Area sanitary landfill: Value	Daily cover for landfill: Rating class and limiting features	Daily cover for landfill: Value
6A:							
Colvard	85	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Seepage	0.50
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		
		Seepage, bottom layer	1.00	Seepage	1.00		
7B:							
Creedmoor	85	Very limited		Somewhat limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.94	Too clayey	1.00
		Too clayey	1.00			Depth to saturated zone	0.96
		Depth to bedrock	1.00				
8A:							
Delanco	85	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.96
		Too sandy	0.50	Flooding	0.40	Too sandy	0.50
		Flooding	0.40				
9B:							
Dyke	95	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
9C:							
Dyke	95	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Slope	0.37	Too clayey	1.00
		Slope	0.37			Hard to compact	1.00
						Slope	0.37
10A:							
Elsinboro	85	Very limited		Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
		Seepage, bottom layer	1.00	Seepage	1.00		
		Too clayey	0.50	Flooding	0.40		
11A:							
Leaksville	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Too clayey	1.00
		Too clayey	1.00			Hard to compact	1.00
12C:							
Littlejoe	95	Very limited		Somewhat limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	0.84	Too clayey	1.00
		Too clayey	1.00	Slope	0.37	Hard to compact	1.00
		Slope	0.37			Depth to bedrock	0.84
12D:							
Littlejoe	95	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	0.84	Too clayey	1.00
		Too clayey	1.00			Hard to compact	1.00

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
13B:							
Mayodan	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
13C:							
Mayodan	85	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Slope	0.37	Too clayey	1.00
		Slope	0.37			Hard to compact	1.00
						Slope	0.37
14B:							
Minnieville	90	Somewhat limited		Not limited		Somewhat limited	
		Too clayey	0.50			Too clayey	0.50
14C:							
Minnieville	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Slope	0.37	Too clayey	0.50
		Slope	0.37			Slope	0.37
14D:							
Minnieville	90	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50
15C:							
Minnieville	55	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Slope	0.37	Too clayey	0.50
		Slope	0.37			Slope	0.37
Urban land	35	Not rated		Not rated		Not rated	
16B:							
Orenda	85	Not limited		Not limited		Not limited	
17C:							
Orenda	75	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.37	Slope	0.37	Slope	0.37
Spriggs	15	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	0.50	Slope	0.37	Too clayey	0.50
		Slope	0.37			Slope	0.37
17D:							
Orenda	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
Spriggs	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	0.50			Too clayey	0.50
17E:							
Orenda	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
17E:							
Spriggs	35	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	0.50			Too clayey	0.50
18B:							
Stoneville	85	Very limited		Somewhat limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	0.61	Too clayey	1.00
		Too clayey	1.00			Depth to bedrock	0.61
19:							
Udorthents	55	Not rated		Not rated		Not rated	
Urban land	30	Not rated		Not rated		Not rated	
20:							
Udorthents	85	Not rated		Not rated		Not rated	
21B:							
Woolwine	55	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	0.50			Too clayey	0.50
Clifford	40	Somewhat limited		Not limited		Somewhat limited	
		Too clayey	0.50			Too clayey	0.50
21C:							
Woolwine	55	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	0.50	Slope	0.37	Too clayey	0.50
		Slope	0.37			Slope	0.37
Clifford	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Slope	0.37	Too clayey	0.50
		Slope	0.37			Slope	0.37
21D:							
Woolwine	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	0.50			Too clayey	0.50
Clifford	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50
21E:							
Woolwine	55	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	0.50			Too clayey	0.50
Clifford	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50

Table 12.—Sanitary Facilities, Part II—Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
22C:							
Woolwine------------	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	0.50	Slope	0.37	Too clayey	0.50
		Slope	0.37			Slope	0.37
Urban land----------	40	Not rated		Not rated		Not rated	
DAM:							
Dam-----------------	100	Not rated		Not rated		Not rated	
W:							
Water---------------	100	Not rated		Not rated		Not rated	

Table 13.—Construction Materials, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
1B:					
Ayersville----------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
1C:					
Ayersville----------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
2B:					
Buckhall------------	95	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
2C:					
Buckhall------------	95	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
3E:					
Buffstat------------	55	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Bugley--------------	40	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
4B:					
Clifford------------	90	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
4C:					
Clifford------------	90	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
4D:					
Clifford------------	90	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
4E:					
Clifford------------	90	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
5A:					
Codorus-------------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
6A:					
Colvard	85	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.02
		Thickest layer	0.00	Thickest layer	0.02
7B:					
Creedmoor	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
8A:					
Delanco	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.10
		Thickest layer	0.00	Bottom layer	0.57
9B:					
Dyke	95	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
9C:					
Dyke	95	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
10A:					
Elsinboro	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
11A:					
Leaksville	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
12C:					
Littlejoe	95	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
12D:					
Littlejoe	95	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
13B:					
Mayodan	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
13C:					
Mayodan	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
14B:					
Minnieville	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
14C:					
Minnieville---------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
14D:					
Minnieville---------	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
15C:					
Minnieville---------	55	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Urban land----------	35	Not rated		Not rated	
16B:					
Orenda--------------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
17C:					
Orenda--------------	75	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Spriggs-------------	15	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
17D:					
Orenda--------------	55	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Spriggs-------------	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
17E:					
Orenda--------------	55	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Spriggs-------------	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
18B:					
Stoneville----------	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
19:					
Udorthents----------	55	Not rated		Not rated	
Urban land----------	30	Not rated		Not rated	

Table 13.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
20:					
Udorthents	85	Not rated		Not rated	
21B:					
Woolwine	55	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Clifford	40	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
21C:					
Woolwine	55	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Clifford	40	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
21D:					
Woolwine	55	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Clifford	40	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
21E:					
Woolwine	55	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Clifford	40	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
22C:					
Woolwine	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Urban land	40	Not rated		Not rated	
DAM:					
Dam	100	Not rated		Not rated	
W:					
Water	100	Not rated		Not rated	

Table 13.—Construction Materials, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1B:							
Ayersville----------	85	Poor		Poor		Fair	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.21
		Organic matter content low	0.12	Low strength	0.22	Too acid	0.88
		Depth to bedrock	0.21				
1C:							
Ayersville----------	85	Poor		Poor		Fair	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.21
		Organic matter content low	0.12	Low strength	0.22	Slope	0.63
		Depth to bedrock	0.21			Too acid	0.88
2B:							
Buckhall------------	95	Poor		Fair		Poor	
		Too clayey	0.00	Shrink-swell	0.97	Too clayey	0.00
		Organic matter content low	0.12			Rock fragments	0.82
		Too acid	0.32			Too acid	0.88
2C:							
Buckhall------------	95	Poor		Fair		Poor	
		Too clayey	0.00	Shrink-swell	0.97	Too clayey	0.00
		Organic matter content low	0.12			Slope	0.63
		Too acid	0.32			Rock fragments	0.82
3E:							
Buffstat------------	55	Fair		Poor		Poor	
		Organic matter content low	0.02	Slope	0.00	Slope	0.00
		Too clayey	0.08	Low strength	0.00	Too clayey	0.04
		Too acid	0.50	Depth to bedrock	0.01	Too acid	0.88
Bugley--------------	40	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Slope	0.00	Depth to bedrock	0.00
		Organic matter content low	0.02			Rock fragments	0.00
4B:							
Clifford------------	90	Poor		Fair		Poor	
		Too clayey	0.00	Low strength	0.10	Too clayey	0.00
		Organic matter content low	0.12			Too acid	0.76
		Too acid	0.20				
4C:							
Clifford------------	90	Poor		Fair		Poor	
		Too clayey	0.00	Low strength	0.10	Too clayey	0.00
		Organic matter content low	0.12			Slope	0.63
		Too acid	0.20			Too acid	0.76

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
4D:							
Clifford------------	90	Poor		Fair		Poor	
		Too clayey	0.00	Low strength	0.10	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Too clayey	0.00
		Too acid	0.20			Too acid	0.76
4E:							
Clifford------------	90	Poor		Poor		Poor	
		Too clayey	0.00	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Low strength	0.10	Too clayey	0.00
		Too acid	0.20			Too acid	0.76
5A:							
Codorus-------------	85	Fair		Fair		Fair	
		Organic matter content low	0.12	Wetness depth	0.14	Wetness depth	0.14
		Too acid	0.54				
6A:							
Colvard-------------	85	Fair		Good		Fair	
		Organic matter content low	0.88			Too sandy	0.99
		Droughty	0.97				
		Too sandy	0.99				
7B:							
Creedmoor-----------	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Too acid	0.08	Wetness depth	0.29	Wetness depth	0.29
		Organic matter content low	0.12	Shrink-swell	0.54	Too acid	0.50
8A:							
Delanco-------------	85	Poor		Fair		Poor	
		Organic matter content low	0.00	Wetness depth	0.29	Hard to reclaim (rock fragments)	0.00
		Too acid	0.32	Shrink-swell	0.99	Wetness depth	0.29
						Too acid	0.88
9B:							
Dyke----------------	95	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.87	Too acid	0.88
		Too acid	0.50				
9C:							
Dyke----------------	95	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.87	Slope	0.63
		Too acid	0.50			Too acid	0.88
10A:							
Elsinboro-----------	85	Fair		Fair		Fair	
		Organic matter content low	0.12	Low strength	0.22	Too acid	0.88
		Too acid	0.50				

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
11A:							
Leaksville	85	Poor		Poor		Poor	
		Droughty	0.00	Wetness depth	0.00	Wetness depth	0.00
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Depth to bedrock	0.10	Depth to bedrock	0.00	Depth to bedrock	0.10
12C:							
Littlejoe	95	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Depth to bedrock	0.16	Slope	0.63
		Too acid	0.50	Shrink-swell	0.87	Too acid	0.88
12D:							
Littlejoe	95	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Slope	0.00
		Organic matter content low	0.12	Depth to bedrock	0.16	Too clayey	0.00
		Too acid	0.50	Slope	0.50	Too acid	0.88
13B:							
Mayodan	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.96	Too acid	0.88
		Too acid	0.32				
13C:							
Mayodan	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.96	Slope	0.63
		Too acid	0.32			Too acid	0.88
14B:							
Minnieville	90	Poor		Fair		Poor	
		Too clayey	0.00	Low strength	0.10	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.93		
		Too acid	0.74				
14C:							
Minnieville	90	Poor		Fair		Poor	
		Too clayey	0.00	Low strength	0.10	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.93	Slope	0.63
		Too acid	0.74				
14D:							
Minnieville	90	Poor		Fair		Poor	
		Too clayey	0.00	Low strength	0.10	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Too clayey	0.00
		Too acid	0.74	Shrink-swell	0.93		

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
15C:							
Minnieville---------	55	Poor		Fair		Poor	
		Too clayey	0.00	Low strength	0.10	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.93	Slope	0.63
		Too acid	0.74				
Urban land----------	35	Not rated		Not rated		Not rated	
16B:							
Orenda--------------	85	Poor		Good		Poor	
		Too clayey	0.00			Too clayey	0.00
		Organic matter content low	0.12				
		Too acid	0.74				
17C:							
Orenda--------------	75	Poor		Good		Poor	
		Too clayey	0.00			Too clayey	0.00
		Organic matter content low	0.12			Slope	0.63
		Too acid	0.74				
Spriggs-------------	15	Fair		Poor		Poor	
		Organic matter content low	0.12	Depth to bedrock	0.00	Rock fragments	0.00
		Droughty	0.29			Slope	0.63
		Too acid	0.54			Too acid	0.98
17D:							
Orenda--------------	55	Poor		Fair		Poor	
		Too clayey	0.00	Slope	0.50	Slope	0.00
		Organic matter content low	0.12			Too clayey	0.00
		Too acid	0.74				
Spriggs-------------	35	Fair		Poor		Poor	
		Organic matter content low	0.12	Depth to bedrock	0.00	Slope	0.00
		Droughty	0.29	Slope	0.50	Rock fragments	0.00
		Too acid	0.54			Too acid	0.98
17E:							
Orenda--------------	55	Poor		Poor		Poor	
		Too clayey	0.00	Slope	0.00	Slope	0.00
		Organic matter content low	0.12			Too clayey	0.00
		Too acid	0.74				
Spriggs-------------	35	Fair		Poor		Poor	
		Organic matter content low	0.12	Slope	0.00	Slope	0.00
		Droughty	0.29	Depth to bedrock	0.00	Rock fragments	0.00
		Too acid	0.54			Too acid	0.98

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
18B:							
Stoneville	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Depth to bedrock	0.39	Too acid	0.98
		Too acid	0.54	Shrink-swell	0.99		
19:							
Udorthents	55	Not rated		Not rated		Not rated	
Urban land	30	Not rated		Not rated		Not rated	
20:							
Udorthents	85	Not rated		Not rated		Not rated	
21B:							
Woolwine	55	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.08	Low strength	0.10	Depth to bedrock	0.35
		Organic matter content low	0.12			Too acid	0.76
Clifford	40	Poor		Fair		Poor	
		Too clayey	0.00	Low strength	0.10	Too clayey	0.00
		Organic matter content low	0.12			Too acid	0.76
		Too acid	0.20				
21C:							
Woolwine	55	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.08	Low strength	0.10	Depth to bedrock	0.35
		Organic matter content low	0.12			Slope	0.63
Clifford	40	Poor		Fair		Poor	
		Too clayey	0.00	Low strength	0.10	Too clayey	0.00
		Organic matter content low	0.12			Slope	0.63
		Too acid	0.20			Too acid	0.76
21D:							
Woolwine	55	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Slope	0.00
		Droughty	0.08	Low strength	0.10	Too clayey	0.00
		Organic matter content low	0.12	Slope	0.50	Depth to bedrock	0.35
Clifford	40	Poor		Fair		Poor	
		Too clayey	0.00	Low strength	0.10	Slope	0.00
		Organic matter content low	0.12	Slope	0.50	Too clayey	0.00
		Too acid	0.20			Too acid	0.76

Table 13.—Construction Materials, Part II—Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
21E:							
Woolwine	55	Poor		Poor		Poor	
		Too clayey	0.00	Slope	0.00	Slope	0.00
		Droughty	0.08	Depth to bedrock	0.00	Too clayey	0.00
		Organic matter content low	0.12	Low strength	0.10	Depth to bedrock	0.35
Clifford	40	Poor		Poor		Poor	
		Too clayey	0.00	Slope	0.00	Slope	0.00
		Organic matter content low	0.12	Low strength	0.10	Too clayey	0.00
		Too acid	0.20			Too acid	0.76
22C:							
Woolwine	50	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.08	Low strength	0.10	Depth to bedrock	0.35
		Organic matter content low	0.12			Slope	0.63
Urban land	40	Not rated		Not rated		Not rated	
DAM:							
Dam	100	Not rated		Not rated		Not rated	
W:							
Water	100	Not rated		Not rated		Not rated	

Table 14.—Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1B:							
Ayersville----------	85	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.86	Piping	1.00	Depth to water	1.00
		Seepage	0.70	Thin layer	0.95		
		Slope	0.32				
1C:							
Ayersville----------	85	Very limited		Very limited		Very limited	
		Slope	1.00	Piping	1.00	Depth to water	1.00
		Depth to bedrock	0.86	Thin layer	0.95		
		Seepage	0.70				
2B:							
Buckhall------------	95	Somewhat limited		Not limited		Very limited	
		Seepage	0.70			Depth to water	1.00
		Slope	0.32				
2C:							
Buckhall------------	95	Very limited		Not limited		Very limited	
		Slope	1.00			Depth to water	1.00
		Seepage	0.70				
3E:							
Buffstat------------	55	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.45	Depth to water	1.00
		Seepage	0.70	Thin layer	0.42		
		Depth to bedrock	0.01				
Bugley--------------	40	Very limited		Very limited		Very limited	
		Slope	1.00	Thin layer	1.00	Depth to water	1.00
		Depth to bedrock	1.00	Piping	1.00		
4B:							
Clifford------------	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.81	Piping	0.91	Depth to water	1.00
		Slope	0.32	Seepage	0.01		
4C:							
Clifford------------	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.91	Depth to water	1.00
		Seepage	0.81	Seepage	0.01		
4D:							
Clifford------------	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.91	Depth to water	1.00
		Seepage	0.81	Seepage	0.01		
4E:							
Clifford------------	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.91	Depth to water	1.00
		Seepage	0.81	Seepage	0.01		

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
5A:							
Codorus	85	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
				Piping	1.00	Cutbanks cave	0.10
6A:							
Colvard	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.02	Depth to water	1.00
7B:							
Creedmoor	85	Not limited		Very limited		Very limited	
				Depth to saturated zone	1.00	Depth to water	1.00
				Piping	0.29		
8A:							
Delanco	85	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	0.64	Slow refill	0.30
9B:							
Dyke	95	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Hard to pack	0.06	Depth to water	1.00
		Slope	0.32				
9C:							
Dyke	95	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Hard to pack	0.06	Depth to water	1.00
		Seepage	0.70				
10A:							
Elsinboro	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	Depth to water	1.00
				Seepage	0.03		
11A:							
Leaksville	85	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.86	Depth to saturated zone	1.00	Depth to water	1.00
				Thin layer	0.98		
				Hard to pack	0.28		
12C:							
Littlejoe	95	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Thin layer	0.26	Depth to water	1.00
		Seepage	0.70	Piping	0.02		
		Depth to bedrock	0.01				
12D:							
Littlejoe	95	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Thin layer	0.26	Depth to water	1.00
		Seepage	0.70	Piping	0.02		
		Depth to bedrock	0.01				
13B:							
Mayodan	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.17	Depth to water	1.00
		Slope	0.32				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
13C:							
Mayodan	85	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.17	Depth to water	1.00
		Seepage	0.70				
14B:							
Minnieville	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.65	Depth to water	1.00
		Slope	0.32				
14C:							
Minnieville	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.65	Depth to water	1.00
		Seepage	0.70				
14D:							
Minnieville	90	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.65	Depth to water	1.00
		Seepage	0.70				
15C:							
Minnieville	55	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.65	Depth to water	1.00
		Seepage	0.70				
Urban land	35	Not rated		Not rated		Not rated	
16B:							
Orenda	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.73	Depth to water	1.00
		Slope	0.32				
17C:							
Orenda	75	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.73	Depth to water	1.00
		Seepage	0.70				
Spriggs	15	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Thin layer	0.56	Depth to water	1.00
		Seepage	0.70				
		Depth to bedrock	0.06				
17D:							
Orenda	55	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.73	Depth to water	1.00
		Seepage	0.70				
Spriggs	35	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Thin layer	0.56	Depth to water	1.00
		Seepage	0.70				
		Depth to bedrock	0.06				
17E:							
Orenda	55	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.73	Depth to water	1.00
		Seepage	0.70				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
17E:							
Spriggs	35	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Thin layer	0.56	Depth to water	1.00
		Seepage	0.70				
		Depth to bedrock	0.06				
18B:							
Stoneville	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.45	Depth to water	1.00
		Slope	0.32	Thin layer	0.16		
		Depth to bedrock	0.01				
19:							
Udorthents	55	Not rated		Not rated		Not rated	
Urban land	30	Not rated		Not rated		Not rated	
20:							
Udorthents	85	Not rated		Not rated		Not rated	
21B:							
Woolwine	55	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Thin layer	0.91	Depth to water	1.00
		Depth to bedrock	0.37	Piping	0.01		
		Slope	0.32				
Clifford	40	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.81	Piping	0.91	Depth to water	1.00
		Slope	0.32	Seepage	0.01		
21C:							
Woolwine	55	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Thin layer	0.91	Depth to water	1.00
		Seepage	0.70	Piping	0.01		
		Depth to bedrock	0.37				
Clifford	40	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.91	Depth to water	1.00
		Seepage	0.81	Seepage	0.01		
21D:							
Woolwine	55	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Thin layer	0.91	Depth to water	1.00
		Seepage	0.70	Piping	0.01		
		Depth to bedrock	0.37				
Clifford	40	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.91	Depth to water	1.00
		Seepage	0.81	Seepage	0.01		
21E:							
Woolwine	55	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Thin layer	0.91	Depth to water	1.00
		Seepage	0.70	Piping	0.01		
		Depth to bedrock	0.37				

Table 14.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
21E:							
Clifford------------	40	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Piping	0.91	Depth to water	1.00
		Seepage	0.81	Seepage	0.01		
22C:							
Woolwine------------	50	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Thin layer	0.91	Depth to water	1.00
		Seepage	0.70	Piping	0.01		
		Depth to bedrock	0.37				
Urban land----------	40	Not rated		Not rated		Not rated	
DAM:							
Dam-----------------	100	Not rated		Not rated		Not rated	
W:							
Water---------------	100	Not rated		Not rated		Not rated	

Table 15.—Engineering Properties

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
1B:												
Ayersville------	0-8	Paragravelly loam, paragravelly silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	85-100	60-90	18-31	4-11
	8-22	Paragravelly loam, paragravelly silt loam, paragravelly silty clay loam, paragravelly clay loam, loam	CL	A-6, A-4	0	0	100	100	85-100	60-95	23-39	7-16
	22-26	Very paragravelly silt loam, very paragravelly loam, extremely paragravelly silt loam	ML, CL-ML	A-4	0	0	100	100	85-100	60-90	14-25	2-8
	26-30	Bedrock			---	---	---	---	---	---	---	---
	30-40	Bedrock			---	---	---	---	---	---	---	---
1C:												
Ayersville------	0-8	Paragravelly loam, paragravelly silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	85-100	60-90	18-31	4-11
	8-22	Paragravelly loam, paragravelly silt loam, paragravelly silty clay loam, paragravelly clay loam, loam	CL	A-6, A-4	0	0	100	100	85-100	60-95	23-39	7-16
	22-26	Very paragravelly silt loam, very paragravelly loam, extremely paragravelly silt loam	CL-ML, ML	A-4	0	0	100	100	85-100	60-90	14-25	2-8
	26-30	Bedrock			---	---	---	---	---	---	---	---
	30-40	Bedrock			---	---	---	---	---	---	---	---
2B:												
Buckhall--------	0-9	Sandy loam, loam	CL-ML, SC-SM	A-2-4, A-4	0	0	84-100	76-100	46-95	23-75	16-25	3-8
	9-19	Sandy clay loam, clay, clay loam	CL, SC	A-2-6, A-7-6, A-6	0	0	84-100	76-100	61-100	27-95	30-52	11-23
	19-35	Clay, clay loam	MH, CL, SC	A-2-6, A-7-5, A-7-6	0	0	84-100	76-100	61-100	27-95	39-61	16-28
	35-46	Clay loam, sandy clay loam	CL, MH, SC	A-7-6, A-7-5, A-2-6	0	0	84-100	76-100	61-100	27-80	34-57	13-26
	46-65	Sandy clay loam, sandy loam, loam	CL, SC-SM, SC, CL-ML	A-2-4, A-7-6, A-2-6	0	0	84-100	76-100	65-95	23-75	16-43	3-18

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
2C:												
Buckhall--------	0-9	Sandy loam, loam	SC-SM, CL-ML	A-2-4, A-4	0	0	84-100	76-100	46-95	23-75	16-25	3-8
	9-19	Sandy clay loam, clay, clay loam	SC, CL	A-2-6, A-7-6, A-6	0	0	84-100	76-100	61-100	27-95	30-52	11-23
	19-35	Clay, clay loam	CL, MH, SC	A-2-6, A-7-5, A-7-6	0	0	84-100	76-100	61-100	27-95	39-61	16-28
	35-46	Clay loam, sandy clay loam	SC, MH, CL	A-7-6, A-7-5, A-2-6	0	0	84-100	76-100	61-100	27-80	34-57	13-26
	46-65	Sandy clay loam, sandy loam, loam	SC-SM, SC, CL-ML, CL	A-2-4, A-7-6, A-2-6	0	0	84-100	76-100	65-95	23-75	16-43	3-18
3E:												
Buffstat--------	0-5	Channery silt loam, channery loam, channery fine sandy loam	ML, CL-ML, SM, SC-SM	A-4, A-2-4	0	12-24	77-90	68-87	48-87	27-78	12-25	1-8
	5-41	Silty clay loam, silty clay, clay, channery silty clay loam	CL, MH	A-7-6, A-7-5, A-6	0	0-24	76-100	68-100	61-100	51-95	39-61	16-28
	41-66	Bedrock			---	---	---	---	---	---	---	---
Bugley----------	0-3	Channery silt loam, channery loam	ML, SC-SM, SM, SC, CL-ML, CL	A-4, A-6	0	12-24	76-90	68-87	58-87	41-78	13-31	1-11
	3-11	Very channery silt loam, channery silt loam, extremely channery silt loam	CL, CL-ML, SC, GC-GM, GC, SC-SM	A-1, A-2-4, A-4, A-6	0	22-42	44-78	27-72	24-72	19-65	16-31	3-11
	11-21	Bedrock			---	---	---	---	---	---	---	---
4B:												
Clifford--------	0-7	Sandy loam, fine sandy loam, loam	SM, SC-SM, CL-ML, ML, SC, CL	A-2-4, A-4	0	0	84-100	76-100	46-95	23-75	10-24	NP-9
	7-54	Clay, clay loam	CL	A-7-6, A-6	0	0	82-100	76-100	68-100	53-95	31-45	13-21
	54-62	Sandy clay loam, loam, clay loam	ML, CL, SC, SM, SC-SM, CL-ML	A-2-4, A-4	0	0	82-100	76-100	61-100	27-80	13-27	2-10
	62-82	Loam, fine sandy loam, sandy loam	CL-ML, SC, SM, ML, CL, SC-SM	A-2-4, A-4	0	0	84-100	76-100	46-95	23-75	13-25	2-9

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
4C:												
Clifford--------	0-7	Sandy loam, fine sandy loam, loam	CL-ML, ML, SC, SM, CL, SC-SM	A-2-4, A-4	0	0	84-100	76-100	46-95	23-75	10-24	NP-9
	7-54	Clay, clay loam	CL	A-7-6, A-6	0	0	82-100	76-100	68-100	53-95	31-45	13-21
	54-62	Sandy clay loam, loam, clay loam	ML, CL, SM, SC, SC-SM, CL-ML	A-2-4, A-4	0	0	82-100	76-100	61-100	27-80	13-27	2-10
	62-82	Loam, fine sandy loam, sandy loam	SC-SM, CL-ML, SC, SM, ML, CL	A-2-4, A-4	0	0	84-100	76-100	46-95	23-75	13-25	2-9
4D:												
Clifford--------	0-7	Sandy loam, fine sandy loam, loam	ML, CL, SC, SC-SM, SM, CL-ML	A-2-4, A-4	0	0	84-100	76-100	46-95	23-75	10-24	NP-9
	7-54	Clay, clay loam	CL	A-7-6, A-6	0	0	82-100	76-100	68-100	53-95	31-45	13-21
	54-62	Sandy clay loam, loam, clay loam	SC-SM, CL-ML, SC, SM, ML, CL	A-2-4, A-4	0	0	82-100	76-100	61-100	27-80	13-27	2-10
	62-82	Loam, fine sandy loam, sandy loam	SC, CL, ML, SM, CL-ML, SC-SM	A-2-4, A-4	0	0	84-100	76-100	46-95	23-75	13-25	2-9
4E:												
Clifford--------	0-7	Sandy loam, fine sandy loam, loam	ML, CL, CL-ML, SC, SC-SM, SM	A-2-4, A-4	0	0	84-100	76-100	46-95	23-75	10-24	NP-9
	7-54	Clay, clay loam	CL	A-7-6, A-6	0	0	82-100	76-100	68-100	53-95	31-45	13-21
	54-62	Sandy clay loam, loam, clay loam	CL-ML, SC-SM, ML, CL, SC, SM	A-2-4, A-4	0	0	82-100	76-100	61-100	27-80	13-27	2-10
	62-82	Loam, fine sandy loam, sandy loam	CL-ML, SC-SM, ML, SC, SM, CL	A-2-4, A-4	0	0	84-100	76-100	46-95	23-75	13-25	2-9
5A:												
Codorus---------	0-8	Loam, silt loam	CL, SC	A-4, A-6	0	0	82-100	76-100	65-100	46-90	21-30	6-11
	8-47	Loam, silt loam, silty clay loam, clay loam	SC, CL	A-6, A-4	0	0	82-100	76-100	65-100	46-95	23-39	7-16
	47-62	Loam, silt loam, sandy loam, sand	SW, SC-SM, SM, ML, CL-ML, CL, SW-SM, SW-SC, SC	A-4, A-6, A-2-4	0	0	84-100	76-100	38-100	4-90	10-30	NP-11

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
6A:												
Colvard---------	0-12	Fine sandy loam, sandy loam, loam	SM, ML, CL-ML, SC-SM	A-2-4, A-4	0	0	84-100	76-100	46-95	23-75	14-23	2-7
	12-43	Fine sandy loam, sandy loam, loam, sand	ML, CL-ML, SM, SC-SM, SW-SM	A-2-4, A-4, A-1	0	0	84-100	76-100	38-95	4-75	11-23	NP-7
	43-62	Fine sandy loam, sandy loam, loam, sand, gravelly sand	CL-ML, SW-SM, SM, ML, SC-SM	A-2-4, A-4, A-1	0	0	84-100	76-100	38-95	4-75	11-23	NP-7
7B:												
Creedmoor-------	0-11	Fine sandy loam, loam, sandy loam	ML, SM, SC-SM, CL-ML	A-2-4, A-4	0	0	96-100	91-100	55-95	27-75	13-25	1-8
	11-47	Clay, silty clay loam	CL, MH	A-7-6, A-7-5, A-6	0	0	94-100	91-100	82-100	68-95	39-61	16-28
	47-67	Clay loam, sandy clay loam, loam, sandy loam	SM, SC, ML, CL-ML, CL, SC-SM	A-4, A-6, A-2-4	0	0	96-100	91-100	55-100	27-80	12-39	1-16
	67-71	Bedrock			---	---	---	---	---	---	---	---
8A:												
Delanco---------	0-10	Loam, fine sandy loam	ML, SM, CL-ML, SC-SM	A-4, A-2-4	0	0	83-100	76-100	53-95	30-75	12-25	1-8
	10-26	Clay loam, sandy clay loam, loam	CL, CL-ML, SC, SC-SM	A-2-4, A-6	0	0	83-100	76-100	61-100	27-80	23-39	7-16
	26-37	Clay, clay loam, sandy clay loam, loam	SC-SM, CL-ML, SC, CL	A-2-4, A-6, A-7-6	0	0	83-100	76-100	61-100	27-95	23-43	7-18
	37-57	Clay loam, fine sandy loam, loamy sand	CL, ML, CL-ML, SC, SC-SM, SM, SW-SC, SW-SM	A-1, A-2-4, A-4, A-6	0	0	85-100	76-100	38-100	11-80	12-39	1-16
	57-80	Clay loam, loamy sand, very gravelly sand, gravelly sandy loam	SC, SM, SC-SM, SP, SW, CL, CL-ML, ML, SW-SC, SW-SM, SP-SC, SP-SM	A-1, A-4, A-2-4, A-6	0	0-19	58-100	45-100	23-100	2-80	9-39	NP-16
9B:												
Dyke------------	0-6	Loam, silt loam	CL, SC-SM, SC, CL-ML	A-6, A-4	0	0	82-100	76-100	65-100	46-90	16-30	3-11
	6-65	Clay, clay loam	CL, MH	A-7-6, A-7-5, A-6	0	0	82-100	76-100	68-100	53-95	39-61	16-28

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
9C:												
Dyke------------	0-6	Loam, silt loam	SC-SM, CL, SC, CL-ML	A-6, A-4	0	0	82-100	76-100	65-100	46-90	16-30	3-11
	6-65	Clay, clay loam	MH, CL	A-7-6, A-7-5, A-6	0	0	82-100	76-100	68-100	53-95	39-61	16-28
10A:												
Elsinboro-------	0-11	Fine sandy loam, sandy loam, loam	ML, SC-SM, SM, CL-ML	A-2, A-4	0	0	84-100	76-100	46-95	23-75	14-23	2-7
	11-38	Sandy clay loam, clay loam, loam	CL, SC	A-6, A-2-4	0	0	83-100	76-100	61-100	27-80	23-38	7-15
	38-60	Sandy loam, fine sandy loam, loam	CL, SC, SC-SM, SM, ML, CL-ML	A-2-4, A-4, A-6, A-1	0	0	84-100	76-100	46-95	23-75	14-30	2-11
11A:												
Leaksville------	0-9	Silt loam, channery silt loam, loam	SC, CL	A-4, A-6, A-7-6	0	0-24	76-100	68-100	58-100	41-95	26-41	9-21
	9-18	Clay, clay loam, silty clay	CH	A-7-6	0	0-12	91-100	87-100	78-100	61-95	51-76	29-49
	18-24	Very channery silty clay loam, very channery clay loam, very channery loam, extremely channery silty clay loam	GP-GC, SC, GC, CH	A-7-6, A-2-4	0	24-45	36-76	17-68	14-68	10-65	26-56	9-33
	24-30	Bedrock			---	---	---	---	---	---	---	---
	30-40	Bedrock			---	---	---	---	---	---	---	---
12C:												
Littlejoe-------	0-8	Silt loam, loam	CL-ML, CL	A-4, A-6	0	0-12	91-100	87-100	74-100	52-90	18-31	4-11
	8-20	Clay loam, silty clay, clay	MH, CL	A-7-6, A-7-5, A-6	0	0-12	91-100	87-100	78-100	61-95	39-61	16-28
	20-45	Clay loam, silty clay, clay	CH, CL, MH	A-7-6, A-7-5, A-6	0	0-12	91-100	87-100	78-100	61-95	39-61	16-28
	45-59	Bedrock			---	---	---	---	---	---	---	---
	59-69	Bedrock			---	---	---	---	---	---	---	---
12D:												
Littlejoe-------	0-8	Silt loam, loam	CL, CL-ML	A-4, A-6	0	0-12	91-100	87-100	74-100	52-90	18-31	4-11
	8-20	Clay loam, silty clay, clay	CL, MH	A-7-6, A-7-5, A-6	0	0-12	91-100	87-100	78-100	61-95	39-61	16-28
	20-45	Clay loam, silty clay, clay	CL, CH, MH	A-7-6, A-7-5, A-6	0	0-12	91-100	87-100	78-100	61-95	39-61	16-28
	45-59	Bedrock			---	---	---	---	---	---	---	---
	59-69	Bedrock			---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
13B:												
Mayodan---------	0-6	Fine sandy loam, sandy loam, loam	CL-ML, SC-SM, SM, ML	A-2-4, A-4	0	0	84-100	76-100	46-95	23-75	12-25	1-8
	6-10	Sandy clay loam, clay loam, fine sandy loam	SC-SM, CL-ML, SC, CL	A-6, A-7-6, A-2-4	0	0	95-100	90-100	65-100	32-80	16-43	3-18
	10-48	Clay, clay loam	CH, CL, MH	A-7-6, A-7-5, A-6	0	0	95-100	90-100	80-100	64-95	39-61	16-28
	48-63	Loam, clay loam, sandy loam, sandy clay loam	SC-SM, SC, CL, CL-ML	A-6, A-2-4, A-4	0	0	95-100	90-100	55-100	27-80	16-39	3-16
13C:												
Mayodan---------	0-6	Fine sandy loam, sandy loam, loam	SC-SM, CL-ML, SM, ML	A-2-4, A-4	0	0	84-100	76-100	46-95	23-75	12-25	1-8
	6-10	Sandy clay loam, clay loam, fine sandy loam	SC-SM, SC, CL-ML, CL	A-6, A-7-6, A-2-4	0	0	95-100	90-100	65-100	32-80	16-43	3-18
	10-48	Clay, clay loam	MH, CL, CH	A-7-6, A-7-5, A-6	0	0	95-100	90-100	80-100	64-95	39-61	16-28
	48-63	Loam, clay loam, sandy loam, sandy clay loam	SC, CL-ML, SC-SM, CL	A-6, A-2-4, A-4	0	0	95-100	90-100	55-100	27-80	16-39	3-16
14B:												
Minnieville-----	0-8	Loam, clay loam	CL, CL-ML, SC-SM, ML	A-4, A-6	0	0	88-100	84-100	71-100	50-80	13-29	2-11
	8-53	Clay, clay loam	CL	A-7-6, A-6	0	0	88-100	84-100	76-100	60-95	31-49	13-22
	53-81	Loam, clay loam	CL	A-6, A-4	0	0	88-100	84-100	71-100	50-80	20-34	6-14
14C:												
Minnieville-----	0-8	Loam, clay loam	SC-SM, ML, CL-ML, CL	A-4, A-6	0	0	88-100	84-100	71-100	50-80	13-29	2-11
	8-53	Clay, clay loam	CL	A-7-6, A-6	0	0	88-100	84-100	76-100	60-95	31-49	13-22
	53-81	Loam, clay loam	CL	A-6, A-4	0	0	88-100	84-100	71-100	50-80	20-34	6-14
14D:												
Minnieville-----	0-8	Loam, clay loam	ML, SC-SM, CL, CL-ML	A-4, A-6	0	0	88-100	84-100	71-100	50-80	13-29	2-11
	8-53	Clay, clay loam	CL	A-7-6, A-6	0	0	88-100	84-100	76-100	60-95	31-49	13-22
	53-81	Loam, clay loam	CL	A-6, A-4	0	0	88-100	84-100	71-100	50-80	20-34	6-14
15C:												
Minnieville-----	0-8	Loam, clay loam	CL, SC-SM, ML, CL-ML	A-4, A-6	0	0	88-100	84-100	71-100	50-80	13-29	2-11
	8-53	Clay, clay loam	CL	A-7-6, A-6	0	0	88-100	84-100	76-100	60-95	31-49	13-22
	53-81	Loam, clay loam	CL	A-6, A-4	0	0	88-100	84-100	71-100	50-80	20-34	6-14
Urban land------	---	---	---	---	---	---	---	---	---	---	---	---

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
16B:												
Orenda----------	0-6	Sandy loam, fine sandy loam, loam	SC-SM, CL-ML	A-4, A-2-4	0	0	84-100	76-100	46-95	23-75	16-25	3-8
	6-25	Clay loam, clay	MH, CL	A-7-6, A-7-5, A-6	0	0	82-100	76-100	68-100	53-95	31-61	11-28
	25-62	Loam, sandy clay loam, sandy loam	CL, SC	A-6, A-2-4	0	0	84-100	76-100	46-95	23-75	21-39	6-16
17C:												
Orenda----------	0-6	Sandy loam, fine sandy loam, loam	SC-SM, CL-ML	A-4, A-2-4	0	0	84-100	76-100	46-95	23-75	16-25	3-8
	6-25	Clay loam, clay	CL, MH	A-7-6, A-7-5, A-6	0	0	82-100	76-100	68-100	53-95	31-61	11-28
	25-62	Loam, sandy clay loam, sandy loam	SC, CL	A-6, A-2-4	0	0	84-100	76-100	46-95	23-75	21-39	6-16
Spriggs---------	0-6	Sandy loam, fine sandy loam, loam	SC-SM, CL-ML	A-4, A-2-4	0	0	84-100	76-100	46-95	23-75	16-25	3-8
	6-38	Clay loam, loam, gravelly clay loam	SC, CL	A-6, A-2-4	0	0	63-100	51-100	43-100	31-80	25-39	8-16
	38-52	Bedrock			---	---	---	---	---	---	---	---
	52-62	Bedrock			---	---	---	---	---	---	---	---
17D:												
Orenda----------	0-6	Sandy loam, fine sandy loam, loam	CL-ML, SC-SM	A-4, A-2-4	0	0	84-100	76-100	46-95	23-75	16-25	3-8
	6-25	Clay loam, clay	CL, MH	A-7-6, A-7-5, A-6	0	0	82-100	76-100	68-100	53-95	31-61	11-28
	25-62	Loam, sandy clay loam, sandy loam	CL, SC	A-6, A-2-4	0	0	84-100	76-100	46-95	23-75	21-39	6-16
Spriggs---------	0-6	Sandy loam, fine sandy loam, loam	CL-ML, SC-SM	A-4, A-2-4	0	0	84-100	76-100	46-95	23-75	16-25	3-8
	6-38	Clay loam, loam, gravelly clay loam	SC, CL	A-6, A-2-4	0	0	63-100	51-100	43-100	31-80	25-39	8-16
	38-52	Bedrock			---	---	---	---	---	---	---	---
	52-62	Bedrock			---	---	---	---	---	---	---	---
17E:												
Orenda----------	0-6	Sandy loam, fine sandy loam, loam	SC-SM, CL-ML	A-4, A-2-4	0	0	84-100	76-100	46-95	23-75	16-25	3-8
	6-25	Clay loam, clay	MH, CL	A-7-6, A-7-5, A-6	0	0	82-100	76-100	68-100	53-95	31-61	11-28
	25-62	Loam, sandy clay loam, sandy loam	CL, SC	A-6, A-2-4	0	0	84-100	76-100	46-95	23-75	21-39	6-16

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
17E:												
Spriggs---------	0-6	Sandy loam, fine sandy loam, loam	SC-SM, CL-ML	A-4, A-2-4	0	0	84-100	76-100	46-95	23-75	16-25	3-8
	6-38	Clay loam, loam, gravelly clay loam	CL, SC	A-6, A-2-4	0	0	63-100	51-100	43-100	31-80	25-39	8-16
	38-52	Bedrock			---	---	---	---	---	---	---	---
	52-62	Bedrock			---	---	---	---	---	---	---	---
18B:												
Stoneville------	0-13	Loam, silt loam	ML, CL-ML, CL	A-4, A-6	0	0-8	94-100	91-100	77-100	55-90	13-30	1-11
	13-38	Clay, clay loam, silty clay, silty clay loam	CL, MH	A-7-6, A-7-5, A-6	0	0-8	94-100	91-100	82-100	64-95	39-61	16-28
	38-48	Loam, silt loam	CL-ML, CL, ML	A-6, A-4	0	0-8	94-100	91-100	77-100	55-90	16-30	3-11
	48-72	Bedrock			---	---	---	---	---	---	---	---
19:												
Udorthents------	---	---	---	---	---	---	---	---	---	---	---	---
Urban land------	---	---	---	---	---	---	---	---	---	---	---	---
20:												
Udorthents------	---	---	---	---	---	---	---	---	---	---	---	---
21B:												
Woolwine--------	0-2	Sandy loam, fine sandy loam, loam	ML, CL, CL-ML, SC, SM, SC-SM	A-2-4, A-4, A-6	0	0	84-100	76-100	46-95	23-75	12-30	1-11
	2-28	Clay, clay loam	CL, MH	A-7-6, A-7-5, A-6	0	0	82-100	76-100	68-100	53-95	39-57	16-26
	28-42	Bedrock			---	---	---	---	---	---	---	---
	42-52	Bedrock			---	---	---	---	---	---	---	---
Clifford--------	0-7	Sandy loam, fine sandy loam, loam	SC-SM, CL-ML, SC, CL, ML, SM	A-2-4, A-4	0	0	84-100	76-100	46-95	23-75	10-24	NP-9
	7-54	Clay, clay loam	CL	A-7-6, A-6	0	0	82-100	76-100	68-100	53-95	31-45	13-21
	54-62	Sandy clay loam, loam, clay loam	SC-SM, SC, SM, ML, CL, CL-ML	A-2-4, A-4	0	0	82-100	76-100	61-100	27-80	13-27	2-10
	62-82	Loam, fine sandy loam, sandy loam	SC, CL-ML, SC-SM, SM, ML, CL	A-2-4, A-4	0	0	84-100	76-100	46-95	23-75	13-25	2-9

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
21C:												
Woolwine--------	0-2	Sandy loam, fine sandy loam, loam	ML, SM, SC-SM, CL-ML, CL, SC	A-2-4, A-4, A-6	0	0	84-100	76-100	46-95	23-75	12-30	1-11
	2-28	Clay, clay loam	MH, CL	A-7-6, A-7-5, A-6	0	0	82-100	76-100	68-100	53-95	39-57	16-26
	28-42	Bedrock			---	---	---	---	---	---	---	---
	42-52	Bedrock			---	---	---	---	---	---	---	---
Clifford--------	0-7	Sandy loam, fine sandy loam, loam	SC-SM, CL, ML, SC, CL-ML, SM	A-2-4, A-4	0	0	84-100	76-100	46-95	23-75	10-24	NP-9
	7-54	Clay, clay loam	CL	A-7-6, A-6	0	0	82-100	76-100	68-100	53-95	31-45	13-21
	54-62	Sandy clay loam, loam, clay loam	SC, CL-ML, SC-SM, CL, ML, SM	A-2-4, A-4	0	0	82-100	76-100	61-100	27-80	13-27	2-10
	62-82	Loam, fine sandy loam, sandy loam	CL, ML, SM, SC, CL-ML, SC-SM	A-2-4, A-4	0	0	84-100	76-100	46-95	23-75	13-25	2-9
21D:												
Woolwine--------	0-2	Sandy loam, fine sandy loam, loam	CL, SC-SM, SM, SC, CL-ML, ML	A-2-4, A-4, A-6	0	0	84-100	76-100	46-95	23-75	12-30	1-11
	2-28	Clay, clay loam	CL, MH	A-7-6, A-7-5, A-6	0	0	82-100	76-100	68-100	53-95	39-57	16-26
	28-42	Bedrock			---	---	---	---	---	---	---	---
	42-52	Bedrock			---	---	---	---	---	---	---	---
Clifford--------	0-7	Sandy loam, fine sandy loam, loam	ML, CL-ML, SC, SC-SM, SM, CL	A-2-4, A-4	0	0	84-100	76-100	46-95	23-75	10-24	NP-9
	7-54	Clay, clay loam	CL	A-7-6, A-6	0	0	82-100	76-100	68-100	53-95	31-45	13-21
	54-62	Sandy clay loam, loam, clay loam	SM, SC, CL-ML, CL, ML, SC-SM	A-2-4, A-4	0	0	82-100	76-100	61-100	27-80	13-27	2-10
	62-82	Loam, fine sandy loam, sandy loam	ML, CL, SC, SM, CL-ML, SC-SM	A-2-4, A-4	0	0	84-100	76-100	46-95	23-75	13-25	2-9

Table 15.—Engineering Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
21E:												
Woolwine--------	0-2	Sandy loam, fine sandy loam, loam	ML, CL, CL-ML, SM, SC-SM, SC	A-2-4, A-4, A-6	0	0	84-100	76-100	46-95	23-75	12-30	1-11
	2-28	Clay, clay loam	MH, CL	A-7-6, A-7-5, A-6	0	0	82-100	76-100	68-100	53-95	39-57	16-26
	28-42	Bedrock			---	---	---	---	---	---	---	---
	42-52	Bedrock			---	---	---	---	---	---	---	---
Clifford--------	0-7	Sandy loam, fine sandy loam, loam	ML, CL-ML, SC-SM, SM, CL, SC	A-2-4, A-4	0	0	84-100	76-100	46-95	23-75	10-24	NP-9
	7-54	Clay, clay loam	CL	A-7-6, A-6	0	0	82-100	76-100	68-100	53-95	31-45	13-21
	54-62	Sandy clay loam, loam, clay loam	SC-SM, CL-ML, SM, ML, CL, SC	A-2-4, A-4	0	0	82-100	76-100	61-100	27-80	13-27	2-10
	62-82	Loam, fine sandy loam, sandy loam	ML, CL, SM, SC-SM, CL-ML, SC	A-2-4, A-4	0	0	84-100	76-100	46-95	23-75	13-25	2-9
22C:												
Woolwine--------	0-2	Sandy loam, fine sandy loam, loam	SM, SC, CL-ML, CL, ML, SC-SM	A-2-4, A-4, A-6	0	0	84-100	76-100	46-95	23-75	12-30	1-11
	2-28	Clay, clay loam	CL, MH	A-7-6, A-7-5, A-6	0	0	82-100	76-100	68-100	53-95	39-57	16-26
	28-42	Bedrock			---	---	---	---	---	---	---	---
	42-52	Bedrock			---	---	---	---	---	---	---	---
Urban land------	---	---	---	---	---	---	---	---	---	---	---	---

Table 16.—Physical Soil Properties

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
1B:														
Ayersville-----------	0-8	15-52	28-80	12-27	1.35-1.55	4.00-42.00	0.09-0.16	0.0-2.9	0.5-2.0	.20	.32	2	5	56
	8-22	15-52	20-80	18-35	1.40-1.60	4.00-14.00	0.08-0.13	0.0-2.9	0.0-0.5	.28	.32			
	22-26	15-52	28-80	8-20	1.45-1.65	4.00-14.00	0.04-0.08	0.0-2.9	0.0-0.5	.28	.32			
	26-30	---	---	---	---	0.00-1.40	---	---	---	---	---			
	30-40	---	---	---	---	0.00-0.42	---	---	---	---	---			
1C:														
Ayersville-----------	0-8	15-52	28-80	12-27	1.35-1.55	4.00-42.00	0.09-0.16	0.0-2.9	0.5-2.0	.20	.32	2	5	56
	8-22	15-52	20-80	18-35	1.40-1.60	4.00-14.00	0.08-0.13	0.0-2.9	0.0-0.5	.28	.32			
	22-26	15-52	28-80	8-20	1.45-1.65	4.00-14.00	0.04-0.08	0.0-2.9	0.0-0.5	.28	.32			
	26-30	---	---	---	---	0.00-1.40	---	---	---	---	---			
	30-40	---	---	---	---	0.00-0.42	---	---	---	---	---			
2B:														
Buckhall-------------	0-9	24-85	0-50	10-20	1.30-1.60	14.00-42.00	0.07-0.12	0.0-2.9	0.5-2.0	.24	.24	4	3	86
	9-19	0-80	0-45	25-50	1.25-1.45	4.00-14.00	0.07-0.17	3.0-5.9	0.0-0.5	.24	.24			
	19-35	0-45	0-45	35-60	1.25-1.45	4.00-14.00	0.08-0.19	3.0-5.9	0.0-0.5	.24	.24			
	35-46	20-80	0-45	30-55	1.25-1.45	4.00-14.00	0.07-0.16	3.0-5.9	0.0-0.5	.20	.20			
	46-65	24-85	0-50	10-40	1.20-1.50	4.00-14.00	0.05-0.12	0.0-2.9	0.0-0.5	.24	.28			
2C:														
Buckhall-------------	0-9	24-85	0-50	10-20	1.30-1.60	14.00-42.00	0.07-0.12	0.0-2.9	0.5-2.0	.24	.24	4	3	86
	9-19	0-80	0-45	25-50	1.25-1.45	4.00-14.00	0.07-0.17	3.0-5.9	0.0-0.5	.24	.24			
	19-35	0-45	0-45	35-60	1.25-1.45	4.00-14.00	0.08-0.19	3.0-5.9	0.0-0.5	.24	.24			
	35-46	20-80	0-45	30-55	1.25-1.45	4.00-14.00	0.07-0.16	3.0-5.9	0.0-0.5	.20	.20			
	46-65	24-85	0-50	10-40	1.20-1.50	4.00-14.00	0.05-0.12	0.0-2.9	0.0-0.5	.24	.28			
3E:														
Buffstat-------------	0-5	0-85	0-80	6-20	1.35-1.45	4.00-14.00	0.08-0.17	0.0-2.9	1.0-2.0	.24	.43	3	8	0
	5-41	0-45	0-65	35-60	1.40-1.50	4.00-14.00	0.09-0.13	3.0-5.9	0.0-0.2	.32	.32			
	41-66	---	---	---	---	0.00-0.42	---	---	---	---	---			
Bugley---------------	0-3	0-52	28-80	7-27	1.25-1.55	14.00-42.00	0.08-0.18	0.0-2.9	0.5-2.0	.20	.43	1	8	0
	3-11	0-50	50-80	10-27	1.35-1.65	14.00-42.00	0.07-0.13	0.0-2.9	0.0-0.2	.28	.37			
	11-21	---	---	---	---	0.00-0.42	---	---	---	---	---			
4B:														
Clifford-------------	0-7	24-85	0-50	6-25	1.40-1.60	14.00-42.00	0.05-0.11	0.0-2.9	1.0-3.0	.20	.24	5	3	86
	7-54	0-45	0-45	35-55	1.25-1.50	4.00-14.00	0.07-0.19	0.0-2.9	0.0-0.5	.28	.32			
	54-62	20-80	0-50	10-30	1.40-1.60	4.00-42.00	0.08-0.18	0.0-2.9	0.0-0.5	.20	.20			
	62-82	24-85	0-50	10-27	1.40-1.60	4.00-42.00	0.06-0.13	0.0-2.9	0.0-0.5	.20	.20			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
4C:														
Clifford-------------	0-7	24-85	0-50	6-25	1.40-1.60	14.00-42.00	0.05-0.11	0.0-2.9	1.0-3.0	.20	.24	5	3	86
	7-54	0-45	0-45	35-55	1.25-1.50	4.00-14.00	0.07-0.19	0.0-2.9	0.0-0.5	.28	.32			
	54-62	20-80	0-50	10-30	1.40-1.60	4.00-42.00	0.08-0.18	0.0-2.9	0.0-0.5	.20	.20			
	62-82	24-85	0-50	10-27	1.40-1.60	4.00-42.00	0.06-0.13	0.0-2.9	0.0-0.5	.20	.20			
4D:														
Clifford-------------	0-7	24-85	0-50	6-25	1.40-1.60	14.00-42.00	0.05-0.11	0.0-2.9	1.0-3.0	.20	.24	5	3	86
	7-54	0-45	0-45	35-55	1.25-1.50	4.00-14.00	0.07-0.19	0.0-2.9	0.0-0.5	.28	.32			
	54-62	20-80	0-50	10-30	1.40-1.60	4.00-42.00	0.08-0.18	0.0-2.9	0.0-0.5	.20	.20			
	62-82	24-85	0-50	10-27	1.40-1.60	4.00-42.00	0.06-0.13	0.0-2.9	0.0-0.5	.20	.20			
4E:														
Clifford-------------	0-7	24-85	0-50	6-25	1.40-1.60	14.00-42.00	0.05-0.11	0.0-2.9	1.0-3.0	.20	.24	5	3	86
	7-54	0-45	0-45	35-55	1.25-1.50	4.00-14.00	0.07-0.19	0.0-2.9	0.0-0.5	.28	.32			
	54-62	20-80	0-50	10-30	1.40-1.60	4.00-42.00	0.08-0.18	0.0-2.9	0.0-0.5	.20	.20			
	62-82	24-85	0-50	10-27	1.40-1.60	4.00-42.00	0.06-0.13	0.0-2.9	0.0-0.5	.20	.20			
5A:														
Codorus--------------	0-8	15-52	28-80	15-25	1.20-1.40	4.00-14.00	0.12-0.18	0.0-2.9	2.0-4.0	.24	.24	5	5	56
	8-47	15-52	20-80	18-35	1.20-1.50	4.00-14.00	0.13-0.17	0.0-2.9	0.0-0.5	.24	.24			
	47-62	15-100	0-80	3-25	1.20-1.50	4.00-141.00	0.09-0.23	0.0-2.9	0.0-0.5	.24	.24			
6A:														
Colvard--------------	0-12	32-85	0-50	8-18	1.45-1.65	14.00-42.00	0.07-0.12	0.0-2.9	1.0-2.0	.24	.24	5	3	86
	12-43	32-100	0-50	4-18	1.45-1.65	14.00-42.00	0.07-0.12	0.0-2.9	0.5-1.0	.24	.24			
	43-62	32-100	0-50	4-18	1.45-1.65	14.00-42.00	0.07-0.12	0.0-2.9	0.5-1.0	.24	.24			
7B:														
Creedmoor------------	0-11	24-85	0-50	7-20	1.55-1.70	14.00-42.00	0.06-0.12	0.0-2.9	0.5-2.0	.28	.28	3	3	86
	11-47	0-45	0-65	35-60	1.30-1.50	0.01-0.42	0.10-0.15	6.0-8.9	0.0-0.5	.32	.32			
	47-67	20-85	0-50	5-35	1.60-1.95	0.01-0.42	0.05-0.12	0.0-2.9	0.0-0.5	.37	.37			
	67-71	---	---	---	---	0.00-1.40	---	---	---	---	---			
8A:														
Delanco--------------	0-10	24-82	0-50	5-20	1.10-1.30	4.00-14.00	0.10-0.22	0.0-2.9	2.0-4.0	.24	.24	5	5	56
	10-26	20-80	0-50	18-35	1.40-1.60	1.00-4.00	0.09-0.19	3.0-5.9	0.0-0.5	.32	.32			
	26-37	0-80	0-50	18-40	1.40-1.60	1.00-4.00	0.05-0.12	3.0-5.9	0.0-0.5	.32	.32			
	37-57	20-91	0-50	5-35	1.50-1.70	4.00-14.00	0.06-0.13	0.0-2.9	0.0-0.5	.28	.32			
	57-80	20-100	0-50	2-35	1.50-1.70	4.00-14.00	0.02-0.05	0.0-2.9	0.0-0.5	.28	.32			
9B:														
Dyke-----------------	0-6	0-52	28-80	10-25	1.20-1.40	4.00-42.00	0.11-0.20	0.0-2.9	0.1-2.0	.32	.32	4	5	56
	6-65	0-45	0-45	35-60	1.25-1.55	4.00-14.00	0.08-0.12	3.0-5.9	0.0-0.5	.28	.28			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
9C:														
Dyke-----------------	0-6	0-52	28-80	10-25	1.20-1.40	4.00-42.00	0.11-0.20	0.0-2.9	0.1-2.0	.32	.32	4	5	56
	6-65	0-45	0-45	35-60	1.25-1.55	4.00-14.00	0.08-0.12	3.0-5.9	0.0-0.5	.28	.28			
10A:														
Elsinboro------------	0-11	24-82	0-50	8-18	1.25-1.40	4.00-14.00	0.07-0.12	0.0-2.9	1.0-3.0	.28	.28	5	5	56
	11-38	20-80	0-50	18-34	1.30-1.50	4.00-14.00	0.09-0.20	0.0-2.9	0.0-0.5	.28	.28			
	38-60	24-82	0-50	8-25	1.35-1.55	4.00-42.00	0.06-0.13	0.0-2.9	0.0-0.5	.17	.20			
11A:														
Leaksville-----------	0-9	0-52	28-80	10-25	1.35-1.50	4.00-14.00	0.10-0.18	0.0-2.9	0.5-2.0	.32	.43	3	6	48
	9-18	0-45	0-60	35-60	1.30-1.45	0.01-0.42	0.06-0.15	6.0-8.9	0.5-1.0	.24	.24			
	18-24	0-52	15-65	10-40	1.35-1.50	0.42-1.40	0.04-0.08	3.0-5.9	0.0-0.5	.24	.28			
	24-30	---	---	---	---	0.00-1.40	---	---	---	---	---			
	30-40	---	---	---	---	0.00-0.42	---	---	---	---	---			
12C:														
Littlejoe------------	0-8	0-52	28-80	12-27	1.10-1.40	4.00-42.00	0.11-0.20	0.0-2.9	0.5-2.0	.37	.37	4	8	0
	8-20	0-45	0-60	30-60	1.40-1.60	4.00-14.00	0.11-0.12	3.0-5.9	0.0-0.5	.28	.28			
	20-45	0-45	0-60	35-60	1.40-1.60	4.00-14.00	0.07-0.11	3.0-5.9	0.0-0.5	.28	.28			
	45-59	---	---	---	---	0.00-1.40	---	---	---	---	---			
	59-69	---	---	---	---	0.00-0.42	---	---	---	---	---			
12D:														
Littlejoe------------	0-8	0-52	28-80	12-27	1.10-1.40	4.00-42.00	0.11-0.20	0.0-2.9	0.5-2.0	.37	.37	4	8	0
	8-20	0-45	0-60	30-60	1.40-1.60	4.00-14.00	0.11-0.12	3.0-5.9	0.0-0.5	.28	.28			
	20-45	0-45	0-60	35-60	1.40-1.60	4.00-14.00	0.07-0.11	3.0-5.9	0.0-0.5	.28	.28			
	45-59	---	---	---	---	0.00-1.40	---	---	---	---	---			
	59-69	---	---	---	---	0.00-0.42	---	---	---	---	---			
13B:														
Mayodan--------------	0-6	24-85	0-50	5-20	1.40-1.65	14.00-42.00	0.05-0.12	0.0-2.9	0.5-2.0	.24	.24	4	3	86
	6-10	20-85	0-49	10-40	1.30-1.40	4.00-14.00	0.04-0.10	0.0-2.9	0.5-1.0	.32	.32			
	10-48	0-45	0-45	35-60	1.25-1.55	4.00-14.00	0.06-0.16	3.0-5.9	0.0-0.5	.28	.28			
	48-63	20-85	0-50	10-35	1.30-1.60	4.00-14.00	0.08-0.21	0.0-2.9	0.0-0.2	.28	.28			
13C:														
Mayodan--------------	0-6	24-85	0-50	5-20	1.40-1.65	14.00-42.00	0.05-0.12	0.0-2.9	0.5-2.0	.24	.24	4	3	86
	6-10	20-85	0-49	10-40	1.30-1.40	4.00-14.00	0.04-0.10	0.0-2.9	0.5-1.0	.32	.32			
	10-48	0-45	0-45	35-60	1.25-1.55	4.00-14.00	0.06-0.16	3.0-5.9	0.0-0.5	.28	.28			
	48-63	20-85	0-50	10-35	1.30-1.60	4.00-14.00	0.08-0.21	0.0-2.9	0.0-0.2	.28	.28			
14B:														
Minnieville----------	0-8	20-52	15-50	10-32	1.25-1.35	4.00-14.00	0.10-0.20	0.0-2.9	1.0-2.0	.37	.37	5	6	48
	8-53	0-45	0-45	35-60	1.25-1.45	4.00-14.00	0.10-0.16	3.0-5.9	0.0-0.5	.24	.24			
	53-81	20-52	15-50	20-40	1.25-1.45	4.00-14.00	0.10-0.16	0.0-2.9	0.0-0.5	.24	.24			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
14C:														
Minnieville----------	0-8	20-52	15-50	10-32	1.25-1.35	4.00-14.00	0.10-0.20	0.0-2.9	1.0-2.0	.37	.37	5	6	48
	8-53	0-45	0-45	35-60	1.25-1.45	4.00-14.00	0.10-0.16	3.0-5.9	0.0-0.5	.24	.24			
	53-81	20-52	15-50	20-40	1.25-1.45	4.00-14.00	0.10-0.16	0.0-2.9	0.0-0.5	.24	.24			
14D:														
Minnieville----------	0-8	20-52	15-50	10-32	1.25-1.35	4.00-14.00	0.10-0.20	0.0-2.9	1.0-2.0	.37	.37	5	6	48
	8-53	0-45	0-45	35-60	1.25-1.45	4.00-14.00	0.10-0.16	3.0-5.9	0.0-0.5	.24	.24			
	53-81	20-52	15-50	20-40	1.25-1.45	4.00-14.00	0.10-0.16	0.0-2.9	0.0-0.5	.24	.24			
15C:														
Minnieville----------	0-8	20-52	15-50	10-32	1.25-1.35	4.00-14.00	0.10-0.20	0.0-2.9	1.0-2.0	.37	.37	5	6	48
	8-53	0-45	0-45	35-60	1.25-1.45	4.00-14.00	0.10-0.16	3.0-5.9	0.0-0.5	.24	.24			
	53-81	20-52	15-50	20-40	1.25-1.45	4.00-14.00	0.10-0.16	0.0-2.9	0.0-0.5	.24	.24			
Urban land-----------	---	---	---	---	---	---	---	---	---	---	---	--	---	---
16B:														
Orenda---------------	0-6	24-85	0-50	10-20	1.25-1.35	4.00-14.00	0.06-0.11	0.0-2.9	1.0-2.0	.20	.20	5	3	86
	6-25	0-45	0-45	27-60	1.25-1.45	1.40-4.00	0.10-0.18	3.0-5.9	0.0-0.5	.24	.28			
	25-62	24-85	0-50	15-35	1.45-1.65	4.00-14.00	0.10-0.19	0.0-2.9	0.0-0.5	.32	.37			
17C:														
Orenda---------------	0-6	24-85	0-50	10-20	1.25-1.35	4.00-14.00	0.06-0.11	0.0-2.9	1.0-2.0	.20	.20	5	3	86
	6-25	0-45	0-45	27-60	1.25-1.45	1.40-4.00	0.10-0.18	3.0-5.9	0.0-0.5	.24	.28			
	25-62	24-85	0-50	15-35	1.45-1.65	4.00-14.00	0.10-0.19	0.0-2.9	0.0-0.5	.32	.37			
Spriggs--------------	0-6	24-85	0-50	10-20	1.30-1.40	4.00-42.00	0.07-0.11	0.0-2.9	0.5-2.0	.20	.20	3	3	86
	6-38	20-52	15-50	20-35	1.33-1.40	4.00-14.00	0.09-0.13	0.0-2.9	0.0-0.5	.37	.43			
	38-52	---	---	---	---	0.00-1.40	---	---	---	---	---			
	52-62	---	---	---	---	0.00-0.42	---	---	---	---	---			
17D:														
Orenda---------------	0-6	24-85	0-50	10-20	1.25-1.35	4.00-14.00	0.06-0.11	0.0-2.9	1.0-2.0	.20	.20	5	3	86
	6-25	0-45	0-45	27-60	1.25-1.45	1.40-4.00	0.10-0.18	3.0-5.9	0.0-0.5	.24	.28			
	25-62	24-85	0-50	15-35	1.45-1.65	4.00-14.00	0.10-0.19	0.0-2.9	0.0-0.5	.32	.37			
Spriggs--------------	0-6	24-85	0-50	10-20	1.30-1.40	4.00-42.00	0.07-0.11	0.0-2.9	0.5-2.0	.20	.20	3	3	86
	6-38	20-52	15-50	20-35	1.33-1.40	4.00-14.00	0.09-0.13	0.0-2.9	0.0-0.5	.37	.43			
	38-52	---	---	---	---	0.00-1.40	---	---	---	---	---			
	52-62	---	---	---	---	0.00-0.42	---	---	---	---	---			
17E:														
Orenda---------------	0-6	24-85	0-50	10-20	1.25-1.35	4.00-14.00	0.06-0.11	0.0-2.9	1.0-2.0	.20	.20	5	3	86
	6-25	0-45	0-45	27-60	1.25-1.45	1.40-4.00	0.10-0.18	3.0-5.9	0.0-0.5	.24	.28			
	25-62	24-85	0-50	15-35	1.45-1.65	4.00-14.00	0.10-0.19	0.0-2.9	0.0-0.5	.32	.37			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
17E:														
Spriggs--------------	0-6	24-85	0-50	10-20	1.30-1.40	4.00-42.00	0.07-0.11	0.0-2.9	0.5-2.0	.20	.20	3	3	86
	6-38	20-52	15-50	20-35	1.33-1.40	4.00-14.00	0.09-0.13	0.0-2.9	0.0-0.5	.37	.43			
	38-52	---	---	---	---	0.00-1.40	---	---	---	---	---			
	52-62	---	---	---	---	0.00-0.42	---	---	---	---	---			
18B:														
Stoneville-----------	0-13	0-52	28-80	7-26	1.35-1.55	4.00-14.00	0.09-0.20	0.0-2.9	0.5-2.0	.32	.32	4	5	56
	13-38	0-45	0-65	35-60	1.25-1.40	4.00-14.00	0.12-0.17	3.0-5.9	0.0-0.5	.28	.28			
	38-48	0-52	28-80	10-26	1.30-1.45	4.00-14.00	0.11-0.20	0.0-2.9	0.0-0.5	.24	.24			
	48-72	---	---	---	---	0.00-1.40	---	---	---	---	---			
19:														
Udorthents-----------	---	---	---	---	---	---	---	---	---	---	---	--	---	---
Urban land-----------	---	---	---	---	---	---	---	---	---	---	---	--	---	---
20:														
Udorthents-----------	---	---	---	---	---	---	---	---	---	---	---	--	---	---
21B:														
Woolwine-------------	0-2	24-85	0-50	6-25	1.40-1.60	14.00-42.00	0.05-0.11	0.0-2.9	1.0-3.0	.15	.20	2	3	86
	2-28	0-45	0-45	35-55	1.25-1.50	4.00-14.00	0.10-0.15	0.0-2.9	0.0-0.5	.28	.32			
	28-42	---	---	---	---	0.00-1.40	---	---	---	---	---			
	42-52	---	---	---	---	0.00-0.42	---	---	---	---	---			
Clifford-------------	0-7	24-85	0-50	6-25	1.40-1.60	14.00-42.00	0.05-0.11	0.0-2.9	1.0-3.0	.20	.24	5	3	86
	7-54	0-45	0-45	35-55	1.25-1.50	4.00-14.00	0.07-0.19	0.0-2.9	0.0-0.5	.28	.32			
	54-62	20-80	0-50	10-30	1.40-1.60	4.00-42.00	0.08-0.18	0.0-2.9	0.0-0.5	.20	.20			
	62-82	24-85	0-50	10-27	1.40-1.60	4.00-42.00	0.06-0.13	0.0-2.9	0.0-0.5	.20	.20			
21C:														
Woolwine-------------	0-2	24-85	0-50	6-25	1.40-1.60	14.00-42.00	0.05-0.11	0.0-2.9	1.0-3.0	.15	.20	2	3	86
	2-28	0-45	0-45	35-55	1.25-1.50	4.00-14.00	0.10-0.15	0.0-2.9	0.0-0.5	.28	.32			
	28-42	---	---	---	---	0.00-1.40	---	---	---	---	---			
	42-52	---	---	---	---	0.00-0.42	---	---	---	---	---			
Clifford-------------	0-7	24-85	0-50	6-25	1.40-1.60	14.00-42.00	0.05-0.11	0.0-2.9	1.0-3.0	.20	.24	5	3	86
	7-54	0-45	0-45	35-55	1.25-1.50	4.00-14.00	0.07-0.19	0.0-2.9	0.0-0.5	.28	.32			
	54-62	20-80	0-50	10-30	1.40-1.60	4.00-42.00	0.08-0.18	0.0-2.9	0.0-0.5	.20	.20			
	62-82	24-85	0-50	10-27	1.40-1.60	4.00-42.00	0.06-0.13	0.0-2.9	0.0-0.5	.20	.20			
21D:														
Woolwine-------------	0-2	24-85	0-50	6-25	1.40-1.60	14.00-42.00	0.05-0.11	0.0-2.9	1.0-3.0	.15	.20	2	3	86
	2-28	0-45	0-45	35-55	1.25-1.50	4.00-14.00	0.10-0.15	0.0-2.9	0.0-0.5	.28	.32			
	28-42	---	---	---	---	0.00-1.40	---	---	---	---	---			
	42-52	---	---	---	---	0.00-0.42	---	---	---	---	---			

Table 16.—Physical Soil Properties—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	um/sec	In/in	Pct	Pct					
21D:														
Clifford-------------	0-7	24-85	0-50	6-25	1.40-1.60	14.00-42.00	0.05-0.11	0.0-2.9	1.0-3.0	.20	.24	5	3	86
	7-54	0-45	0-45	35-55	1.25-1.50	4.00-14.00	0.07-0.19	0.0-2.9	0.0-0.5	.28	.32			
	54-62	20-80	0-50	10-30	1.40-1.60	4.00-42.00	0.08-0.18	0.0-2.9	0.0-0.5	.20	.20			
	62-82	24-85	0-50	10-27	1.40-1.60	4.00-42.00	0.06-0.13	0.0-2.9	0.0-0.5	.20	.20			
21E:														
Woolwine-------------	0-2	24-85	0-50	6-25	1.40-1.60	14.00-42.00	0.05-0.11	0.0-2.9	1.0-3.0	.15	.20	2	3	86
	2-28	0-45	0-45	35-55	1.25-1.50	4.00-14.00	0.10-0.15	0.0-2.9	0.0-0.5	.28	.32			
	28-42	---	---	---	---	0.00-1.40	---	---	---	---	---			
	42-52	---	---	---	---	0.00-0.42	---	---	---	---	---			
Clifford-------------	0-7	24-85	0-50	6-25	1.40-1.60	14.00-42.00	0.05-0.11	0.0-2.9	1.0-3.0	.20	.24	5	3	86
	7-54	0-45	0-45	35-55	1.25-1.50	4.00-14.00	0.07-0.19	0.0-2.9	0.0-0.5	.28	.32			
	54-62	20-80	0-50	10-30	1.40-1.60	4.00-42.00	0.08-0.18	0.0-2.9	0.0-0.5	.20	.20			
	62-82	24-85	0-50	10-27	1.40-1.60	4.00-42.00	0.06-0.13	0.0-2.9	0.0-0.5	.20	.20			
22C:														
Woolwine-------------	0-2	24-85	0-50	6-25	1.40-1.60	14.00-42.00	0.05-0.11	0.0-2.9	1.0-3.0	.15	.20	2	3	86
	2-28	0-45	0-45	35-55	1.25-1.50	4.00-14.00	0.10-0.15	0.0-2.9	0.0-0.5	.28	.32			
	28-42	---	---	---	---	0.00-1.40	---	---	---	---	---			
	42-52	---	---	---	---	0.00-0.42	---	---	---	---	---			
Urban land-----------	---	---	---	---	---	---	---	---	---	---	---	--	---	---
DAM:														
Dam------------------	---	---	---	---	---	---	---	---	---	---	---	--	---	---
W:														
Water----------------	---	---	---	---	---	---	---	---	---	---	---	--	---	---

Table 17.—Chemical Soil Properties

(Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
1B:				
Ayersville	0-8	4.1-11	3.1-8.4	4.5-6.0
	8-22	4.5-9.9	3.4-7.4	4.5-5.5
	22-26	2.0-6.1	1.5-4.6	4.5-5.5
	26-30	---	---	---
	30-40	---	---	---
1C:				
Ayersville	0-8	4.1-11	3.1-8.4	4.5-6.0
	8-22	4.5-9.9	3.4-7.4	4.5-5.5
	22-26	2.0-6.1	1.5-4.6	4.5-5.5
	26-30	---	---	---
	30-40	---	---	---
2B:				
Buckhall	0-9	3.6-9.5	2.7-7.1	4.5-5.5
	9-19	3.8-11	2.8-8.3	4.5-5.5
	19-35	3.8-11	2.8-8.3	4.5-5.5
	35-46	8.8-16	6.6-12	4.5-5.5
	46-65	2.5-11	1.9-8.3	4.5-5.5
2C:				
Buckhall	0-9	3.6-9.5	2.7-7.1	4.5-5.5
	9-19	3.8-11	2.8-8.3	4.5-5.5
	19-35	3.8-11	2.8-8.3	4.5-5.5
	35-46	8.8-16	6.6-12	4.5-5.5
	46-65	2.5-11	1.9-8.3	4.5-5.5
3E:				
Buffstat	0-5	4.3-12	3.3-8.6	4.5-6.5
	5-41	12-22	9.2-16	4.5-5.5
	41-66	---	---	---
Bugley	0-3	3.6-14	2.7-10	3.6-5.5
	3-11	3.5-13	2.6-9.5	3.6-5.5
	11-21	---	---	---
4B:				
Clifford	0-7	2.9-9.2	2.1-6.9	3.6-6.0
	7-54	3.5-6.6	2.6-5.0	3.6-6.0
	54-62	1.0-4.1	0.8-3.1	3.6-6.0
	62-82	1.0-4.1	0.8-3.1	3.6-6.0
4C:				
Clifford	0-7	2.9-9.2	2.1-6.9	3.6-6.0
	7-54	3.5-6.6	2.6-5.0	3.6-6.0
	54-62	1.0-4.1	0.8-3.1	3.6-6.0
	62-82	1.0-4.1	0.8-3.1	3.6-6.0
4D:				
Clifford	0-7	2.9-9.2	2.1-6.9	3.6-6.0
	7-54	3.5-6.6	2.6-5.0	3.6-6.0
	54-62	1.0-4.1	0.8-3.1	3.6-6.0
	62-82	1.0-4.1	0.8-3.1	3.6-6.0
4E:				
Clifford	0-7	2.9-9.2	2.1-6.9	3.6-6.0
	7-54	3.5-6.6	2.6-5.0	3.6-6.0
	54-62	1.0-4.1	0.8-3.1	3.6-6.0
	62-82	1.0-4.1	0.8-3.1	3.6-6.0

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
5A:				
Codorus	0-8	9.8-18	7.3-13	4.5-6.0
	8-47	6.3-13	4.7-10	5.1-6.5
	47-62	1.1-9.9	0.8-7.4	5.1-6.5
6A:				
Colvard	0-12	5.0-11	3.8-8.1	5.1-7.8
	12-43	2.5-8.6	1.9-6.4	5.1-7.8
	43-62	2.5-8.6	1.9-6.4	5.1-7.8
7B:				
Creedmoor	0-11	3.6-12	2.7-8.6	3.5-5.5
	11-47	12-22	9.2-17	3.5-5.5
	47-67	1.8-13	1.3-10	3.5-5.5
	67-71	---	---	---
8A:				
Delanco	0-10	5.8-14	4.4-10	3.5-6.0
	10-26	4.5-9.9	3.4-7.4	3.5-6.0
	26-37	4.5-9.9	3.4-7.4	3.5-6.0
	37-57	1.3-11	1.0-8.3	3.5-6.0
	57-80	1.3-11	1.0-8.3	3.5-6.0
9B:				
Dyke	0-6	2.7-11	2.0-8.1	4.5-5.5
	6-65	8.8-16	6.6-12	4.5-5.5
9C:				
Dyke	0-6	2.7-11	2.0-8.1	4.5-5.5
	6-65	8.8-16	6.6-12	4.5-5.5
10A:				
Elsinboro	0-11	4.2-11	3.2-8.4	4.5-5.5
	11-38	4.5-9.6	3.4-7.2	4.5-5.5
	38-60	2.0-9.6	1.5-7.2	4.5-5.5
11A:				
Leaksville	0-9	6.1-17	4.6-13	5.1-6.5
	9-18	19-32	14-24	6.1-7.8
	18-24	5.0-21	3.8-16	6.1-7.8
	24-30	---	---	---
	30-40	---	---	---
12C:				
Littlejoe	0-8	4.1-11	3.1-8.4	4.5-5.5
	8-20	8.8-16	6.6-12	4.5-5.5
	20-45	8.8-16	6.6-12	4.5-5.5
	45-59	---	---	---
	59-69	---	---	---
12D:				
Littlejoe	0-8	4.1-11	3.1-8.4	4.5-5.5
	8-20	8.8-16	6.6-12	4.5-5.5
	20-45	8.8-16	6.6-12	4.5-5.5
	45-59	---	---	---
	59-69	---	---	---
13B:				
Mayodan	0-6	2.9-12	2.2-8.6	4.5-6.0
	6-10	8.1-16	6.1-12	4.5-6.0
	10-48	12-22	9.2-17	4.5-5.5
	48-63	3.5-13	2.6-9.5	4.5-5.5

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
13C:				
Mayodan--------------	0-6	2.9-12	2.2-8.6	4.5-6.0
	6-10	8.1-16	6.1-12	4.5-6.0
	10-48	12-22	9.2-17	4.5-5.5
	48-63	3.5-13	2.6-9.5	4.5-5.5
14B:				
Minnieville----------	0-8	3.2-7.2	2.4-5.4	5.1-6.0
	8-53	3.5-7.1	2.6-5.3	5.1-6.0
	53-81	2.0-5.1	1.5-3.8	5.1-6.0
14C:				
Minnieville----------	0-8	3.2-7.2	2.4-5.4	5.1-6.0
	8-53	3.5-7.1	2.6-5.3	5.1-6.0
	53-81	2.0-5.1	1.5-3.8	5.1-6.0
14D:				
Minnieville----------	0-8	3.2-7.2	2.4-5.4	5.1-6.0
	8-53	3.5-7.1	2.6-5.3	5.1-6.0
	53-81	2.0-5.1	1.5-3.8	5.1-6.0
15C:				
Minnieville----------	0-8	3.2-7.2	2.4-5.4	5.1-6.0
	8-53	3.5-7.1	2.6-5.3	5.1-6.0
	53-81	2.0-5.1	1.5-3.8	5.1-6.0
Urban land-----------	---	---	---	---
16B:				
Orenda---------------	0-6	5.8-12	4.3-8.6	5.1-6.0
	6-25	12-22	9.2-17	5.1-6.0
	25-62	7.0-13	5.2-10	5.1-6.0
17C:				
Orenda---------------	0-6	5.8-12	4.3-8.6	5.1-6.0
	6-25	12-22	9.2-17	5.1-6.0
	25-62	7.0-13	5.2-10	5.1-6.0
Spriggs--------------	0-6	4.6-12	3.5-8.6	4.5-6.0
	6-38	7.0-13	5.2-10	4.5-6.0
	38-52	---	---	---
	52-62	---	---	---
17D:				
Orenda---------------	0-6	5.8-12	4.3-8.6	5.1-6.0
	6-25	12-22	9.2-17	5.1-6.0
	25-62	7.0-13	5.2-10	5.1-6.0
Spriggs--------------	0-6	4.6-12	3.5-8.6	4.5-6.0
	6-38	7.0-13	5.2-10	4.5-6.0
	38-52	---	---	---
	52-62	---	---	---
17E:				
Orenda---------------	0-6	5.8-12	4.3-8.6	5.1-6.0
	6-25	12-22	9.2-17	5.1-6.0
	25-62	7.0-13	5.2-10	5.1-6.0
Spriggs--------------	0-6	4.6-12	3.5-8.6	4.5-6.0
	6-38	7.0-13	5.2-10	4.5-6.0
	38-52	---	---	---
	52-62	---	---	---

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
18B:				
Stoneville	0-13	2.9-11	2.2-8.2	4.5-6.0
	13-38	8.8-16	6.6-12	4.5-6.0
	38-48	2.5-7.6	1.9-5.7	4.5-6.0
	48-72	---	---	---
19:				
Udorthents	---	---	---	---
Urban land	---	---	---	---
20:				
Udorthents	---	---	---	---
21B:				
Woolwine	0-2	2.9-9.2	2.1-6.9	3.6-6.0
	2-28	3.5-6.6	2.6-5.0	3.6-6.0
	28-42	---	---	---
	42-52	---	---	---
Clifford	0-7	2.9-9.2	2.1-6.9	3.6-6.0
	7-54	3.5-6.6	2.6-5.0	3.6-6.0
	54-62	1.0-4.1	0.8-3.1	3.6-6.0
	62-82	1.0-4.1	0.8-3.1	3.6-6.0
21C:				
Woolwine	0-2	2.9-9.2	2.1-6.9	3.6-6.0
	2-28	3.5-6.6	2.6-5.0	3.6-6.0
	28-42	---	---	---
	42-52	---	---	---
Clifford	0-7	2.9-9.2	2.1-6.9	3.6-6.0
	7-54	3.5-6.6	2.6-5.0	3.6-6.0
	54-62	1.0-4.1	0.8-3.1	3.6-6.0
	62-82	1.0-4.1	0.8-3.1	3.6-6.0
21D:				
Woolwine	0-2	2.9-9.2	2.1-6.9	3.6-6.0
	2-28	3.5-6.6	2.6-5.0	3.6-6.0
	28-42	---	---	---
	42-52	---	---	---
Clifford	0-7	2.9-9.2	2.1-6.9	3.6-6.0
	7-54	3.5-6.6	2.6-5.0	3.6-6.0
	54-62	1.0-4.1	0.8-3.1	3.6-6.0
	62-82	1.0-4.1	0.8-3.1	3.6-6.0
21E:				
Woolwine	0-2	2.9-9.2	2.1-6.9	3.6-6.0
	2-28	3.5-6.6	2.6-5.0	3.6-6.0
	28-42	---	---	---
	42-52	---	---	---
Clifford	0-7	2.9-9.2	2.1-6.9	3.6-6.0
	7-54	3.5-6.6	2.6-5.0	3.6-6.0
	54-62	1.0-4.1	0.8-3.1	3.6-6.0
	62-82	1.0-4.1	0.8-3.1	3.6-6.0
22C:				
Woolwine	0-2	2.9-9.2	2.1-6.9	3.6-6.0
	2-28	3.5-6.6	2.6-5.0	3.6-6.0
	28-42	---	---	---
	42-52	---	---	---

Table 17.—Chemical Soil Properties—Continued

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil reaction
	Inches	meq/100 g	meq/100 g	pH
22C:				
Urban land	---	---	---	---
DAM:				
Dam	---	---	---	---
W:				
Water	---	---	---	---

Table 18.—Water Features

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
1B:										
Ayersville	B	High	Jan-Dec	---	---	---	---	None	---	None
1C:										
Ayersville	B	High	Jan-Dec	---	---	---	---	None	---	None
2B:										
Buckhall	B	Medium	Jan-Dec	---	---	---	---	None	---	None
2C:										
Buckhall	B	Medium	Jan-Dec	---	---	---	---	None	---	None
3E:										
Buffstat	B	High	Jan-Dec	---	---	---	---	None	---	None
Bugley	C/D	Very high	Jan-Dec	---	---	---	---	None	---	None
4B:										
Clifford	B	Medium	Jan-Dec	---	---	---	---	None	---	None
4C:										
Clifford	B	Medium	Jan-Dec	---	---	---	---	None	---	None
4D:										
Clifford	B	High	Jan-Dec	---	---	---	---	None	---	None
4E:										
Clifford	B	High	Jan-Dec	---	---	---	---	None	---	None
5A:										
Codorus	C	Low	Jan-Apr	1.0-2.0	>6.0	---	---	None	Very brief	Frequent
			May-Oct	---	---	---	---	None	---	None
			Nov-Dec	1.0-2.0	>6.0	---	---	None	Very brief	Frequent
6A:										
Colvard	B	Negligible	Jan-Apr	4.0-6.6	>6.0	---	---	None	Very brief	Occasional
			May-Oct	---	---	---	---	None	---	None
			Nov-Dec	4.0-6.6	>6.0	---	---	None	Very brief	Occasional

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
7B:										
Creedmoor	C	Very high	Jan-Apr	1.0-2.5	2.5-4.0	---	---	None	---	None
			May-Nov	---	---	---	---	None	---	None
			Dec	1.0-2.5	2.5-4.0	---	---	None	---	None
8A:										
Delanco	C	Medium	Jan-May	1.0-2.5	>6.0	---	---	None	Very brief	Rare
			Jun-Oct	---	---	---	---	None	---	None
			Nov-Dec	1.0-2.5	>6.0	---	---	None	Very brief	Rare
9B:										
Dyke	B	Medium	Jan-Dec	---	---	---	---	None	---	None
9C:										
Dyke	B	Medium	Jan-Dec	---	---	---	---	None	---	None
10A:										
Elsinboro	B	Low	Jan-May	>5.0	>6.0	---	---	None	Very brief	Rare
			Jun-Oct	---	---	---	---	None	---	None
			Nov-Dec	>5.0	>6.0	---	---	None	Very brief	Rare
11A:										
Leaksville	D	High	Jan-May	0.0-1.0	0.5-1.5	---	---	None	---	None
			Jun-Oct	---	---	---	---	None	---	None
			Nov-Dec	0.0-1.0	0.5-1.5	---	---	None	---	None
12C:										
Littlejoe	B	Medium	Jan-Dec	---	---	---	---	None	---	None
12D:										
Littlejoe	B	High	Jan-Dec	---	---	---	---	None	---	None
13B:										
Mayodan	B	Medium	Jan-Dec	---	---	---	---	None	---	None
13C:										
Mayodan	B	Medium	Jan-Dec	---	---	---	---	None	---	None
14B:										
Minnieville	C	Medium	Jan-Dec	---	---	---	---	None	---	None
14C:										
Minnieville	C	Medium	Jan-Dec	---	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
14D:										
Minnieville	C	High	Jan-Dec	---	---	---	---	None	---	None
15C:										
Minnieville	C	Medium	Jan-Dec	---	---	---	---	None	---	None
Urban land	---	---	Jan-Dec	---	---	---	---	None	---	None
16B:										
Orenda	B	High	Jan-Dec	---	---	---	---	None	---	None
17C:										
Orenda	B	High	Jan-Dec	---	---	---	---	None	---	None
Spriggs	C	High	Jan-Dec	---	---	---	---	None	---	None
17D:										
Orenda	B	Very high	Jan-Dec	---	---	---	---	None	---	None
Spriggs	C	Very high	Jan-Dec	---	---	---	---	None	---	None
17E:										
Orenda	B	Very high	Jan-Dec	---	---	---	---	None	---	None
Spriggs	C	Very high	Jan-Dec	---	---	---	---	None	---	None
18B:										
Stoneville	B	Medium	Jan-Dec	---	---	---	---	None	---	None
19:										
Udorthents	---	---	Jan-Dec	---	---	---	---	None	---	None
Urban land	---	---	Jan-Dec	---	---	---	---	None	---	None
20:										
Udorthents	---	---	Jan-Dec	---	---	---	---	None	---	None
21B:										
Woolwine	B	High	Jan-Dec	---	---	---	---	None	---	None
Clifford	B	Medium	Jan-Dec	---	---	---	---	None	---	None
21C:										
Woolwine	B	High	Jan-Dec	---	---	---	---	None	---	None
Clifford	B	Medium	Jan-Dec	---	---	---	---	None	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
21D:										
Woolwine	B	High	Jan-Dec	---	---	---	---	None	---	None
Clifford	B	High	Jan-Dec	---	---	---	---	None	---	None
21E:										
Woolwine	B	High	Jan-Dec	---	---	---	---	None	---	None
Clifford	B	High	Jan-Dec	---	---	---	---	None	---	None
22C:										
Woolwine	B	High	Jan-Dec	---	---	---	---	None	---	None
Urban land	---	---	Jan-Dec	---	---	---	---	None	---	None

Table 19.—Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
1B:							
Ayersville	Paralithic bedrock	20-40	---	Moderately cemented	None	Low	High
	Lithic bedrock	20-40	---	Indurated			
1C:							
Ayersville	Lithic bedrock	20-40	---	Indurated	None	Low	High
	Paralithic bedrock	20-40	---	Moderately cemented			
2B:							
Buckhall	---	---	---	---	Moderate	Moderate	Moderate
2C:							
Buckhall	---	---	---	---	Moderate	Moderate	Moderate
3E:							
Buffstat	Paralithic bedrock	40-60	---	Weakly cemented	None	Moderate	High
Bugley	Lithic bedrock	10-20	---	Indurated	None	Low	High
4B:							
Clifford	---	---	---	---	Moderate	Moderate	High
4C:							
Clifford	---	---	---	---	Moderate	Moderate	High
4D:							
Clifford	---	---	---	---	Moderate	Moderate	Moderate
4E:							
Clifford	---	---	---	---	Moderate	Moderate	Moderate
5A:							
Codorus	---	---	---	---	High	High	Moderate
6A:							
Colvard	---	---	---	---	Moderate	Low	Moderate
7B:							
Creedmoor	Paralithic bedrock	60-120	---	Moderately cemented	None	High	High

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
8A:							
Delanco	---	---	---	---	High	High	High
9B:							
Dyke	---	---	---	---	Moderate	High	Moderate
9C:							
Dyke	---	---	---	---	Moderate	High	Moderate
10A:							
Elsinboro	---	---	---	---	Moderate	Moderate	High
11A:							
Leaksville	Paralithic bedrock	20-40	---	Strongly cemented	None	Moderate	Low
	Lithic bedrock	24-60	---	Indurated			
12C:							
Littlejoe	Paralithic bedrock	40-60	---	Moderately cemented	None	High	High
	Lithic bedrock	40-60	---	Indurated			
12D:							
Littlejoe	Paralithic bedrock	40-60	---	Moderately cemented	None	High	High
	Lithic bedrock	40-60	---	Indurated			
13B:							
Mayodan	---	---	---	---	None	High	Moderate
13C:							
Mayodan	---	---	---	---	None	High	Moderate
14B:							
Minnieville	---	---	---	---	Moderate	High	Moderate
14C:							
Minnieville	---	---	---	---	Moderate	High	Moderate
14D:							
Minnieville	---	---	---	---	Moderate	High	Moderate

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
15C:							
Minnieville	---	---	---	---	Moderate	High	Moderate
Urban land	---	10-10	---	---	None	---	---
16B:							
Orenda	---	---	---	---	Moderate	High	Moderate
17C:							
Orenda	---	---	---	---	Moderate	High	Moderate
Spriggs	Paralithic bedrock	20-40	---	Moderately cemented	Moderate	Low	Moderate
	Lithic bedrock	40-60	---	Indurated			
17D:							
Orenda	---	---	---	---	Moderate	High	Moderate
Spriggs	Paralithic bedrock	20-40	---	Moderately cemented	Moderate	Low	Moderate
	Lithic bedrock	40-60	---	Indurated			
17E:							
Orenda	---	---	---	---	Moderate	High	Moderate
Spriggs	Paralithic bedrock	20-40	---	Moderately cemented	Moderate	Low	Moderate
	Lithic bedrock	40-60	---	Indurated			
18B:							
Stoneville	Paralithic bedrock	40-60	---	Strongly cemented	None	High	High
19:							
Udorthents	---	---	---	---	---	---	---
Urban land	---	10-10	---	---	None	---	---
20:							
Udorthents	---	---	---	---	---	---	---

Table 19.—Soil Features—Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
21B:							
Woolwine	Paralithic bedrock	20-40	---	Strongly cemented	Moderate	Moderate	High
	Lithic bedrock	40-60	---	Indurated			
Clifford	---	---	---	---	Moderate	Moderate	Moderate
21C:							
Woolwine	Paralithic bedrock	20-40	---	Strongly cemented	Moderate	Moderate	High
	Lithic bedrock	40-60	---	Indurated			
Clifford	---	---	---	---	Moderate	Moderate	Moderate
21D:							
Woolwine	Paralithic bedrock	20-40	---	Strongly cemented	Moderate	Moderate	High
	Lithic bedrock	40-60	---	Indurated			
Clifford	---	---	---	---	Moderate	Moderate	Moderate
21E:							
Woolwine	Paralithic bedrock	20-40	---	Strongly cemented	Moderate	Moderate	High
	Lithic bedrock	40-60	---	Indurated			
Clifford	---	---	---	---	Moderate	Moderate	Moderate
22C:							
Woolwine	Paralithic bedrock	20-40	---	Strongly cemented	Moderate	Moderate	High
	Lithic bedrock	40-60	---	Indurated			
Urban land	---	10-10	---	---	None	---	---

Table 20.—Taxonomic Classification of the Soils

(An asterisk in the first column indicates a taxadjunct to the series. See text for a description of those characteristics that are outside the range of the series.)

Soil name	Family or higher taxonomic class
Ayersville	Fine-loamy, mixed, semiactive, mesic Typic Dystrudepts
Buckhall	Fine, mixed, semiactive, mesic Typic Hapludults
Buffstat	Fine, mixed, semiactive, mesic Typic Hapludults
Bugley	Loamy-skeletal, mixed, semiactive, mesic Lithic Dystrudepts
Clifford	Fine, kaolinitic, mesic Typic Kanhapludults
Codorus	Fine-loamy, mixed, active, mesic Fluvaquentic Dystrudepts
Colvard	Coarse-loamy, mixed, active, nonacid, mesic Typic Udifluvents
Creedmoor	Fine, mixed, semiactive, thermic Aquic Hapludults
Delanco	Fine-loamy, mixed, semiactive, mesic Aquic Hapludults
Dyke	Fine, mixed, semiactive, mesic Typic Rhodudults
Elsinboro	Fine-loamy, mixed, semiactive, mesic Typic Hapludults
Leaksville	Fine, smectitic, mesic Typic Albaqualfs
Littlejoe	Fine, mixed, subactive, mesic Typic Hapludults
Mayodan	Fine, mixed, semiactive, thermic Typic Hapludults
Minnieville	Fine, kaolinitic, mesic Typic Hapludults
Orenda	Fine, mixed, active, mesic Ultic Hapludalfs
Spriggs	Fine-loamy, mixed, active, mesic Ultic Hapludalfs
Stoneville	Fine, mixed, semiactive, mesic Typic Rhodudults
Udorthents	Udorthents
Woolwine	Fine, kaolinitic, mesic Typic Kanhapludults

Table 21.—Relationship of Geologic Systems, Formations, and Rock Types to Soil Series

System	Formation	Rock Type	Dominant Soil
Quaternary	Alluvium	Poorly sorted organic matter, clay, sand, and rounded gravel and cobbles	Codorus Colvard Delanco Elsinboro
Tertiary	Terrace Deposits (undifferentiated)	Poorly sorted clay, sand, and rounded gravel and cobbles; deeply weathered	Dyke
Triassic	Mesozoic Basins-Newark Supergroup	Interbedded sandstone, siltstone, and shale	Ayersville Creedmoor Leaksville Mayodan Stoneville
Cambrian	Fork Mountain	Mica schist and biotite gneiss	Clifford Woolwine
	Alligator Back	Graphitic and sericitic schist	Buffstat Bugley
	Candler	Phyllite	Littlejoe
Preterozoic	Bassett	Amphibolite	Minnieville Orenda Spriggs
		Biotite gneiss and granite gneiss	Clifford
	Ashe	Biotite gneiss	Clifford Woolwine
	Stuart Creek Gneiss	Biotite augen and flaser gneiss	Clifford
Igneous	Leatherwood Granite	Biotite granite	Clifford
	Rice Acres	Norite, metagabbro, and diorite	Minnieville Orenda Spriggs

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