United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with Tennessee Agricultural Experiment Station, Tennessee Department of Agriculture, Johnson County Board of County Commissioners, and United States Department of Agriculture, Forest Service

Soil Survey of Johnson County, Tennessee

How To Use This Soil Survey

General Soil Map

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

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

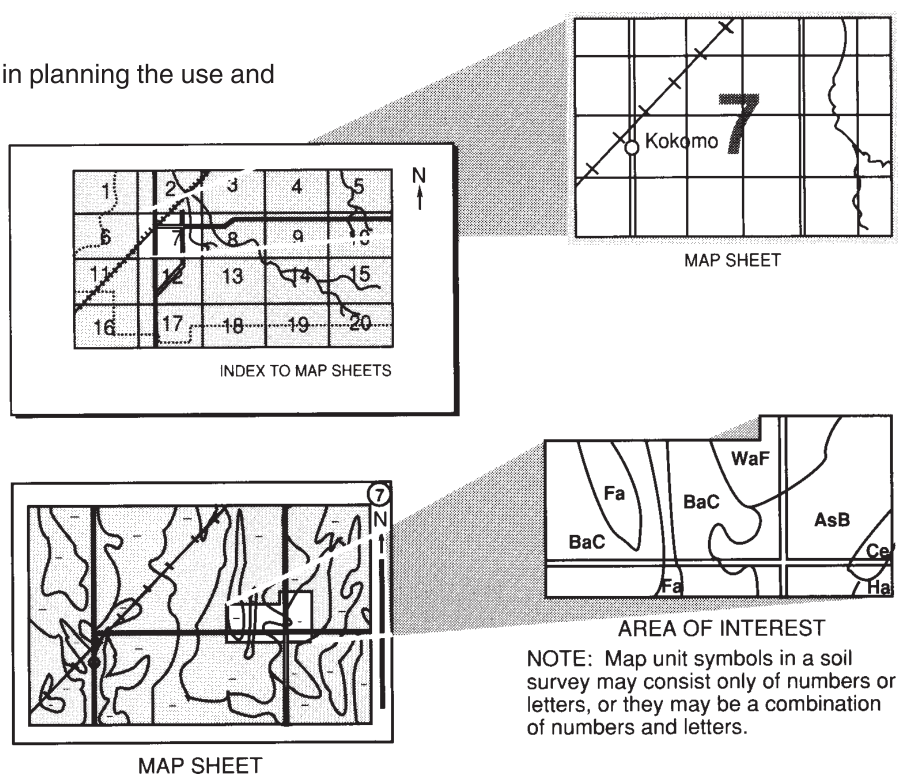
Detailed Soil Maps

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

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

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

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



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

This soil survey is a publication of the National Cooperative Soil Survey Program, 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 has the leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1990. Soil names and descriptions were approved in 2000. Unless otherwise indicated, statements in the publication refer to the conditions in the survey area in 1991. This survey was made cooperatively by the Natural Resources Conservation Service, the Tennessee Agricultural Experiment Station, the Tennessee Department of Agriculture, the Johnson County Board of County Commissioners, and the United States Department of Agriculture, Forest Service. The survey is a part of the technical assistance furnished to the Johnson County Soil Conservation District. The Johnson County Board of County Commissioners and the Tennessee Department of Agriculture provided financial assistance for the survey.

Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service home page on the World Wide Web. The address is http://www.nrcs.usda.gov.

Contents

Issued 2005

Foreword

This soil survey contains information that affects land use planning in Johnson County. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

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

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

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

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

James W. Ford
State Conservationist
Natural Resources Conservation Service

Soil Survey of
Johnson County, Tennessee

By Nathan T. Hartgrove, Natural Resources Conservation Service

Fieldwork by Jack D. Colflesh and Nathan T. Hartgrove, Natural Resources Conservation Service, and A. Lea Mashburn, Johnson County

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
Tennessee Agricultural Experiment Station, Tennessee Department of Agriculture, Johnson County Board of County Commissioners, and United States Department of Agriculture, Forest Service

JOHNSON COUNTY is in the extreme northeastern corner of Tennessee (fig. 1). It is bordered on the northwest by Sullivan County, Tennessee; on the north and northeast by Washington and Grayson Counties, Virginia; on the east and southeast by Ashe and Watauga Counties, North Carolina; and on the southwest by Carter County, Tennessee. Mountain City, the county seat, is in the east-central part of the county, between the cities of Elizabethton, Tennessee, and Damascus, Virginia. In 1990, according to the Tennessee Department of Economic and Community Development, the population of the county was 13,766.

Johnson County is irregular in shape and measures about 14 miles from east to west and 19 miles from north to south. It covers about 300 square miles, or about 193,700 acres. About 190,200 acres are land, and about 3,500 acres are water areas.

This survey updates the soil survey of Johnson County published in 1956 *(3)*. It provides additional information and has larger maps, which show the soils in greater detail.

General Nature of the County

This section gives general information about the survey area. It describes history and settlement; industry; transportation; natural resources; physiography, drainage, and geology; and climate.

Figure 1.—Location of Johnson County in Tennessee.

History and Settlement

Johnson County was created in 1836 out of a part of Carter County and was named in honor of Thomas Johnson, an early settler. About 1770, a man named Honeycutt made the first settlement in the survey area, on Roan Creek near its confluence with the Watauga River. Other settlements were made soon after farther up Roan Creek. Among the early pioneers who established homes in the area were Joseph Hoskins, George and Samuel Heatherby, and Joseph Gentry.

At an early period in the county's history, Nathaniel Taylor came to Roan Creek and established an iron works. The first county seat, Taylorsville, was named for him. In 1885, the name was changed to Mountain City.

Many of the county's early settlers came from North Carolina and Virginia. A few were from Pennsylvania, and some were immigrants who came directly from Europe. The early settlers were mainly Scotch-Irish and English, but some were Welsh and French.

Mountain City is in the east-central part of the county. It was and still is the main trade center for Johnson County. Other community centers are Butler and Shady Valley.

Industry

The industry of Johnson County includes textiles, clothing, and footwear. More than 15 firms operate in the county. According to the Tennessee Department of Economic and Community Development, these firms employ about 16 percent of the non-agricultural population, or 37 percent of the non-farm civilian labor force. Industrial firms in surrounding counties also employ several Johnson County residents.

Residential areas have developed in many areas of the county. Most of the residential units are single-family dwellings. Prime farmland is being used for urban and residential development in many areas.

A number of Christmas tree growers operate in Johnson County. Christmas trees, mainly Fraser fir, are grown on about 500 acres. There are also several growers of nursery stock. Nursery stock is produced on about 320 acres.

Transportation

Johnson County has a good network of State and local highways, roads, and streets. The main traffic flow to and from adjoining counties is on two-lane State highways. Major roads and highways and many secondary roads and streets are paved or otherwise improved.

Johnson County is served commercially by the Tri-Cities Regional Airport, located about 35 miles west of Mountain City, near Blountville. The airport is served by 6 airlines and has 31 daily arrivals and departures. Car rentals and taxi service are available. Private and charter air service is also available through the Johnson County Airport and an aviation service in Elizabethton.

Natural Resources

Johnson County has an abundant supply of timber and fresh water. Tree production is a major enterprise in the Cherokee National Forest as well as in other parts of the survey area not suited to agriculture. Primary production trees are oak, yellow-poplar, hickory, and beech.

There are several quarries, gravel mines, and pits scattered throughout the county that produce gravel and limestone products.

Johnson County has a good supply of fresh water. Streams that flow year-round are common. The major area of impounded water is Watauga Lake.

Physiography, Drainage, and Geology

Johnson County lies entirely within the Blue Ridge Major Land Resource Area. The soils formed under forest vegetation and are typically light colored. They are shallow to very deep over sedimentary rocks (arkose, metasandstone, shale, limestone, and siltstone) and crystalline igneous and metamorphic rocks (granite, gneiss, and schist).

The county is physiographically composed of two narrow valleys that are situated between high, parallel mountain chains. The valleys are interspersed with knobs and ridges. The highly dissected mountainous areas exhibit extreme changes in elevation. Elevations range from about 2,400 to 5,500 feet. The ridges are long and have narrow crests, projecting spurs, and deep intervening valleys and coves in which colluvium and valley fill have collected.

The Watauga River and the South Fork Holston River drain the county. The southern part of the county is drained by Roan, Doe, and Cobbs Creeks. These creeks emptied into the Watauga River near Butler until Watauga Lake was built. Beaverdam and Laurel Creeks flow northeastward from the divide and into the South Fork Holston River in Virginia, a few miles north from where it enters Tennessee.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Bristol, Tennessee, in the period 1951 to 1988. 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 the winter, the average temperature is 37 degrees F, and the average daily minimum temperature is 27 degrees. The lowest temperature on record, which occurred on January 21, 1985, is -21 degrees. In summer, the average temperature is 74 degrees and the average daily maximum temperature is 85 degrees. The highest recorded temperature, which occurred at Bristol on July 7, 1952, 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 total annual precipitation is about 40 inches. Of this, about 21 inches, or 50 percent, usually falls in April through September. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 3.65 inches on October 16, 1964. Thunderstorms occur on about 44 days each year.

The average relative humidity in mid-afternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 85 percent. The sun shines 60 percent of the time possible in summer and 45 percent in winter. The prevailing wind is from the northeast. Average windspeed is highest, 9 miles per hour, in spring.

How This Survey Was Made

This survey was made to provide information about the soils 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 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. 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 somewhat accurately predict that a given soil will have a high water table within certain depths in most years. However, 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 some adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

General Soil Map Units

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

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

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

1. Ditney-Unicoi-Keener

Shallow to very deep, sloping to extremely steep, well drained and somewhat excessively drained soils that formed in residuum and colluvium derived from metasandstone and quartzite and sandstone rock outcrops

Setting

Landscape: Mountains
Slope range: 20 to 95 percent

Composition

Percentage of map unit in the survey area: 46
Extent of soils in the map unit:
Ditney soils—30 percent
Unicoi soils—25 percent
Keener soils—11 percent
Minor soils—34 percent

Soil Properties and Qualities

Ditney

Depth class: Moderately deep
Drainage class: Well drained
Landscape position: Mountain crests, shoulders, and side slopes
Parent material: Residuum
Typical texture of surface layer: Sandy loam
Slope: Steep to extremely steep

Unicoi

Depth class: Shallow
Drainage class: Somewhat excessively drained
Landscape position: Mountain side slopes
Parent material: Residuum
Typical texture of surface layer: Very cobbly sandy loam
Slope: Extremely steep

Keener

Depth class: Very deep
Drainage class: Well drained
Landscape position: Footslopes, benches, colluvial fans, and mountain coves
Parent material: Colluvium
Typical texture of surface layer: Loam
Slope: Sloping to very steep

Minor Soils

- Brookshire soils that formed in very deep loamy colluvium, in coves
- Cataska soils that formed in shallow loamy residuum, on mountain ridges
- Lonon soils that formed in very deep loamy colluvium, in coves and on footslopes
- Northcove soils that formed in very deep cobbly or stony colluvium, in coves
- Maymead soils that formed in very deep loamy colluvium, in coves
- Soco soils that formed in moderately deep loamy residuum, on mountain ridges

Use and Management

Land use: Mixed woodland, consisting of hardwood, eastern white pine, and Virginia pine, in most areas
Primary limitations: Depth to bedrock in areas of the

Ditney and Unicoi soils; rock outcrops associated with the Unicoi soils; slope in most areas

2. Keener-Lonon

Very deep, sloping to very steep, well drained soils that formed in colluvium from metasandstone, quartzite, and siltstone

Setting

Landscape: Coves, mountain foothills, and valleys
Slope range: 5 to 50 percent

Composition

Percentage of map unit in the survey area: 16
Extent of soils in the map unit:
Keener soils—44 percent
Lonon soils—34 percent
Minor soils—22 percent

Soil Properties and Qualities

Keener

Depth class: Very deep
Drainage class: Well drained
Landscape position: Footslopes, benches, colluvial fans, and mountain coves
Parent material: Colluvium
Typical texture of surface layer: Loam
Slope: Sloping to very steep

Lonon

Depth class: Very deep
Drainage class: Well drained
Landscape position: Benches, footslopes, and toeslopes
Parent material: Colluvium
Typical texture of surface layer: Loam
Slope: Moderately steep and steep

Minor Soils

- Craigsville soils that formed in very deep cobbly or stony alluvium, on mountain flood plains
- Northcove soils that formed in very deep cobbly or stony alluvium, in coves and on footslopes
- Shelocta soils that formed in very deep loamy colluvium, on footslopes and in coves
- Statler soils that formed in very deep loamy alluvium, on low stream terraces
- Ditney soils that formed in moderately deep loamy residuum, on mountain ridges
- Unicoi soils that formed in shallow cobbly or stony residuum, on mountain ridges

Use and Management

Land use: Mixed woodland; many of the less sloping areas are cleared and used for cropland, pasture, or hay
Primary limitations: Slope in many areas

3. Dunning-Statler-Hatboro

Very deep, nearly level and gently sloping, poorly drained and well drained soils that formed in mixed alluvium

Setting

Landscape: Valleys
Slope range: 0 to 4 percent

Composition

Percentage of map unit in the survey area: 1
Extent of soils in the map unit:
Dunning soils—33 percent
Statler soils—27 percent
Hatboro soils—24 percent
Minor soils—16 percent

Soil Properties and Qualities

Dunning

Depth class: Very deep
Drainage class: Poorly drained
Landscape position: Flood plains and areas at stream heads
Parent material: Alluvium
Typical texture of surface layer: Silt loam
Slope: Nearly level

Statler

Depth class: Very deep
Drainage class: Well drained
Landscape position: Low stream terraces
Parent material: Alluvium
Typical texture of surface layer: Loam
Slope: Nearly level and gently sloping

Hatboro

Depth class: Very deep
Drainage class: Poorly drained
Landscape position: Flood plains
Parent material: Alluvium
Typical texture of surface layer: Silt loam
Slope: Nearly level

Minor Soils

- Chagrin soils that formed in deep loamy alluvium, on flood plains

- Dillard soils that formed in very deep loamy alluvium, on low stream terraces
- Keener soils that formed in very deep loamy colluvium, on footslopes and in coves

Use and Management

Land use: Most areas are cleared and used for cropland, hay, or pasture
Primary limitations: High water table and flooding in areas of the Dunning and Hatboro soils

4. Statler-Chagrin-Dillard

Very deep and deep, nearly level and gently sloping, well drained and moderately well drained soils that formed in mixed alluvium on low stream terraces and flood plains

Setting

Landscape: Valleys
Slope range: 1 to 4 percent

Composition

Percentage of map unit in the survey area: 2
Extent of soils in the map unit:
Statler soils—37 percent
Chagrin soils—26 percent
Dillard soils—13 percent
Minor soils—24 percent

Soil Properties and Qualities

Statler

Depth class: Very deep
Drainage class: Well drained
Landscape position: Low stream terraces
Parent material: Alluvium
Typical texture of surface layer: Loam
Slope: Nearly level and gently sloping

Chagrin

Depth class: Deep
Drainage class: Well drained
Landscape position: Flood plains
Parent material: Alluvium
Typical texture of surface layer: Loam
Slope: Nearly level

Dillard

Depth class: Very deep
Drainage class: Moderately well drained
Landscape position: Low stream terraces and toeslopes
Parent material: Alluvium
Typical texture of surface layer: Loam
Slope: Nearly level

Minor Soils

- Hatboro soils that formed in very deep loamy alluvium, on flood plains
- Calvin soils that formed in moderately deep loamy residuum, on upland ridges
- Shelocta soils that formed in very deep loamy colluvium, in coves, on footslopes, and on benches
- Keener soils that formed in very deep loamy colluvium, in coves and on footslopes

Use and Management

Land use: Most areas are cleared and used for cropland, pasture, or hay
Primary limitations: Rare flooding and susceptibility to wetness in areas of the Chagrin and Dillard soils

5. Burton-Greenlee-Ashe

Moderately deep and very deep, moderately steep to extremely steep, well drained and somewhat excessively drained soils that formed in residuum and colluvium from crystalline igneous and metamorphic rocks, such as granite, gneiss, or schist

Setting

Landscape: Mountains
Slope range: 12 to 95 percent

Composition

Percentage of map unit in the survey area: 4
Extent of soils in the map unit:
Burton soils—37 percent
Greenlee soils—16 percent
Ashe soils—10 percent
Minor soils—37 percent

Soil Properties and Qualities

Burton

Depth class: Moderately deep
Drainage class: Well drained
Landscape position: Ridge crests, shoulders, and side slopes at high elevations
Parent material: Residuum
Typical texture of surface layer: Loam
Slope: Moderately steep to extremely steep

Greenlee

Depth class: Very deep
Drainage class: Well drained
Landscape position: Coves and benches

Parent material: Colluvium
Typical texture of surface layer: Very cobbly loam
Slope: Very steep and extremely steep

Ashe

Depth class: Moderately deep
Drainage class: Somewhat excessively drained
Landscape position: Mountain ridge crests, shoulders, and side slopes
Parent material: Residuum
Typical texture of surface layer: Gravelly fine sandy loam
Slope: Moderately steep to extremely steep

Minor Soils

- Hatboro soils that formed in very deep, poorly drained loamy alluvium, on flood plains
- Pigeonroost soils that formed in moderately deep loamy residuum, on mountain ridges
- Pineola soils that formed in moderately deep loamy residuum, on mountain ridges
- Porters soils that formed in deep loamy residuum, on mountain ridges
- Craggey soils that formed in shallow loamy residuum, on mountain ridges

Use and Management

Land use: Mixed woodland in most areas
Primary limitations: Depth to bedrock in areas of the Ashe and Burton soils; high, frigid, exposed elevations in areas of the Burton soils; slope in most areas

6. Ashe-Greenlee-Tusquitee

Moderately deep and very deep, sloping to extremely steep, well drained and somewhat excessively drained soils that formed in residuum and colluvium from crystalline igneous and metamorphic rocks

Setting

Landscape: Mountains
Slope range: 8 to 95 percent

Composition

Percentage of map unit in the survey area: 11
Extent of soils in the map unit:
Ashe soils—41 percent
Greenlee soils—17 percent
Tusquitee soils—12 percent
Minor soils—30 percent

Soil Properties and Qualities

Ashe

Depth class: Moderately deep
Drainage class: Somewhat excessively drained
Landscape position: Mountain ridge crests, shoulders, and side slopes
Parent material: Residuum
Typical texture of surface layer: Gravelly fine sandy loam
Slope: Moderately steep to extremely steep

Greenlee

Depth class: Very deep
Drainage class: Well drained
Landscape position: Coves and benches
Parent material: Colluvium
Typical texture of surface layer: Very cobbly loam
Slope: Very steep and extremely steep

Tusquitee

Depth class: Very deep
Drainage class: Well drained
Landscape position: Mountain coves, benches, and footslopes
Parent material: Colluvium
Typical texture of surface layer: Loam
Slope: Sloping to moderately steep

Minor Soils

- Burton soils that formed in moderately deep loamy residuum, at high mountain elevations
- Craggey soils that formed in shallow loamy residuum, at high mountain elevations
- Edneyville soils that formed in very deep loamy residuum, on mountain ridges
- Hatboro soils that formed in very deep, poorly drained loamy alluvium, on flood plains
- Maymead soils that formed in very deep loamy colluvium, in coves
- Porters soils that formed in deep loamy residuum, on mountain ridges

Use and Management

Land use: Mixed woodland in most areas; some small areas are cleared and used mainly for pasture, hay, or Christmas tree production
Primary limitations: Depth to bedrock in areas of the Ashe soils; slope in most areas

7. Ashe-Maymead-Keener

Moderately deep and very deep, sloping to extremely steep, somewhat excessively drained and well drained soils that formed in residuum derived from crystalline rocks and colluvium derived mainly from metasedimentary rocks

Setting

Landscape: Mountains and foothills
Slope range: 5 to 95 percent

Composition

Percentage of map unit in the survey area: 2
Extent of soils in the map unit:
Ashe soils—35 percent
Maymead soils—16 percent
Keener soils—16 percent
Minor soils—33 percent

Soil Properties and Qualities

Ashe

Depth class: Moderately deep
Drainage class: Somewhat excessively drained
Landscape position: Mountain ridge crests, shoulders, and side slopes
Parent material: Residuum
Typical texture of surface layer: Gravelly fine sandy loam
Slope: Moderately steep to extremely steep

Maymead

Depth class: Very deep
Drainage class: Well drained
Landscape position: Mountain coves, footslopes, and benches
Parent material: Colluvium
Typical texture of surface layer: Loam
Slope: Steep and very steep

Keener

Depth class: Very deep
Drainage class: Well drained
Landscape position: Footslopes, benches, colluvial fans, and mountain coves
Parent material: Colluvium
Typical texture of surface layer: Loam
Slope: Sloping to very steep

Minor Soils

- Shelocta soils that formed in very deep loamy colluvium, on footslopes and in coves
- Saunook soils that formed in very deep loamy colluvium, on benches and footslopes
- Calvin soils that formed in moderately deep loamy residuum, on upland ridges

Use and Management

Land use: Mixed woodland in many areas; less sloping areas are cleared and used for cropland, hay, or pasture
Primary limitations: Depth to bedrock in areas of the Calvin soils; slope in many areas

8. Calvin-Shelocta-Bledsoe

Moderately deep to very deep, gently sloping to very steep, well drained soils that formed in residuum and colluvium from siltstone or limestone

Setting

Landscape: Foothills and valleys
Slope range: 5 to 50 percent

Composition

Percentage of map unit in the survey area: 18
Extent of soils in the map unit:
Calvin soils—38 percent
Shelocta soils—20 percent
Bledsoe soils—15 percent
Minor soils—27 percent

Soil Properties and Qualities

Calvin

Depth class: Moderately deep
Drainage class: Well drained
Landscape position: Ridgetops, shoulders, and side slopes
Parent material: Residuum
Typical texture of surface layer: Channery silt loam
Slope: Moderately steep to very steep

Shelocta

Depth class: Very deep
Drainage class: Well drained
Landscape position: Coves, footslopes, and benches
Parent material: Colluvium
Typical texture of surface layer: Silt loam
Slope: Gently sloping to very steep

Bledsoe

Depth class: Deep
Drainage class: Well drained
Landscape position: Side slopes and footslopes

Parent material: Colluvium
Typical texture of surface layer: Silt loam
Slope: Sloping to steep

Minor Soils

- Caneyville soils that formed in moderately deep clayey residuum, on upland ridges
- Lonon soils that formed in very deep loamy colluvium, on benches and footslopes
- Keener soils that formed in very deep loamy colluvium, on benches and footslopes
- Statler soils that formed in very deep loamy alluvium, on stream terraces
- Maymead soils that formed in very deep loamy colluvium, in coves and on footslopes

Use and Management

Land use: Many areas are cleared and used for cropland, pasture, or hay; some of the steeper areas remain in woodland
Primary limitations: Slope in many areas; depth to bedrock in areas of the Calvin soils

Detailed Soil Map Units

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

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

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

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

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

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

Soils of one series can differ in texture of the surface layer, slope, stoniness, degree of erosion, and other characteristics that affect their use. Because 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 features that affect use or management. For example, Bledsoe silt loam, 5 to 12 percent slopes, is a phase of the Bledsoe 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. Chestnut-Ashe complex, 50 to 95 percent slopes, very stony, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. The Rock outcrop part of Unicoi-Rock outcrop complex, 50 to 80 percent slopes, is an example.

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

AcF—Ashe-Cleveland-Rock outcrop complex, 50 to 95 percent slopes, extremely bouldery

Composition

Ashe soil: Averaging about 40 percent of map units, but ranging between 30 and 50 percent of each mapped area
Cleveland soil: Averaging about 30 percent of map units, but ranging between 20 and 40 percent of each mapped area
Rock outcrop: Averaging about 20 percent of map units, but ranging between 10 and 30 percent of each mapped area

Setting

Landscape position: Side slopes of mountain ridges
Major uses: Woodland in most areas

Properties and Features of the Ashe and Cleveland Soils

Permeability: Moderately rapid
Available water capacity: Ashe—low; Cleveland—very low
Depth to high water table: More than 6 feet
Drainage class: Somewhat excessively drained
Flood hazard: None
Soil reaction: Very strongly acid to moderately acid
Depth to bedrock: Ashe—0 to 40 inches; Cleveland—0 to 20 inches

Typical Profile

Ashe

Surface layer:
0 to 4 inches—brown gravelly fine sandy loam

Subsurface layer:
4 to 10 inches—dark yellowish brown fine sandy loam

Subsoil:
10 to 26 inches—yellowish brown loam
26 to 32 inches—yellowish brown fine sandy loam

Substratum:
32 inches—hard bedrock

Cleveland

Surface layer:
0 to 1 inch—partially decomposed forest litter
1 to 4 inches—brown cobbly fine sandy loam

Subsoil:
4 to 15 inches—yellowish brown cobbly sandy loam

Substratum:
15 inches—hard granitic gneiss bedrock

Rock outcrop

Rock outcrops occur as individual rocks, ledges, or bluffs. Many loose boulders and stones also occur scattered on the soil surface.

Inclusions

Contrasting inclusions:
• Small areas of soils that have bedrock at a depth of more than 40 inches
• Areas of soils that have a high content of rock fragments throughout

Similar inclusions:
• Areas of soils that have relatively few boulders or surface stones

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because areas of this map unit are so steep, droughty, and rocky, agricultural production of any type is virtually prohibited.

Pasture and hay

Suitability: Unsuited
Management concerns and considerations:
• Because of a moisture deficiency, caused by the limited depth to bedrock, and equipment limitations, caused by boulders, rock outcrops, and extremely steep slopes, the establishment and maintenance of pasture and hay are difficult.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• The slope causes a severe erosion hazard during harvesting and reforestation and limits the safe operation of equipment and the types of equipment that may be used.
• Because of the limited depth to bedrock, there is a windthrow hazard in established stands and a

susceptibility to seedling mortality due to inadequate moisture.
• Plant competition is a concern in areas of the Ashe soil unless competing vegetation is controlled.
• Trees suitable for planting include eastern white pine and shortleaf pine.
• Christmas tree species suited for planting on the deeper Ashe soil include Norway spruce, Fraser fir, and Scotch pine.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and depth to bedrock are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

AsE—Ashe gravelly fine sandy loam, 12 to 25 percent slopes

Setting

Landscape position: Mountain ridge crests, shoulders, and side slopes
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Low or moderate
Depth to high water table: More than 6 feet
Drainage class: Somewhat excessively drained
Flood hazard: None
Soil reaction: Very strongly acid to moderately acid
Depth to bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 4 inches—brown gravelly fine sandy loam

Subsurface layer:
4 to 10 inches—dark yellowish brown fine sandy loam

Subsoil:
10 to 26 inches—yellowish brown loam
26 to 32 inches—yellowish brown fine sandy loam

Substratum:
32 inches—hard schist

Inclusions

Contrasting inclusions:
• Areas of Greenlee soils that have a high content of rock fragments and have bedrock at a depth of more than 60 inches
• Areas of Cleveland soils that have bedrock at a depth of less than 20 inches

Similar inclusions:
• Areas of Maymead soils that have bedrock at a depth of more than 40 inches
• Small areas of soils that do not have hard bedrock between depths of 20 and 40 inches but do have soft, weathered bedrock at these depths

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability: Poorly suited
Management concerns and considerations:
• The slope and the limited available water capacity restrict the use of this soil for hayland.
• Good pasture management is recommended to control erosion and maintain productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation and limits the safe operation of equipment and the types of equipment that may be used.
• Seedling mortality and susceptibility to windthrow are management concerns because excessive drainage causes a moisture deficiency and leads to shallow rooting.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include eastern white pine and various Christmas tree species.

Urban development

Suitability: Poorly suited

Management concerns and considerations:
• The depth to bedrock and the slope are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 6e

AsF—Ashe gravelly fine sandy loam, 25 to 65 percent slopes

Setting

Landscape position: Mountain ridges, shoulders, and side slopes
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Low or moderate
Depth to high water table: More than 6 feet
Drainage class: Somewhat excessively drained
Flood hazard: None
Soil reaction: Very strongly acid to moderately acid
Depth to bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 4 inches—brown gravelly fine sandy loam

Subsurface layer:
4 to 10 inches—dark yellowish brown fine sandy loam

Subsoil:
10 to 26 inches—yellowish brown loam
26 to 32 inches—yellowish brown fine sandy loam

Substratum:
32 inches—hard schist

Inclusions

Contrasting inclusions:
• Areas of Greenlee soils that have a high content of rock fragments and have bedrock at a depth of more than 60 inches
• Areas of Cleveland soils that have bedrock at a depth of less than 20 inches

Similar inclusions:
• Areas of Maymead soils that have bedrock at a depth of more than 40 inches
• Small areas of soils that do not have hard bedrock between depths of 20 and 40 inches but do have soft, weathered bedrock at these depths

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
• Because of a moisture deficiency caused by the limited depth to bedrock and an equipment limitation on very steep slopes, the establishment and maintenance of hay and pasture are difficult.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes a severe erosion hazard during harvesting and reforestation and limits the safe operation of equipment and the types of equipment that may be used.
• Seedling mortality and susceptibility to windthrow are concerns because the excessive drainage causes a moisture deficiency and leads to shallow rooting.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include eastern white pine and various Christmas tree species.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The depth to bedrock and the slope are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

BeC—Bledsoe silt loam, 5 to 12 percent slopes

Setting

Landscape position: Footslopes and side slopes
Major uses: Hay, pasture, or crop production in most areas

Soil Properties and Features

Permeability: Moderately slow
Available water capacity: High
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Moderately acid to mildly alkaline
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 7 inches—brown silt loam

Subsoil:
7 to 60 inches—strong brown silty clay loam

Inclusions

Similar inclusions:
• Small areas of eroded soils that have more clay in the surface layer
• Small areas of soils that have bedrock between depths of 40 and 60 inches

Use and Management

Row crops and small grain

Suitability: Poorly suited
Management concerns and considerations:
• Erosion is a severe hazard if cultivated crops are grown.
• Conservation tillage, crop residue management, contour farming, crop rotations, and the use of cover crops are important practices for controlling erosion and maintaining productivity.
• Regular crop rotation is necessary in most sloping areas.
• The use of terraces, grassed waterways, field borders, and filter strips in the appropriate places can help to prevent sediment in runoff water from entering streams and bodies of water.

Pasture and hay

Suitability: Well suited
Management concerns and considerations:
• This soil has few limitations affecting pasture and hayland.
• Proper stocking rates, pasture rotation, deferred grazing, and a well planned clipping and harvesting schedule are important management practices.

Woodland

Suitability: Well suited
Management concerns and considerations:
• Plant competition is the only significant management concern. Seeds and seedlings grow well if competing vegetation is controlled.
• Trees suitable for planting include yellow-poplar and northern red oak.

Urban development

Suitability: Moderately suited
Management concerns and considerations:
• The high clay content and moderate shrink-swell potential of the subsoil are limitations affecting most urban uses. These features can present problems for excavations, some sanitary facilities, and the construction of footers and basements. Careful design and construction may minimize these limitations.

Interpretive Group

Land capability subclass: 4e

BeD—Bledsoe silt loam, 12 to 20 percent slopes

Setting

Landscape position: Footslopes and side slopes of upland ridges
Major uses: Hay or pasture in most areas

Soil Properties and Features

Permeability: Moderately slow
Available water capacity: High
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Moderately acid to mildly alkaline
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 7 inches—brown silt loam

Subsoil:
7 to 60 inches—strong brown silty clay loam

Inclusions

Similar inclusions:
• Small areas of eroded soils that have more clay in the surface layer
• Small areas of soils that have bedrock between depths of 40 and 60 inches

Use and Management

Row crops and small grain

Suitability: Poorly suited

Management concerns and considerations:
• Erosion is a severe hazard if cultivated crops are grown.
• Conservation tillage, crop residue management, contour farming, crop rotations, and the use of cover crops are important practices for controlling erosion and maintaining productivity.
• The use of contour strips, grassed waterways, field borders, and filter strips on moderately steep slopes helps to prevent sediment in runoff water from entering streams and bodies of water.

Pasture and hay

Suitability: Moderately suited
Management concerns and considerations:
• The slope may limit the use of this soil for hayland.
• Proper stocking rates, pasture rotation, deferred grazing, and a well planned clipping and harvesting schedule are important management practices.
• Good pasture management is recommended to control erosion and maintain productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation and limits the operation of equipment.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include yellow-poplar and northern red oak.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and the clayey subsoil are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 6e

BeE—Bledsoe silt loam, 20 to 35 percent slopes

Setting

Landscape position: Side slopes of upland ridges
Major uses: Pasture in most areas

Soil Properties and Features

Permeability: Moderately slow
Available water capacity: High
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Moderately acid to mildly alkaline
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 7 inches—brown silt loam

Subsoil:
7 to 60 inches—strong brown silty clay loam

Inclusions

Similar inclusions:
• Small areas of eroded soils that have more clay in the surface layer
• Small areas of soils that have bedrock between depths of 40 and 60 inches

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability for pasture: Moderately suited
Suitability for hay: Poorly suited
Management concerns and considerations:
• The slope limits the use of this soil for hayland.
• Good pasture management is essential in controlling erosion and maintaining productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation.
• The use of equipment when the soil is wet can cause excessive rutting or miring. Equipment use can be delayed until the soil is dry, and gravel or other suitable subgrade material can be added to the main roads.
• Plant competition is a concern unless competing vegetation is controlled.

• Trees suitable for planting include yellow-poplar and northern red oak.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and the clayey subsoil are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

BsE—Brookshire silt loam, 20 to 35 percent slopes

Setting

Landscape position: North- and east-facing mountain coves
Major uses: Woodland, consisting of upland oaks and other hardwoods, in most areas

Soil Properties and Features

Permeability: Moderately rapid or rapid
Available water capacity: High
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Strongly acid
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 1 inch—partially decomposed forest litter
1 to 6 inches—very dark grayish brown silt loam
6 to 8 inches—dark brown loam

Subsoil:
8 to 18 inches—strong brown loam
18 to 53 inches—strong brown gravelly loam

Substratum:
53 to 65 inches—reddish yellow gravelly loam

Inclusions

Contrasting inclusions:
• Small areas of soils that have bedrock at a depth of less than 40 inches
• Areas of soils that have a high content of rock fragments throughout

Similar inclusions:
• Areas of Maymead soils that do not have a dark surface layer
• Areas of soils that have more clay in the subsoil

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
• Good pasture management is essential in controlling erosion and maintaining productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation.
• The use of equipment when the soil is wet can cause excessive rutting or miring. Equipment use can be delayed until the soil is dry, and gravel or other suitable subgrade material can be added to the main roads.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include yellow-poplar and eastern white pine.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope is a limitation affecting most urban uses. Because of the severity of this limitation, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 6e

BsF—Brookshire silt loam, 35 to 50 percent slopes

Setting

Landscape position: North- and east-facing mountain coves
Major uses: Woodland consisting of upland oaks and other hardwoods in most areas

Soil Properties and Features

Permeability: Moderately rapid or rapid
Available water capacity: High
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Strongly acid
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 1 inch—partially decomposed forest litter
1 to 6 inches—very dark grayish brown silt loam
6 to 8 inches—dark brown loam

Subsoil:
8 to 18 inches—strong brown loam
18 to 53 inches—strong brown gravelly loam

Substratum:
53 to 65 inches—reddish yellow gravelly loam

Inclusions

Contrasting inclusions:
- Small areas of soils that have bedrock at a depth of less than 40 inches
- Areas of soils that have a high content of rock fragments throughout

Similar inclusions:
- Areas of Maymead soils that do not have a dark surface layer
- Areas of soils that have more clay in the subsoil

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
- Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
- Good pasture management is essential in controlling erosion and maintaining productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
- The slope causes an erosion hazard during harvesting and reforestation and limits the safe operation of equipment and the types of equipment that may be used.
- Plant competition is a concern unless competing vegetation is controlled.
- Trees suitable for planting include yellow-poplar and eastern white pine.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
- The slope is a limitation affecting most urban uses. Because of the severity of this limitation, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

BtD—Burton loam, 7 to 15 percent slopes, stony

Setting

Landscape position: Summits and shoulders
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to moderately acid
Depth to bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 14 inches—very dark brown and dark brown loam

Subsoil:
14 to 21 inches—dark yellowish brown fine sandy loam

Substratum:
21 to 28 inches—dark yellowish brown and yellowish brown saprolite that crushes to loamy fine sand
28 inches—unweathered amphibolite

Inclusions

Contrasting inclusions:
• Areas of soils that have bedrock at a depth of less than 20 inches
• Areas of soils that have bedrock at a depth of more than 40 inches

Similar inclusions:
• Areas of soils that have more clay in the subsoil
• Areas of soils that have lighter colored surface layers

Use and Management

Row crops, small grain, and pasture and hay

Suitability: Poorly suited
Management concerns and considerations:
• Because of the high, frigid elevations, the stones on the soil surface, and the severe hazard of erosion, the production of cultivated crops and the maintenance of hayland are difficult.
• Good pasture management is essential in maintaining productivity.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• There is a hazard of windthrow in established stands due to the limited depth to bedrock.
• Trees suitable for planting include Fraser fir and red spruce.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The depth to bedrock is the major limitation affecting urban uses. Because of the severity of this limitation, there would be considerable expense in the design and construction of buildings and facilities that function properly.

Interpretive Group

Land capability subclass: 4e

BtE—Burton loam, 15 to 35 percent slopes, very stony

Setting

Landscape position: Summits, shoulders, and backslopes
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to moderately acid
Depth to bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 14 inches—very dark brown and dark brown loam

Subsoil:
14 to 21 inches—dark yellowish brown fine sandy loam

Substratum:
21 to 28 inches—dark yellowish brown and yellowish brown saprolite that crushes to loamy fine sand
28 inches—unweathered amphibolite

Inclusions

Contrasting inclusions:
• Areas of soils that have bedrock at a depth of less than 20 inches
• Areas of soils that have bedrock at a depth of more than 40 inches

Similar inclusions:
• Areas of soils that have more clay in the subsoil
• Areas of soils that have lighter colored surface layers

Use and Management

Row crops, small grain, and pasture and hay

Suitability: Unsuited
Management concerns and considerations:
• Because of the frigid elevations, the stones on the soil surface, and the severe hazard of erosion, crop production is impractical.
• Good pasture management is essential in maintaining productivity.

Woodland

Suitability: Moderately suited

Management concerns and considerations:
• There is a hazard of windthrow in established stands due to the limited depth to bedrock.
• Because of the slope, there is an erosion hazard during harvesting and reforestation and a moderate equipment limitation.
• Trees suitable for planting included Fraser fir and red spruce.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The depth to bedrock and the slope are major limitations affecting urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings and facilities that function properly.

Interpretive Group

Land capability subclass: 7e

BtF—Burton loam, 35 to 55 percent slopes, very stony

Setting

Landscape position: Backslopes and shoulders
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to moderately acid
Depth to bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 14 inches—very dark brown and dark brown loam

Subsoil:
14 to 21 inches—dark yellowish brown fine sandy loam

Substratum:
21 to 28 inches—dark yellowish brown and yellowish brown saprolite that crushes to loamy fine sand
28 inches—unweathered amphibolite

Inclusions

Contrasting inclusions:
• Areas of soils that have bedrock at a depth of less than 20 inches
• Areas of soils that have bedrock at a depth of more than 40 inches

Similar inclusions:
• Areas of soils that have more clay in the subsoil
• Areas of soils that have lighter colored surface layers

Use and Management

Row crops, small grain, and pasture and hay

Suitability: Unsuited
Management concerns and considerations:
• Because of the high, frigid elevations, the stones on the soil surface, and the severe erosion hazard on the very steep slopes, crop production is impractical.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• There is a hazard of windthrow in established stands due to the limited depth to bedrock.
• There is a severe hazard of erosion during harvesting and reforestation and an equipment limitation on very steep slopes.
• Trees suitable for planting include Fraser fir and red spruce.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The depth to bedrock and the slope are the major limitations affecting urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings and facilities that function properly.

Interpretive Group

Land capability subclass: 7e

BuF—Burton-Craggey-Rock outcrop complex, windswept, 30 to 95 percent slopes

Composition

Burton soil: Averaging about 40 percent of map units, but ranging between 30 and 50 percent of each mapped area
Craggey soil: Averaging about 30 percent of map units, but ranging between 20 and 40 percent of each mapped area
Rock outcrop: Averaging about 20 percent of map

units, but ranging between 10 and 30 percent of each mapped area

Setting

Landscape position: Mountain crests, shoulders, and side slopes at high elevations
Major uses: Woodland in most areas

Properties and Features of the Burton and Craggey Soils

Permeability: Moderately rapid
Available water capacity: Burton—moderate; Craggey—very low
Depth to high water table: More than 6 feet
Drainage class: Burton—well drained; Craggey—somewhat excessively drained
Flood hazard: None
Soil reaction: Extremely acid to moderately acid
Depth to bedrock: Burton—20 to 40 inches; Craggey—less than 20 inches

Typical Profile

Burton

Surface layer:
0 to 14 inches—very dark brown and dark brown loam

Subsoil:
14 to 21 inches—dark yellowish brown fine sandy loam

Substratum:
21 to 28 inches—dark yellowish brown and yellowish brown saprolite that crushes to loamy fine sand
28 inches—unweathered amphibolite bedrock

Craggey

Surface layer:
0 to 4 inches—black muck (about 30 percent fiber, 15 percent rubbed)
4 to 9 inches—very dark brown mucky loam

Subsurface layer:
9 to 11 inches—dark brown gravelly fine sandy loam

Substratum:
11 to 25 inches—unweathered amphibolite bedrock

Rock outcrop

Rock outcrops occur as individual rocks, ledges, or bluffs. Some loose stones or boulders also occur scattered on the soil surface in some areas.

Inclusions

Contrasting inclusions:
• Small areas of soils that have bedrock at a depth of more than 40 inches
• Areas of soils that have a high content of rock fragments throughout

Use and Management

Row crops, small grain, and pasture and hay

Suitability: Unsuited
Management concerns and considerations:
• Because areas of this map unit are so steep, cold, droughty, and rocky, agricultural production of any type is virtually prohibited.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• The slope causes a severe erosion hazard during harvesting and reforestation and limits the safe operation of equipment and the types of equipment that may be used.
• Because of the limited depth to bedrock, there is a windthrow hazard in established stands and a susceptibility to seedling mortality due to inadequate moisture.
• Areas at the high, frigid, exposed elevations are susceptible to severe wind and frost damage, which substantially limits productivity.
• Trees suitable for planting include Fraser fir and red spruce.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The depth to bedrock and the slope are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

BwD—Burton-Wayah complex, windswept, 15 to 30 percent slopes, stony

Composition

Burton soil: Averaging about 60 percent of map units, but ranging between 55 and 65 percent of each mapped area
Wayah soil: Averaging about 35 percent of map units, but ranging between 20 and 45 percent of each mapped area

Setting

Landscape position: Mountain crests, shoulders, and side slopes at high elevations
Major uses: Woodland consisting mostly of fir and spruce

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to moderately acid
Depth to bedrock: Burton—0 to 40 inches; Wayah—more than 60 inches

Typical Profile

Burton

Surface layer:
0 to 14 inches—very dark brown and dark brown loam

Subsoil:
14 to 21 inches—dark yellowish brown fine sandy loam

Substratum:
21 to 28 inches—dark yellowish brown and yellowish brown saprolite that crushes to loamy fine sand
28 inches—unweathered amphibolite bedrock

Wayah

Surface layer:
0 to 12 inches—very dark brown and dark brown loam

Subsoil:
12 to 24 inches—dark yellowish brown sandy loam

Substratum:
24 to 61 inches—yellowish brown loamy sand saprolite

Inclusions

Contrasting inclusions:
• Areas of Craggey soils that have bedrock at a depth of less than 20 inches
• Small areas of organic soils that range from less than 10 inches to as much as 25 inches thick over bedrock
• Small areas of soils that have a high content of rock fragments throughout

Similar inclusions:
• Areas of soils that have bedrock between depths of 40 and 60 inches

Use and Management

Row crops, small grain, and pasture and hay

Suitability: Unsuited
Management concerns and considerations:
• Because areas of this map unit are so steep, cold, and droughty, agricultural production of any type is virtually prohibited.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• The limited depth to bedrock in the Burton soil causes a windthrow hazard in established stands.
• Seedling mortality is a concern because of the cold, droughty nature of the soils.
• The slope causes an erosion hazard during harvesting and reforestation and limits the operation of equipment.
• Areas at the high, frigid, exposed elevations are susceptible to severe wind and frost damage, which substantially limits productivity.
• Trees suitable for planting include Fraser fir and red spruce.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope is a limitation affecting most urban uses. The limited depth to bedrock in the Burton soil is an additional limitation. Because of the severity of these limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

CaD—Calvin channery silt loam, 12 to 20 percent slopes

Setting

Landscape position: Ridgetops, shoulders, and side slopes
Major uses: Most areas are cleared and used for hay or pasture

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Low
Depth to high water table: More than 6 feet
Drainage class: Well drained

Flood hazard: None
Soil reaction: Very strongly acid to moderately acid
Depth to bedrock: 20 to 40 inches

Typical Profile

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

Subsurface layer:
3 to 8 inches—reddish brown channery loam

Subsoil:
8 to 22 inches—reddish brown very channery loam
22 to 33 inches—reddish brown very channery clay loam

Substratum:
33 to 38 inches—reddish brown extremely channery loam
38 inches—weathered siltstone bedrock

Inclusions

Contrasting inclusions:
• Small areas of soils that have bedrock at a depth of less than 20 inches

Similar inclusions:
• Areas of soils that have fewer rock fragments and/or more clay in the subsoil

Use and Management

Row crops and small grain

Suitability: Poorly suited
Management concerns and considerations:
• The main limitations affecting cultivated crops are the severe erosion hazard and the limited available water capacity.

Pasture and hay

Suitability: Moderately suited
Management concerns and considerations:
• The limited available water capacity restricts the use of this soil for hayland.
• Good pasture management is recommended to control erosion and maintain productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• Seedling mortality is a concern due to a moisture deficiency and is worse on south- and west-facing slopes.
• The slope limits the operation of equipment in some areas.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include eastern white pine and Virginia pine.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and depth to bedrock are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 4e

CaE—Calvin channery silt loam, 20 to 35 percent slopes

Setting

Landscape position: Ridge shoulders and side slopes
Major uses: Most areas are cleared and used for hay or pasture

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Low
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Very strongly acid to moderately acid
Depth to bedrock: 20 to 40 inches

Typical Profile

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

Subsurface layer:
3 to 8 inches—reddish brown channery loam

Subsoil:
8 to 22 inches—reddish brown very channery loam
22 to 33 inches—reddish brown very channery clay loam

Substratum:
33 to 38 inches—reddish brown extremely channery loam
38 inches—weathered siltstone bedrock

Inclusions

Contrasting inclusions:
• Small areas of soils that have bedrock at a depth of less than 20 inches

Similar inclusions:
• Areas of soils that have fewer rock fragments and/or more clay in the subsoil

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
• The slope and the limited available water capacity restrict the use of this soil for hayland.
• Good pasture management is essential in controlling erosion and maintaining productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• Seedling mortality is a concern due to a moisture deficiency and is worse on south- and west-facing slopes.
• The slope limits the operation of equipment in some areas.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include eastern white pine and Virginia pine.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and depth to bedrock are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 6e

CaF—Calvin channery silt loam, 35 to 50 percent slopes

Setting

Landscape position: Side slopes of upland ridges
Major uses: Many areas are in woodland; some areas are cleared and used as pasture

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Low
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Very strongly acid to moderately acid
Depth to bedrock: 20 to 40 inches

Typical Profile

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

Subsurface layer:
3 to 8 inches—reddish brown channery loam

Subsoil:
8 to 22 inches—reddish brown very channery loam
22 to 33 inches—reddish brown very channery clay loam

Substratum:
33 to 38 inches—reddish brown extremely channery loam
38 inches—weathered siltstone bedrock

Inclusions

Contrasting inclusions:
• Small areas of soils that have bedrock at a depth of less than 20 inches

Similar inclusions:
• Areas of soils that have fewer rock fragments and/or more clay in the subsoil

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited

Management concerns and considerations:
• Because of a moisture deficiency caused by the limited depth to bedrock and an equipment limitation on very steep slopes, the establishment and maintenance of hay and pasture are difficult.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation and limits the safe operation of equipment and the types of equipment that may be used.
• Seedling mortality is a concern due to a moisture deficiency and is worse on south- and west-facing slopes.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include eastern white pine and Virginia pine.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The depth to bedrock and the slope are limitations that are extremely difficult to overcome.

Interpretive Group

Land capability subclass: 7e

CbrG—Caneyville-Rock outcrop complex, 50 to 80 percent slopes

Composition

Caneyville soil: Averaging about 65 percent of map units, but ranging between 50 and 70 percent of each mapped area
Rock outcrop: Averaging about 25 percent of map units, but ranging between 15 and 35 percent of each mapped area

Setting

Landscape position: Side slopes of upland ridges
Major uses: Most areas are in woodland; some areas are cleared and used as pasture

Properties and Features of the Caneyville Soil

Permeability: Moderately slow
Available water capacity: Low or moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Very strongly acid to neutral
Depth to bedrock: 20 to 40 inches

Typical Profile

Caneyville

Surface layer:
0 to 4 inches—brown silty clay loam

Subsoil:
4 to 29 inches—yellowish red and red clay

Substratum:
29 inches—limestone bedrock

Rock outcrop

Limestone rock outcrops occur as individual rocks, ledges, or bluffs. Some loose stones or boulders also occur scattered on the soil surface in some areas.

Inclusions

Contrasting inclusions:
• Small areas of soils that have bedrock at a depth of more than 40 inches
• Areas of soils that have bedrock at a depth of less than 20 inches

Use and Management

Row crops, small grain, and pasture and hay

Suitability: Unsuited
Management concerns and considerations:
• Because areas of this map unit are so steep and rocky, agricultural production of any type is virtually prohibited.
• Because of a moisture deficiency, caused by the limited depth to bedrock, and equipment limitations, caused by the rock outcrops and extremely steep slopes, the establishment and maintenance of pasture are difficult.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation and limits the safe operation of equipment and the types of equipment that may be used.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include white oak and eastern white pine.

Urban development

Suitability: Poorly suited

Management concerns and considerations:
• The slope and depth to bedrock are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

CcE—Cataska channery silt loam, 20 to 35 percent slopes

Setting

Landscape position: Mountain ridge crests, shoulders, and side slopes
Major uses: Woodland consisting of Virginia pine, upland oaks, and mixed hardwoods in most areas

Soil Properties and Features

Permeability: Moderately rapid or rapid
Available water capacity: Very low
Depth to high water table: More than 6 feet
Drainage class: Excessively drained
Flood hazard: None
Soil reaction: Extremely acid to strongly acid
Depth to bedrock: 10 to 20 inches

Typical Profile

Surface layer:
0 to 1 inch—slightly decomposed forest litter
1 to 2 inches—dark brown channery silt loam

Subsurface layer:
2 to 5 inches—yellowish brown channery silt loam

Subsoil:
5 to 18 inches—strong brown and brown very channery silt loam

Substratum:
18 inches—weathered siltstone

Inclusions

Contrasting inclusions:
• Areas of Keener or Northcove soils that are more than 60 inches to bedrock, in concave positions
• Areas of soils that have bedrock at a depth of more than 20 inches

Similar inclusions:
• Small areas of soils that have fewer rock fragments throughout

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because areas of this soil are so steep, shallow, and droughty, agricultural production of any type is virtually prohibited.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
• Because of a moisture deficiency caused by the limited depth to bedrock and an equipment limitation on steep slopes, the establishment and maintenance of hay and pasture are difficult.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• Because of the shallow depth to bedrock, there is a windthrow hazard in established stands and a susceptibility to seedling mortality due to inadequate moisture.
• Plant competition is a concern unless competing vegetation is controlled.
• Virginia pine is suitable for planting.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The depth to bedrock and the slope are limitations that are extremely difficult to overcome.

Interpretive Group

Land capability subclass: 7e

CcF—Cataska channery silt loam, 35 to 50 percent slopes

Setting

Landscape position: Shoulders and side slopes of mountain ridges
Major uses: Woodland consisting of Virginia pine, upland oaks, and mixed hardwoods in most areas

Soil Properties and Features

Permeability: Moderately rapid or rapid
Available water capacity: Very low
Depth to high water table: More than 6 feet

Drainage class: Excessively drained
Flood hazard: None
Soil reaction: Extremely acid to strongly acid
Depth to bedrock: 10 to 20 inches

Typical Profile

Surface layer:
0 to 1 inch—slightly decomposed forest litter
1 to 2 inches—dark brown channery silt loam

Subsurface layer:
2 to 5 inches—yellowish brown channery silt loam

Subsoil:
5 to 18 inches—strong brown and brown very channery silt loam

Substratum:
18 inches—weathered siltstone

Inclusions

Contrasting inclusions:
• Areas of Keener or Northcove soils that have bedrock at a depth of more than 60 inches, in concave positions
• Areas of soils that have bedrock at a depth of more than 20 inches

Similar inclusions:
• Small areas of soils that have fewer rock fragments throughout

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because areas of this soil are so steep, shallow, and droughty, agricultural production of any type is virtually prohibited.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
• Because of a moisture deficiency caused by the limited depth to bedrock and an equipment limitation on very steep slopes, the establishment and maintenance of hay and pasture are difficult.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• Because of the shallow depth to bedrock, there is a windthrow hazard in established stands and a susceptibility to seedling mortality due to inadequate moisture.
• The slope causes an erosion hazard during harvesting and reforestation and limits the safe operation of equipment.
• Plant competition is a concern unless competing vegetation is controlled.
• Virginia pine is suitable for planting.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The depth to bedrock and the slope are limitations that are extremely difficult to overcome.

Interpretive Group

Land capability subclass: 7e

CcG—Cataska channery silt loam, 50 to 80 percent slopes

Setting

Landscape position: Shoulders and side slopes of mountain ridges
Major uses: Woodland consisting of Virginia pine, upland oaks, and mixed hardwoods in most areas

Soil Properties and Features

Permeability: Moderately rapid or rapid
Available water capacity: Very low
Depth to high water table: More than 6 feet
Drainage class: Excessively drained
Flood hazard: None
Soil reaction: Extremely acid to strongly acid
Depth to bedrock: 10 to 20 inches

Typical Profile

Surface layer:
0 to 1 inch—slightly decomposed forest litter
1 to 2 inches—dark brown channery silt loam

Subsurface layer:
2 to 5 inches—yellowish brown channery silt loam

Subsoil:
5 to 18 inches—strong brown and brown very channery silt loam

Substratum:
18 inches—weathered siltstone

Inclusions

Contrasting inclusions:
• Areas of Keener or Northcove soils that have

bedrock at a depth of more than 60 inches, in concave positions
• Areas of soils that have bedrock at a depth of more than 20 inches

Similar inclusions:
• Small areas of soils that have fewer rock fragments throughout

Use and Management

Row crops, small grain, and pasture and hay

Suitability: Unsuited
Management concerns and considerations:
• Because areas of this soil are so steep, shallow, and droughty, agricultural production of any type is virtually prohibited.
• Because of a moisture deficiency, caused by the limited depth to bedrock, and an equipment limitation on extremely steep slopes, the establishment and maintenance of hay and pasture are difficult.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• Because of the shallow depth to bedrock, there is a windthrow hazard in established stands and a susceptibility to seedling mortality due to inadequate moisture.
• The slope causes a severe erosion hazard during harvesting and reforestation and limits the safe operation of equipment and the types of equipment that may be used.
• Plant competition is a concern unless competing vegetation is controlled.
• Virginia pine is suitable for planting.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The depth to bedrock and the slope are limitations that are extremely difficult to overcome.

Interpretive Group

Land capability subclass: 7e

Cg—Chagrin loam, rarely flooded

Setting

Landscape position: Flood plains
Major uses: Hay, crops, or pasture in most areas

Soil Properties and Features

Permeability: Moderate
Available water capacity: High
High water table: An apparent water table at a depth of 4 to 6 feet in February and March
Drainage class: Well drained
Flood hazard: Rare flooding for brief duration from November to May
Soil reaction: Moderately acid to neutral
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 7 inches—brown loam

Subsoil:
7 to 20 inches—dark yellowish brown loam
20 to 40 inches—dark yellowish brown sandy loam

Substratum:
40 to 60 inches—brown gravelly loamy fine sand

Inclusions

Contrasting inclusions:
• Small areas of soils in depressions and lower areas that are poorly drained, somewhat poorly drained, or moderately well drained

Similar inclusions:
• Small areas of soils that have more rock fragments in the subsoil

Use and Management

Row crops and small grain

Suitability: Well suited
Management concerns and considerations:
• This soil is suited to most crops, grasses, and legumes that are adapted to the local climate.
• Species that are seeded late in spring or that can tolerate early season flooding are best suited.

Pasture and hay

Suitability: Well suited
Management concerns and considerations:
• This soil has few limitations affecting pasture and hayland.
• The wetness due to flooding may hinder early hay cutting operations in some years.

Woodland

Suitability: Well suited
Management concerns and considerations:
• Plant competition is the only significant management concern. Seeds and seedlings grow well if competing vegetation is controlled.
• Trees suitable for planting include yellow-poplar and northern red oak.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The flooding is a limitation that is extremely difficult to overcome.

Interpretive Group

Land capability subclass: 1

ChE—Chestnut loam, 20 to 35 percent slopes

Setting

Landscape position: Tops and shoulders of mountain ridges
Major uses: Much of this map unit is in woodland, but many areas are cleared and in pasture; some areas are used for growing Christmas trees

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Low
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Very strongly acid or strongly acid
Depth to bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 2 inches—partially decomposed forest litter
2 to 3 inches—dark brown fine sandy loam

Subsurface layer:
3 to 8 inches—yellowish brown fine sandy loam

Subsoil:
8 to 16 inches—yellowish brown gravelly sandy loam

Substratum:
16 to 29 inches—brownish yellow sandy loam
29 inches—soft, weathered granitic gneiss bedrock

Inclusions

Contrasting inclusions:
• Areas of soils in concave positions that have more clay in the subsoil than the Chestnut soil and have bedrock at a depth of more than 60 inches
• Areas of Greenlee soils that have a high content of rock fragments and have bedrock at a depth of more than 60 inches, in concave positions
• Small areas of Cleveland soils that have bedrock at a depth of less than 20 inches

Similar inclusions:
• Areas of Ashe soils that have hard bedrock between depths of 20 and 40 inches

Use and Management

Cropland

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability: Poorly suited
Management concerns and considerations:
• Because of a moisture deficiency caused by the limited depth to bedrock and an equipment limitation on steep slopes, the establishment and maintenance of hay and pasture are difficult.
• Good pasture management is essential in controlling erosion and maintaining productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation and limits the safe operation of equipment and the types of equipment that may be used.
• Susceptibility to windthrow is a concern due to the limited rooting depth.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include eastern white pine and yellow-poplar.
• Fraser fir is an example of a Christmas tree species suitable for planting.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and depth to bedrock are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

ChF—Chestnut loam, 35 to 50 percent slopes

Setting

Landscape position: Side slopes of mountain ridges
Major uses: Much of this map unit is in woodland, but many areas are cleared and in pasture; some areas are used for growing Christmas trees

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Low
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Very strongly acid or strongly acid
Depth to bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 2 inches—partially decomposed forest litter
2 to 3 inches—dark brown fine sandy loam

Subsurface layer:
3 to 8 inches—yellowish brown fine sandy loam

Subsoil:
8 to 16 inches—yellowish brown gravelly sandy loam

Substratum:
16 to 29 inches—brownish yellow sandy loam
29 inches—soft, weathered granitic gneiss bedrock

Inclusions

Contrasting inclusions:
• Areas of soils that have more clay in the subsoil than the Chestnut soil and have bedrock at a depth of more than 60 inches, in concave positions
• Areas of Greenlee soils that have a high content of rock fragments and have bedrock at a depth of more than 60 inches, in concave positions
• Small areas of Cleveland soils that have bedrock at a depth of less than 20 inches

Similar inclusions:
• Areas of Ashe soils that have hard bedrock between depths of 20 and 40 inches

Use and Management

Cropland

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
• Because of a moisture deficiency caused by the limited depth to bedrock and an equipment limitation on very steep slopes, the establishment and maintenance of pasture are difficult.
• Good pasture management is essential in controlling erosion and maintaining productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• The slope causes a severe erosion hazard during harvesting and reforestation and limits the safe operation of equipment and the types of equipment that may be used.
• Susceptibility to windthrow is a concern due to the limited rooting depth.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include eastern white pine and yellow-poplar.
• Fraser fir is an example of a Christmas tree species suitable for planting.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and depth to bedrock are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

ChG—Chestnut-Ashe complex, 50 to 95 percent slopes, very stony

Composition

Chestnut soil: Averaging about 50 percent of map

units, but ranging between 40 and 60 percent of each mapped area
Ashe soil: Averaging about 35 percent of map units, but ranging between 20 and 50 percent of each mapped area

Setting

Landscape position: Side slopes of mountain ridges
Major uses: Much of this map unit is in woodland, but many areas are cleared and used as pasture

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Low
Depth to high water table: More than 6 feet
Drainage class: Chestnut—well drained; Ashe—somewhat excessively drained
Flood hazard: None
Soil reaction: Very strongly acid to moderately acid
Depth to bedrock: Chestnut—0 to 40 inches to soft bedrock; Ashe—0 to 40 inches to hard bedrock

Typical Profile

Chestnut

Surface layer:
0 to 2 inches—partially decomposed forest litter
2 to 3 inches—dark brown fine sandy loam
3 to 8 inches—yellowish brown fine sandy loam

Subsoil:
8 to 16 inches—yellowish brown gravelly sandy loam

Substratum:
16 to 29 inches—brownish yellow sandy loam
29 to 60 inches—soft, weathered granitic gneiss bedrock

Ashe

Surface layer:
0 to 4 inches—brown gravelly fine sandy loam

Subsurface layer:
4 to 10 inches—dark yellowish brown fine sandy loam

Subsoil:
10 to 26 inches—yellowish brown loam
26 to 32 inches—yellowish brown fine sandy loam

Substratum:
32 inches—hard bedrock

Inclusions

Contrasting inclusions:
- Areas of soils that have more clay in the subsoil than the Chestnut and Ashe soils and have bedrock at a depth of more than 60 inches, in concave positions
- Areas of Greenlee soils that have a high content of rock fragments and have bedrock at a depth of more than 60 inches, in concave positions
- Small areas of Cleveland soils that have bedrock at a depth of less than 20 inches

Use and Management

Row crops, small grain, and pasture and hay

Suitability: Unsuited
Management concerns and considerations:
- Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.
- Because of a moisture deficiency, caused by the limited depth to bedrock, and the equipment limitation on very steep slopes, the establishment and maintenance of pasture are difficult.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
- The slope causes a severe erosion hazard during harvesting and reforestation and limits the safe operation of equipment and the types of equipment that may be used.
- Susceptibility to windthrow is a concern due to the limited rooting depth.
- Plant competition is a concern unless competing vegetation is controlled.
- Seedling mortality is a concern in areas of the Ashe soil due to a moisture deficiency and is worse on south- and west-facing slopes.
- Trees suitable for planting include eastern white pine and yellow-poplar.
- Christmas tree species suitable for planting include Fraser fir, Norway spruce, and Scotch pine.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
- The slope and depth to bedrock are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

CjD—Chestnut-Edneyville complex, 15 to 30 percent slopes, stony

Composition

Chestnut soil: Averaging about 50 percent of map units, but ranging between 40 and 60 percent of each mapped area
Edneyville soil: Averaging about 30 percent of map units, but ranging between 20 and 40 percent of each mapped area

Setting

Landscape position: Crests, shoulders, and side slopes of mountain ridges
Major uses: Most areas are cleared and used for pasture, but several areas are in woodland

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Chestnut—low; Edneyville—moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Very strongly acid to moderately acid
Depth to bedrock: Chestnut—0 to 40 inches to soft bedrock; Edneyville—more than 60 inches

Typical Profile

Chestnut

Surface layer:
0 to 2 inches—partially decomposed forest litter
2 to 3 inches—dark brown fine sandy loam
3 to 8 inches—yellowish brown fine sandy loam

Subsoil:
8 to 16 inches—yellowish brown gravelly sandy loam

Substratum:
16 to 29 inches—brownish yellow sandy loam
29 to 60 inches—soft, weathered granitic gneiss bedrock

Edneyville

Surface layer:
0 to 8 inches—dark brown loam

Subsoil:
8 to 22 inches—brown and strong brown loam
22 to 28 inches—strong brown sandy loam

Substratum:
28 to 62 inches—dark yellowish brown and dark gray saprolite that crushes to fine sandy loam

Inclusions

Contrasting inclusions:
• Areas of Cleveland soils that have bedrock at a depth of less than 20 inches
• Areas of Greenlee soils that have a high content of rock fragments throughout

Similar inclusions:
• Areas of Ashe soils that have hard bedrock between depths of 20 and 40 inches
• Areas of soils that have bedrock between depths of 40 and 60 inches

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope and stoniness, crop production is impractical.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
• The stoniness and the slope limit the use of the soils for hayland.
• Good pasture management is essential in controlling erosion and maintaining productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation and limits the operation of equipment.
• Susceptibility to windthrow is a concern in areas of the Chestnut soil due to the limited rooting depth.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include eastern white pine and yellow-poplar.
• Christmas tree species suitable for planting include Fraser fir, Scotch pine, and Norway spruce.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope is a limitation affecting most urban uses. The limited depth to bedrock in the Chestnut soil is an additional limitation. Because of the severity of these

limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 6e

CjE—Chestnut-Edneyville complex, 30 to 50 percent slopes, stony

Composition

Chestnut soil: Averaging about 50 percent of map units, but ranging between 40 and 60 percent of each mapped area
Edneyville soil: Averaging about 30 percent of map units, but ranging between 20 and 40 percent of each mapped area

Setting

Landscape position: Crests, shoulders, and side slopes of mountain ridges
Major uses: Most areas are cleared and used for pasture, but several areas are in woodland

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Chestnut—low; Edneyville—moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Very strongly acid to moderately acid
Depth to bedrock: Chestnut—0 to 40 inches to soft bedrock; Edneyville—more than 60 inches

Typical Profile

Chestnut

Surface layer:
0 to 2 inches—partially decomposed forest litter
2 to 3 inches—dark brown fine sandy loam
3 to 8 inches—yellowish brown fine sandy loam

Subsoil:
8 to 16 inches—yellowish brown gravelly sandy loam

Substratum:
16 to 29 inches—brownish yellow sandy loam
29 to 60 inches—soft, weathered granitic gneiss bedrock

Edneyville

Surface layer:
0 to 8 inches—dark brown loam

Subsoil:
8 to 22 inches—brown and strong brown loam
22 to 28 inches—strong brown sandy loam

Substratum:
28 to 62 inches—dark yellowish brown and dark gray saprolite that crushes to fine sandy loam

Inclusions

Contrasting inclusions:
• Areas of Cleveland soils that have bedrock at a depth of less than 20 inches
• Areas of Greenlee soils that have a high content of rock fragments throughout

Similar inclusions:
• Areas of Ashe soils that have hard bedrock between depths of 20 and 40 inches
• Areas of soils that have bedrock between depths of 40 and 60 inches

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope and stoniness, crop production is impractical.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
• Good pasture management is essential in controlling erosion and maintaining productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes a severe erosion hazard during harvesting and reforestation and limits the safe operation of equipment and the types of equipment that may be used.
• Susceptibility to windthrow is a concern in areas of the Chestnut soil due to the limited rooting depth.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include eastern white pine and yellow-poplar.
• Christmas tree species suitable for planting include Fraser fir, Scotch pine, and Norway spruce.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope is a limitation affecting most urban uses. The limited depth to bedrock in the Chestnut soil is an additional limitation. Because of the severity of these limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

Cs—Craigsville cobbly sandy loam, frequently flooded

Setting

Landscape position: Mountain flood plains
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid or rapid
Available water capacity: Low or moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: Frequent flooding for very brief duration from November to May
Soil reaction: Strongly acid or very strongly acid
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 1 inch—partially decomposed forest litter
1 to 4 inches—dark grayish brown cobbly sandy loam

Subsurface layer:
4 to 9 inches—dark yellowish brown cobbly sandy loam

Subsoil:
9 to 40 inches—yellowish brown very cobbly sandy loam
40 to 63 inches—yellowish brown extremely cobbly sandy loam

Inclusions

Similar inclusions:
• Small areas of Northcove soils that are not subject to flooding
• Small areas that consist mainly of cobbles, stones, or boulders and have little or no soil material

Use and Management

Row crops and small grain

Suitability: Poorly suited
Management concerns and considerations:
• Rock fragments in the surface layer seriously hinder or prevent tillage operations in most areas.

Pasture and hay

Suitability: Poorly suited
Management concerns and considerations:
• Rock fragments in and on the soil prevent the use of mowers, disks, and other equipment needed for hay cutting or pasture renovation in most areas.

Woodland

Suitability: Well suited
Management concerns and considerations:
• Plant competition is the only significant management concern. Seeds and seedlings grow well if competing vegetation is controlled.
• Trees suitable for planting include eastern white pine and yellow-poplar.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The flooding is a limitation that is extremely difficult to overcome.

Interpretive Group

Land capability subclass: 3s

CuD—Cullasaja very cobbly loam, 15 to 30 percent slopes, very stony

Setting

Landscape position: Footslopes, benches, and toeslopes
Major uses: Most areas are cleared and used for pasture

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Low
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Very strongly acid to moderately acid
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 2 inches—partially decomposed forest litter
2 to 12 inches—very dark brown very cobbly loam
12 to 15 inches—dark yellowish brown very cobbly fine sandy loam

Subsoil:
15 to 46 inches—dark yellowish brown and yellowish brown very cobbly fine sandy loam

Substratum:
46 to 60 inches—yellowish brown very cobbly loamy sand

Inclusions

Contrasting inclusions:
• Small areas of Ashe or Chestnut soils that have bedrock between depths of 20 and 40 inches
• Areas of soils that have fewer rock fragments throughout than the Cullasaja soil

Similar inclusions:
• Areas of Greenlee soils that do not have a dark surface layer

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope and rock fragments, crop production is impractical.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
• Rock fragments in the surface layer and the slope are severe limitations affecting pasture and hayland management.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation.
• The slope and the rock fragments in and on the soil limit the use of equipment.
• Seedling mortality is a concern because of the droughty nature of this soil.
• Plant competition is a concern unless competing vegetation is controlled.
• Fraser fir is suitable for planting.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and the large stones in the soil are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7s

Di—Dillard loam, rarely flooded

Setting

Landscape position: Low stream terraces and toeslopes
Major uses: Most areas are cleared and used for pasture, hay, or crop production

Soil Properties and Features

Permeability: Moderate in the subsoil and very slow in the substratum
Available water capacity: Moderate
High water table: An apparent water table at a depth of 2 to 3 feet from December to April
Drainage class: Moderately well drained
Flood hazard: Rare flooding for very brief duration from November to May
Soil reaction: Strongly acid or moderately acid, except in limed areas
Depth to bedrock: More than 60 inches

Typical Profile

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

Subsurface layer:
6 to 10 inches—dark yellowish brown clay loam

Subsoil:
10 to 30 inches—yellowish brown and light yellowish brown clay loam
30 to 42 inches—gray clay loam

Substratum:
42 to 60 inches—mottled gravelly sandy loam

Inclusions

Contrasting inclusions:
• Areas of Calvin soils that are well drained, have a high content of rock fragments throughout, and have shale bedrock between depths of 20 and 40 inches, on adjacent slopes

• Areas of soils that are somewhat poorly drained or poorly drained, commonly in small depressions

Similar inclusions:
• Areas of soils that have less clay and more sand in the subsoil
• Small areas of well drained soils

Use and Management

Row crops and small grain

Suitability: Well suited
Management concerns and considerations:
• This soil is suited to most crops, grasses, and legumes that are adapted to the local climate.
• Crops that are seeded late in spring and that can tolerate wetness in the root zone are best suited.

Pasture and hay

Suitability: Well suited
Management concerns and considerations:
• This soil has few limitations affecting pasture and hayland.
• Plant species that can tolerate wetness in the root zone are best suited.

Woodland

Suitability: Well suited
Management concerns and considerations:
• Plant competition is the only significant management concern. Seeds and seedlings grow well if competing vegetation is controlled.
• Trees suitable for planting include yellow-poplar, eastern white pine, and black walnut.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The wetness due to the high water table is the main limitation affecting urban uses. It is a special concern for septic tank absorption fields and residential developments.

Interpretive Group

Land capability subclass: 2w

DjF—Ditney-Unicoi complex, 50 to 95 percent slopes, very rocky

Composition

Ditney soil: Averaging about 45 percent of map units, but ranging between 30 and 60 percent of each mapped area

Unicoi soil: Averaging about 40 percent of map units, but ranging between 30 and 50 percent of each mapped area

Setting

Landscape position: Mountainsides
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Ditney—low; Unicoi—very low
Depth to high water table: More than 6 feet
Drainage class: Ditney—well drained; Unicoi—somewhat excessively drained
Flood hazard: None
Soil reaction: Extremely acid to strongly acid
Depth to bedrock: Ditney—20 to 40 inches; Unicoi—7 to 20 inches

Typical Profile

Ditney

Surface layer:
0 to 1 inch—partially decomposed forest litter
1 to 4 inches—dark grayish brown sandy loam

Subsurface layer:
4 to 8 inches—yellowish brown sandy loam

Subsoil:
8 to 24 inches—yellowish brown cobbly loam

Substratum:
24 to 27 inches—partially weathered metasandstone
27 inches—hard metasandstone

Unicoi

Surface layer:
0 to 2 inches—partially decomposed forest litter
2 to 3 inches—very dark grayish brown very cobbly sandy loam

Subsurface layer:
3 to 7 inches—brown very cobbly sandy loam

Subsoil:
7 to 15 inches—yellowish brown very cobbly sandy loam

Substratum:
15 inches—hard metasandstone

Inclusions

Similar inclusions:
• Areas of Northcove soils that have bedrock at a depth of more than 60 inches
• Areas of soils that have more clay in the subsoil

Use and Management

Row crops, small grain, and pasture and hay

Suitability: Unsuited
Management concerns and considerations:
• Because areas of this map unit are so steep and rocky, agricultural production of any type is virtually prohibited.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation and limits the safe operation of equipment and the types of equipment that may be used.
• Because of the limited depth to bedrock, there is a windthrow hazard in established stands and a susceptibility to seedling mortality due to inadequate moisture.
• Plant competition is a concern in areas of the Ditney soil unless competing vegetation is controlled.
• Trees suitable for planting include Virginia pine and shortleaf pine.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and depth to bedrock are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7s

DtE—Ditney sandy loam, 20 to 35 percent slopes

Setting

Landscape position: Mountain ridge crests, shoulders, and sides slopes
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Low
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to strongly acid
Depth to bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 1 inch—partially decomposed forest litter
1 to 4 inches—dark grayish brown sandy loam

Subsurface layer:
4 to 8 inches—yellowish brown sandy loam

Subsoil:
8 to 24 inches—yellowish brown cobbly loam

Substratum:
24 to 27 inches—partially weathered metasandstone
27 inches—hard metasandstone

Inclusions

Contrasting inclusions:
• Small areas of Unicoi or Cataska soils that have a high content of rock fragments and have bedrock within a depth of 20 inches

Similar inclusions:
• Areas of soils that have less sand and more clay in the subsoil
• Small areas of soils that have bedrock at a depth of more than 40 inches

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability: Poorly suited
Management concerns and considerations:
• The slope and the limited available water capacity restrict the use of this soil for hayland.
• Good pasture management is essential in controlling erosion and maintaining productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.
• Proper stocking rates, pasture rotation, deferred grazing, and a well planned clipping and harvesting schedule are important management practices.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope limits the operation of equipment in some areas.

• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include shortleaf pine and eastern white pine.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and depth to bedrock are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

DtF—Ditney sandy loam, 35 to 50 percent slopes

Setting

Landscape position: Side slopes of mountain ridges
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Low
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to strongly acid
Depth to bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 1 inch—partially decomposed forest litter
1 to 4 inches—dark grayish brown sandy loam

Subsurface layer:
4 to 8 inches—yellowish brown sandy loam

Subsoil:
8 to 24 inches—yellowish brown cobbly loam

Substratum:
24 to 27 inches—partially weathered metasandstone
27 inches—hard metasandstone

Inclusions

Contrasting inclusions:
• Small areas of Unicoi or Cataska soils that have a high content of rock fragments and have bedrock within a depth of 20 inches

Similar inclusions:
• Areas of soils that have less sand and more clay in the subsoil
• Small areas of soils that have bedrock at a depth of more than 40 inches

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
• Pasture management is essential in controlling erosion and maintaining productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation and limits the safe operation of equipment.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include shortleaf pine and eastern white pine.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and depth to bedrock are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

DtG—Ditney sandy loam, 50 to 80 percent slopes

Setting

Landscape position: Side slopes of mountain ridges
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Low or moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Very strongly acid or strongly acid
Depth to bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 1 inch—partially decomposed forest litter
1 to 4 inches—dark grayish brown sandy loam

Subsurface layer:
4 to 8 inches—yellowish brown sandy loam

Subsoil:
8 to 24 inches—yellowish brown cobbly loam

Substratum:
24 to 27 inches—partially weathered metasandstone
27 inches—hard metasandstone

Inclusions

Contrasting inclusions:
• Small areas of Unicoi or Cataska soils that have a high content of rock fragments and have bedrock within a depth of 20 inches

Similar inclusions:
• Areas of soils that have less sand and more clay in the subsoil
• Small areas of soils that have bedrock at a depth of more than 40 inches

Use and Management

Cropland

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability: Unsuited
Management concerns and considerations:
• Because of the slope and low available water capacity, the establishment and maintenance of pasture are extremely difficult.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes a severe erosion hazard during harvesting and reforestation and limits the safe operation of equipment and the types of equipment that may be used.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include shortleaf pine and eastern white pine.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and depth to bedrock are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

Du—Dunning silt loam, occasionally flooded

Setting

Landscape position: Flood plains and areas at stream heads
Major uses: Most areas are cleared and used for cropland, hay, or pasture

Soil Properties and Features

Permeability: Slow
Available water capacity: High
High water table: An apparent water table at a depth of 0 to 0.5 foot from January to April
Drainage class: Poorly drained or very poorly drained
Flood hazard: Occasional flooding for brief duration from December to May
Soil reaction: Moderately acid to mildly alkaline
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 12 inches—very dark gray silt loam

Subsoil:
12 to 32 inches—grayish brown clay

Substratum:
32 to 60 inches—grayish brown silty clay loam

Inclusions

Contrasting inclusions:
• Areas of Statler or Dillard soils that are well drained or moderately well drained and that have less clay and

more sand in the subsoil than the Dunning soil, on adjacent stream terraces
• Small areas of well drained or moderately well drained soils in the higher areas on the flood plain

Similar inclusions:
• Areas of Hatboro soils that have less clay and more sand in the subsoil and do not have a dark surface layer

Use and Management

Row crops and small grain

Suitability: Moderately suited
Management concerns and considerations:
• The flooding and the wetness in the root zone are the major limitations affecting crop production.
• Crops that require a short growing season and than can tolerate wetness and flooding are best suited.

Pasture and hay

Suitability: Moderately suited
Management concerns and considerations:
• The high water table and the occasional flooding are the main limitations affecting pasture and hayland.
• The wetness hinders early hay cutting operations in some years.
• Permitting grazing when the soil is saturated can cause compaction of the soil surface and thus result in slower infiltration rates and loss of the stand.
• Plant species that can tolerate wetness and flooding are best suited.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• The flooding and wetness cause an equipment limitation during the wetter parts of the year.
• The high water table leads to shallow rooting, which causes a windthrow hazard in established stands.
• The shallow root zone and the flooding increase seedling mortality rates.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include sweetgum and American sycamore.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The flooding and wetness are limitations that are extremely difficult to overcome.

Interpretive Group

Land capability subclass: 3w

EdE—Edneyville loam, 12 to 25 percent slopes

Setting

Landscape position: Mountain crests and shoulders
Major uses: Most areas are in woodland, but several areas are cleared and used for pasture

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Very strongly acid to moderately acid
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 8 inches—dark brown loam

Subsoil:
8 to 22 inches—brown and strong brown loam
22 to 28 inches—strong brown sandy loam

Substratum:
28 to 62 inches—dark yellowish brown and dark gray saprolite that crushes to fine sandy loam

Inclusions

Contrasting inclusions:
• Small areas of Chestnut or Ashe soils that have bedrock between depths of 20 and 40 inches
• Areas of soils that have bedrock between depths of 40 and 60 inches

Similar inclusions:
• Areas of soils that have more clay in the subsoil

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production and adequate soil conservation are difficult.

Pasture and hay

Suitability: Poorly suited
Management concerns and considerations:
• The slope and the limited available water capacity restrict the use of this soil for hayland.
• Good pasture management is recommended to control erosion and maintain productivity. It includes

liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation and limits the operation of equipment.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include eastern white pine and yellow-poplar.
• Christmas tree species suitable for planting include Scotch pine and Norway spruce.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope is a limitation affecting most urban uses. Because of the severity of this limitation, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 6e

EdF—Edneyville loam, 25 to 45 percent slopes

Setting

Landscape position: Shoulders and side slopes of mountain ridges
Major uses: Most areas are in woodland, but several areas are cleared and used for pasture

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Very strongly acid to moderately acid
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 8 inches—dark brown loam

Subsoil:
8 to 22 inches—brown and strong brown loam
22 to 28 inches—strong brown sandy loam

Substratum:
28 to 62 inches—dark yellowish brown and dark gray saprolite that crushes to fine sandy loam

Inclusions

Contrasting inclusions:
• Small areas of Chestnut or Ashe soils that have bedrock between depths of 20 and 40 inches
• Areas of soils that have bedrock between depths of 40 and 60 inches

Similar inclusions:
• Areas of soils that have more clay in the subsoil

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
• Good pasture management is essential in controlling erosion and maintaining productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes a severe erosion hazard during harvesting and reforestation and limits the safe operation of equipment and the types of equipment that may be used.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include eastern white pine and yellow-poplar.
• Christmas tree species suitable for planting include Scotch pine and Norway spruce.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope is a limitation affecting most urban uses. Because of the severity of this limitation, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

EvE—Edneyville-Chestnut complex, 30 to 50 percent slopes, stony

Composition

Edneyville soil: Averaging about 40 percent of map units, but ranging between 25 and 55 percent of each mapped area
Chestnut soil: Averaging about 35 percent of map units, but ranging between 20 and 50 percent of each mapped area

Setting

Landscape position: Crests, shoulders, and side slopes of mountain ridges
Major uses: Most areas are in woodland; some areas are cleared and used for pasture

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Edneyville—moderate; Chestnut—low
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Very strongly acid to moderately acid
Depth to bedrock: Edneyville—more than 60 inches; Chestnut—20 to 40 inches to soft bedrock

Typical Profile

Edneyville

Surface layer:
0 to 8 inches—dark brown loam

Subsoil:
8 to 22 inches—brown and strong brown loam
22 to 28 inches—strong brown sandy loam

Substratum:
28 to 62 inches—dark yellowish brown and dark gray saprolite that crushes to fine sandy loam

Chestnut

Surface layer:
0 to 2 inches—partially decomposed forest litter
2 to 3 inches—dark brown fine sandy loam
3 to 8 inches—yellowish brown fine sandy loam

Subsoil:
8 to 16 inches—yellowish brown gravelly sandy loam

Substratum:
16 to 29 inches—brownish yellow sandy loam
29 to 60 inches—soft, weathered granitic gneiss bedrock

Inclusions

Contrasting inclusions:
• Areas of Cleveland soils that have bedrock at a depth of less than 20 inches, on points of ridges
• Areas of Greenlee soils that have a high content of rock fragments throughout

Similar inclusions:
• Areas of Ashe soils that have hard bedrock between depths of 20 and 40 inches
• Areas of soils that have bedrock between depths of 40 and 60 inches

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
• The slope and rock fragments in and on the soil are severe limitations affecting pasture and hayland management.
• Good pasture management is essential in controlling erosion and maintaining productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation and limits the safe operation of equipment.
• Susceptibility to windthrow is a concern in areas of the Chestnut soil due to the limited rooting depth.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include eastern white pine and yellow-poplar.
• Christmas tree species suitable for planting include Fraser fir, Scotch pine, and Norway spruce.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope is a limitation affecting most urban uses. The limited depth to bedrock in the Chestnut soil is an additional limitation. Because of the severity of these limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

GrE—Greenlee very cobbly loam, 15 to 35 percent slopes, very stony

Setting

Landscape position: Mountain coves and benches
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Low
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to moderately acid
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 6 inches—brown very cobbly loam

Subsoil:
6 to 22 inches—dark yellowish brown very cobbly loam
22 to 47 inches—yellowish brown very cobbly fine sandy loam

Substratum:
47 to 65 inches—brownish yellow extremely cobbly sandy loam

Inclusions

Contrasting inclusions:
• Small areas of soils that have bedrock at a depth of less than 60 inches
• Areas of Cleveland soils that have bedrock at a depth of less than 20 inches, on adjacent side slopes

Similar inclusions:
• Small areas that consist primarily of stones, cobbles, and boulders and have very little soil material

Use and Management

Cropland

Suitability: Unsuited
Management concerns and considerations:
• Because areas of this soil are so steep and rocky, agricultural production of any type is virtually prohibited.

Pasture and hay

Suitability: Unsuited
Management concerns and considerations:
• Because of rock fragments in and on the soil and the slope, the use of mowers, disks, and other equipment needed for hay cutting or pasture renovation is restricted in most areas.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation.
• The slope and the rock fragments in and on the soil limit the use of equipment.
• Seedling mortality is a concern due to a moisture deficiency and is worse on south- and west-facing slopes.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include eastern white pine and yellow-poplar.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and the large stones in the soil are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7s

GrF—Greenlee very cobbly loam, 35 to 55 percent slopes, very stony

Setting

Landscape position: Mountain coves and benches
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Low
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to moderately acid
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 6 inches—brown very cobbly loam

Subsoil:
6 to 22 inches—dark yellowish brown very cobbly loam
22 to 47 inches—yellowish brown very cobbly fine sandy loam

Substratum:
47 to 65 inches—brownish yellow extremely cobbly sandy loam

Inclusions

Contrasting inclusions:
• Small areas of soils that have bedrock at a depth of less than 60 inches
• Areas of Cleveland soils that have bedrock at a depth of less than 20 inches, on adjacent side slopes

Similar inclusions:
• Small areas that consist primarily of stones, cobbles, and boulders and have very little soil material

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because areas of this soil are so steep and rocky, agricultural production of any type is virtually prohibited.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
• Rock fragments in and on the soil prevent the use of mowers, disks, and other equipment needed for hay cutting or pasture renovation in most areas.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• The slope causes a severe erosion hazard during harvesting and reforestation.
• The slope and the rock fragments in and on the soil limit the safe operation of equipment and the types of equipment that may be used.
• Seedling mortality is a concern due to a moisture deficiency and is worse on south- and west-facing slopes.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include eastern white pine and yellow-poplar.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and the large stones in the soil are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7s

GrG—Greenlee very cobbly loam, 55 to 80 percent slopes, very stony

Setting

Landscape position: Mountain coves
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Low
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to moderately acid
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 6 inches—brown very cobbly loam

Subsoil:
6 to 22 inches—dark yellowish brown very cobbly loam
22 to 47 inches—yellowish brown very cobbly fine sandy loam

Substratum:
47 to 65 inches—brownish yellow extremely cobbly sandy loam

Inclusions

Contrasting inclusions:
• Small areas of soils that have bedrock at a depth of less than 60 inches
• Areas of Cleveland soils that have bedrock at a depth of less than 20 inches, on adjacent side slopes

Similar inclusions:
• Small areas that consist primarily of stones, cobbles, and boulders and have very little soil material

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because areas of this soil are so steep and rocky, agricultural production of any type is virtually prohibited.

Pasture and hay

Suitability: Unsuited
Management concerns and considerations:
• Because of a moisture deficiency due to the high content of rock fragments and an equipment limitation on extremely steep slopes, the establishment and maintenance of pasture are difficult.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• The slope causes a severe erosion hazard during harvesting and reforestation.
• The slope and the rock fragments in and on the soil limit the safe operation of equipment and the types of equipment that may be used.
• Seedling mortality is a concern due to a moisture deficiency and is worse on south- and west-facing slopes.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include eastern white pine and yellow-poplar.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and the large stones in the soil are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7s

Ht—Hatboro loam, occasionally flooded

Setting

Landscape position: Flood plains
Major uses: Most areas are cleared and used for cropland, hay, or pasture

Soil Properties and Features

Permeability: Moderate
Available water capacity: High
High water table: An apparent water table at a depth of 0 to 0.5 foot from October to May
Drainage class: Poorly drained
Flood hazard: Occasional flooding for very brief duration from November to May
Soil reaction: Very strongly acid to neutral above a depth of 30 inches and moderately acid or slightly acid below a depth of 30 inches
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 10 inches—very dark grayish brown loam

Subsoil:
10 to 32 inches—grayish brown clay loam

Substratum:
32 to 60 inches—grayish brown stratified sandy loam and loamy sand

Inclusions

Contrasting inclusions:
• Small areas of Dillard and Statler soils that are moderately well drained or well drained and have more clay in the subsoil than the Hatboro soil, on adjacent stream terraces
• Small areas of well drained or moderately well drained soils on the higher parts of the flood plain

Similar inclusions:
• Areas of Dunning soils that have more clay and less sand in the subsoil and have a dark surface layer

Use and Management

Row crops and small grain

Suitability: Moderately suited

Management concerns and considerations:
• The flooding and the wetness in the root zone are the major limitations affecting crop production.
• Crops that require a short growing season and that can tolerate wetness and flooding are best suited.

Pasture and hay

Suitability: Moderately suited
Management concerns and considerations:
• The high water table and the occasional flooding are the main limitations affecting pasture and hayland.
• The wetness hinders early hay cutting operations in some years.
• Permitting grazing when the soil is saturated can cause compaction of the soil surface and thus result in slower infiltration rates and loss of the stand.
• Plant species that can tolerate wetness and flooding are best suited.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• The flooding and wetness cause an equipment limitation during the wetter parts of the year.
• The high water table leads to shallow rooting and thus causes a windthrow hazard in established stands.
• Trees suitable for planting include sweetgum and American sycamore.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The flooding and wetness are limitations that are extremely difficult to overcome.

Interpretive Group

Land capability subclass: 3w

Hu—Hatboro sandy loam, frequently flooded

Setting

Landscape position: Flood plains
Major uses: Most areas are cleared and used for cropland, hay, or pasture

Soil Properties and Features

Permeability: Moderate
Available water capacity: High
High water table: An apparent water table at a depth of 0 to 0.5 foot from October to May
Drainage class: Poorly drained
Flood hazard: Frequent flooding for very brief duration from November to May
Soil reaction: Very strongly acid to neutral above a depth of 30 inches and moderately acid or slightly acid below a depth of 30 inches
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 10 inches—very dark grayish brown sandy loam

Subsoil:
10 to 32 inches—grayish brown clay loam

Substratum:
32 to 60 inches—grayish brown stratified sandy loam and loamy sand

Inclusions

Contrasting inclusions:
• Small areas of Dillard and Statler soils that are moderately well drained or well drained and have more clay in the subsoil than the Hatboro soil, on adjacent stream terraces
• Small areas of well drained or moderately well drained soils on the higher parts of the flood plain

Similar inclusions:
• Areas of Dunning soils that have more clay and less sand in the subsoil and have a dark surface layer

Use and Management

Row crops and small grain

Suitability: Moderately suited
Management concerns and considerations:
• The flooding and the wetness in the root zone are the major limitations affecting crop production.
• Crops that require a short growing season and that can tolerate wetness and flooding are best suited.

Pasture and hay

Suitability: Moderately suited
Management concerns and considerations:
• The high water table and the frequent flooding are the main limitations affecting pasture and hayland.
• The wetness hinders early hay cutting operations in some years.
• Permitting grazing when the soil is saturated can cause compaction of the soil surface and thus result in slower infiltration rates and loss of the stand.
• Plant species that can tolerate wetness and flooding are best suited.

Woodland

Suitability: Poorly suited

Management concerns and considerations:
• The flooding and wetness cause an equipment limitation during the wetter parts of the year.
• The high water table leads to shallow rooting, which causes a windthrow hazard in established stands.
• Trees suitable for planting include sweetgum and American sycamore.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The flooding and wetness are limitations that are extremely difficult to overcome.

Interpretive Group

Land capability subclass: 4w

JeD—Jeffrey cobbly loam, 15 to 30 percent slopes, very stony

Setting

Landscape position: Crests and shoulders of mountain ridges
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderate or moderately rapid
Available water capacity: Low
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Very strongly acid or strongly acid
Depth to bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 4 inches—partially decomposed forest litter
4 to 13 inches—dark brown and dark yellowish brown cobbly loam

Subsoil:
13 to 29 inches—dark yellowish brown cobbly sandy loam

Substratum:
29 inches—hard quartzite bedrock

Inclusions

Contrasting inclusions:
• Areas of Maymead or Brookshire soils that have bedrock at a depth of more than 60 inches
• Areas of Northcove soils that have a high content of rock fragments throughout and have bedrock at a depth of more than 60 inches

Similar inclusions:
• Areas of Ditney soils that do not have a dark surface layer
• Areas of soils that have less sand and more clay in the subsoil

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope and rock fragments in and on the soil, crop production is impractical.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
• Because of rock fragments in and on the soil, the use of mowers, disks, and other equipment needed for hay cutting is restricted in most areas.
• Because of a moisture deficiency, caused by the limited depth to bedrock, and an equipment limitation, caused by rock fragments on the soil surface, the establishment and maintenance of pasture are difficult.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• In many areas, the slope and rock fragments on the surface interfere with the use of mechanical equipment.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include yellow-poplar and eastern white pine.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and depth to bedrock are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 6e

JeE—Jeffrey cobbly loam, 30 to 50 percent slopes, very stony

Setting

Landscape position: Shoulders and side slopes of mountain ridges
Major uses: Woodland in all areas

Soil Properties and Features

Permeability: Moderate or moderately rapid
Available water capacity: Low
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Very strongly acid or strongly acid
Depth to bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 4 inches—partially decomposed forest litter
4 to 13 inches—dark brown and dark yellowish brown cobbly loam

Subsoil:
13 to 29 inches—dark yellowish brown cobbly sandy loam

Substratum:
29 inches—hard quartzite bedrock

Inclusions

Contrasting inclusions:
• Areas of Maymead or Brookshire soils that have bedrock at a depth of more than 60 inches
• Areas of Northcove soils that have a high content of rock fragments throughout and have bedrock at a depth of more than 60 inches

Similar inclusions:
• Areas of Ditney soils that do not have a dark surface layer
• Areas of soils that have less sand and more clay in the subsoil

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
• Because of a moisture deficiency caused by the limited depth to bedrock and an equipment limitation on very steep slopes, the establishment and maintenance of pasture are difficult.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation.
• The slope and the rock fragments on the soil surface limit the safe operation of equipment and the types of equipment that may be used.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include yellow-poplar and eastern white pine.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and depth to bedrock are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

KeC—Keener loam, 5 to 12 percent slopes

Setting

Landscape position: Footslopes, benches, and colluvial fans
Major uses: Most areas are in woodland; some areas are cleared and used for agriculture

Soil Properties and Features

Permeability: Moderate
Available water capacity: Moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to moderately acid
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 2 inches—very dark grayish brown loam

Subsurface layer:
2 to 7 inches—yellowish brown loam

Subsoil:
7 to 45 inches—yellowish brown and strong brown clay loam
45 to 63 inches—strong brown very cobbly loam

Inclusions

Contrasting inclusions:
• Areas of Northcove soils that have a high content of rock fragments throughout

Similar inclusions:
• Areas of Maymead soils that have more sand and less clay in the subsoil
• Areas that have significant quantities of rock fragments scattered on the soil surface

Use and Management

Row crops and small grain

Suitability: Moderately suited
Management concerns and considerations:
• Erosion is a moderate hazard if cultivated crops are grown.
• Rock fragments in the surface layer may hinder tillage operations in some areas.
• Conservation tillage, crop residue management, contour farming, and the use of cover crops help to control erosion, increase infiltration rates, and maintain soil tilth.
• The use of terraces, grassed waterways, field borders, and filter strips in the appropriate places can help to prevent sediment in runoff water from entering streams and bodies of water.

Pasture and hay

Suitability: Well suited
Management concerns and considerations:
• Proper stocking rates, pasture rotation, deferred grazing, and a well planned clipping and harvesting schedule are important management practices.
• Good pasture management is recommended to control erosion and maintain productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Well suited
Management concerns and considerations:
• Plant competition is the only significant management concern. Seeds and seedlings grow well if competing vegetation is controlled.
• Trees suitable for planting include northern red oak and yellow-poplar.

Urban development

Suitability: Moderately suited
Management concerns and considerations:
• The slope and the large stones in the subsoil are limitations affecting urban uses. Special designs for structures and facilities may minimize or overcome these limitations.

Interpretive Group

Land capability subclass: 3e

KeD—Keener loam, 12 to 20 percent slopes

Setting

Landscape position: Footslopes, benches, colluvial fans, and coves
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderate
Available water capacity: Moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to moderately acid
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 2 inches—very dark grayish brown loam

Subsurface layer:
2 to 7 inches—yellowish brown loam

Subsoil:
7 to 45 inches—yellowish brown and strong brown clay loam
45 to 63 inches—strong brown very cobbly loam

Inclusions

Contrasting inclusions:
• Areas of Northcove soils that have a high content of rock fragments throughout

Similar inclusions:
• Areas of Maymead soils that have more sand and less clay in the subsoil
• Areas that have significant quantities of rock fragments scattered on the soil surface

Use and Management

Row crops and small grain

Suitability: Poorly suited
Management concerns and considerations:
• Erosion is a severe hazard if cultivated crops are grown.
• Conservation tillage, crop residue management, contour farming, crop rotations, and the use of cover crops are important practices in controlling erosion and maintaining productivity.
• The use of contour strips, grassed waterways, field borders, and filter strips on moderately steep slopes helps to prevent sediment in runoff water from entering streams and bodies of water.

Pasture and hay

Suitability: Moderately suited
Management concerns and considerations:
• Ensuring proper fertility and maintaining an adequate stand help to increase production and reduce sediment and nutrient runoff on moderately steep pastures and hayland.
• Good pasture management is recommended to control erosion and maintain productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation and limits the operation of equipment.
• Locating roads and trails as closely to the contour as possible, protecting permanent access roads by the use of gravel, installing water breaks and culverts, and closing roads that are no longer used may reduce the hazard of erosion.
• Equipment tracks or tires can cause rutting or miring during rainy periods, especially where the soil is eroded into the subsoil. The use of equipment can be delayed until the soil is dry, and gravel or other suitable subgrade material can be added to the main roads.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include northern red oak and yellow-poplar.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and the large stones in the subsoil are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 4e

KeE—Keener loam, 20 to 35 percent slopes

Setting

Landscape position: Footslopes, benches, colluvial fans, and coves
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderate
Available water capacity: Moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to moderately acid
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 2 inches—very dark grayish brown loam

Subsurface layer:
2 to 7 inches—yellowish brown loam

Subsoil:
7 to 45 inches—yellowish brown and strong brown clay loam
45 to 63 inches—strong brown very cobbly loam

Inclusions

Contrasting inclusions:
• Areas of Northcove soils that have a high content of rock fragments throughout

Similar inclusions:
• Areas of Maymead soils that have more sand and less clay in the subsoil
• Areas that have significant quantities of rock fragments scattered on the soil surface

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an

equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability: Poorly suited
Management concerns and considerations:
• Ensuring proper fertility and maintaining an adequate stand help to increase production and reduce sediment and nutrient runoff on steep pastures and hayland.
• Good pasture management is essential in controlling erosion and maintaining productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation and limits the safe operation of equipment and the types of equipment that may be used.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include northern red oak and yellow-poplar.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and the large stones in the subsoil are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 6e

KeF—Keener loam, 35 to 50 percent slopes

Setting

Landscape position: Benches, colluvial fans, and coves
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderate
Available water capacity: Moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to moderately acid
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 2 inches—very dark grayish brown loam

Subsurface layer:
2 to 7 inches—yellowish brown loam

Subsoil:
7 to 45 inches—yellowish brown and strong brown clay loam
45 to 63 inches—strong brown very cobbly loam

Inclusions

Contrasting inclusions:
• Areas of Northcove soils that have a high content of rock fragments throughout

Similar inclusions:
• Areas of Maymead soils that have more sand and less clay in the subsoil
• Areas that have significant quantities of rock fragments scattered on the soil surface

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
• Good pasture management is essential in controlling erosion and maintaining productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes a severe erosion hazard during harvesting and reforestation and limits the safe operation of equipment and the types of equipment that may be used.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include northern red oak and yellow-poplar.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and the large stones in the subsoil are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

LoD—Lonon loam, 12 to 20 percent slopes

Setting

Landscape position: Footslopes, benches, and toeslopes
Major uses: Some areas are in woodland, but several areas are used for pasture, hay, or crop production

Soil Properties and Features

Permeability: Moderate
Available water capacity: High
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to moderately acid, except in limed areas
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 2 inches—brown loam

Subsurface layer:
2 to 6 inches—strong brown loam

Subsoil:
6 to 29 inches—yellowish red loam
29 to 50 inches—yellowish red clay loam
50 to 65 inches—red loam

Inclusions

Contrasting inclusions:
• Small areas of Northcove soils that have a high content of rock fragments throughout

Similar inclusions:
• Areas of Keener soils that have browner colors in the subsoil
• Small areas of soils that have significant quantities of cobbles or stones scattered on the soil surface

Use and Management

Row crops and small grain

Suitability: Poorly suited
Management concerns and considerations:
• Erosion is a severe hazard if cultivated crops are grown.
• Conservation tillage, crop residue management, contour farming, crop rotations, and the use of cover crops are important practices in controlling erosion and maintaining productivity.
• The use of contour strips, grassed waterways, field borders, and filter strips on moderately steep slopes helps to prevent sediment in runoff water from entering streams and bodies of water.

Pasture and hay

Suitability: Moderately suited
Management concerns and considerations:
• Ensuring proper fertility and maintaining an adequate stand help to increase production and reduce sediment and nutrient runoff on moderately steep pastures and hayland.
• Good pasture management is recommended to control erosion and maintain productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation and limits the operation of equipment.
• Locating roads and trails as closely to the contour as possible, protecting permanent access roads by the use of gravel, installing water breaks and culverts, and closing roads that are no longer used may reduce the hazard of erosion.
• Equipment tracks or tires can cause rutting or miring during rainy periods, especially where the soil is eroded into the subsoil. The use of equipment can be delayed until the soil is dry, and gravel or other suitable subgrade material can be added to the main roads.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include northern red oak and yellow-poplar.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and the large stones in the subsoil are

limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 4e

LoE—Lonon loam, 20 to 35 percent slopes

Setting

Landscape position: Footslopes, benches, and toeslopes
Major uses: Some areas are in woodland, but several areas are used for pasture, hay, or crop production

Soil Properties and Features

Permeability: Moderate
Available water capacity: High
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to moderately acid, except in limed areas
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 2 inches—brown loam

Subsurface layer:
2 to 6 inches—strong brown loam

Subsoil:
6 to 29 inches—yellowish red loam
29 to 50 inches—yellowish red clay loam
50 to 65 inches—red loam

Inclusions

Contrasting inclusions:
• Small areas of Northcove soils that have a high content of rock fragments throughout

Similar inclusions:
• Areas of Keener soils that have browner colors in the subsoil
• Small areas of soils that have significant quantities of cobbles or stones scattered on the soil surface

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability: Poorly suited
Management concerns and considerations:
• Ensuring proper fertility and maintaining an adequate stand help to increase production and reduce sediment and nutrient runoff on steep pastures and hayland.
• Good pasture management is essential in controlling erosion and maintaining productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation and limits the safe operation of equipment and the types of equipment that may be used.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include northern red oak and yellow-poplar.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and the large stones in the subsoil are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 6e

MaE—Maymead loam, 20 to 35 percent slopes

Setting

Landscape position: Mountain coves, footslopes, and benches
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None

Soil reaction: Very strongly acid or strongly acid
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 2 inches—partially decomposed forest litter
2 to 4 inches—dark brown loam

Subsurface layer:
4 to 8 inches—dark yellowish brown loam

Subsoil:
8 to 18 inches—strong brown loam
18 to 38 inches—strong brown gravelly loam

Substratum:
38 to 63 inches—yellowish brown extremely gravelly loam

Inclusions

Contrasting inclusions:
• Small areas of Northcove soils that have a high content of rock fragments throughout

Similar inclusions:
• Areas of Keener soils that have less sand and more clay in the subsoil

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability: Poorly suited
Management concerns and considerations:
• The slope and the limited available water capacity restrict the use of this soil for hayland.
• Ensuring proper fertility and maintaining an adequate stand help to increase production and reduce sediment and nutrient runoff on steep pastures and hayland.
• Good pasture management is essential in controlling erosion and maintaining productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation and limits the operation of equipment.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include yellow-poplar and eastern white pine.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope is a limitation affecting most urban uses. Because of the severity of this limitation, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 6e

MaF—Maymead loam, 35 to 50 percent slopes

Setting

Landscape position: Mountain coves
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Very strongly acid or strongly acid
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 2 inches—partially decomposed forest litter
2 to 4 inches—dark brown loam

Subsurface layer:
4 to 8 inches—dark yellowish brown loam

Subsoil:
8 to 18 inches—strong brown loam
18 to 38 inches—strong brown gravelly loam

Substratum:
38 to 63 inches—yellowish brown extremely gravelly loam

Inclusions

Contrasting inclusions:
• Small areas of Northcove soils that have a high content of rock fragments throughout

Similar inclusions:
• Areas of Keener soils that have less sand and more clay in the subsoil

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
• Good pasture management is essential in controlling erosion and maintaining productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation and limits the safe operation of equipment and the types of equipment that may be used.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include yellow-poplar and eastern white pine.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope is a limitation affecting most urban uses. Because of the severity of this limitation, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

NcF—Northcove very stony sandy loam, 35 to 50 percent slopes

Setting

Landscape position: Mountain coves, footslopes, and benches
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Low
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to moderately acid
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 1 inch—partially decomposed forest litter
1 to 2 inches—dark brown very stony sandy loam

Subsurface layer:
2 to 5 inches—dark yellowish brown very stony sandy loam

Subsoil:
5 to 24 inches—yellowish brown very stony sandy loam
24 to 38 inches—yellowish brown extremely stony sandy loam

Substratum:
38 to 63 inches—yellowish brown extremely cobbly sandy loam

Inclusions

Contrasting inclusions:
• Small areas of Keener or Lonon soils that have fewer rock fragments and more clay in the subsoil than the Northcove soil

Similar inclusions:
• Small areas that consist mostly of stones, cobbles, or boulders and have very little soil material

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because areas of this soil are so steep, narrow, and rocky, agricultural production of any type is virtually prohibited.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
• Rock fragments in and on the soil prevent the use of mowers, disks, and other equipment needed for hay cutting or pasture renovation in most areas.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation.
• The slope and the rock fragments in and on the soil limit the safe operation of equipment.
• Seedling mortality is a concern due to a moisture deficiency and is worse on south- and west-facing slopes.
• Plant competition is a concern unless competing vegetation is controlled.
• Eastern white pine is suitable for planting.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and the large stones in the soil are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7s

NcG—Northcove very stony sandy loam, 50 to 80 percent slopes

Setting

Landscape position: Mountain coves, footslopes, and benches
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Low
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to moderately acid
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 1 inch—partially decomposed forest litter
1 to 2 inches—dark brown very stony sandy loam

Subsurface layer:
2 to 5 inches—dark yellowish brown very stony sandy loam

Subsoil:
5 to 24 inches—yellowish brown very stony sandy loam
24 to 38 inches—yellowish brown extremely stony sandy loam

Substratum:
38 to 63 inches—yellowish brown extremely cobbly sandy loam

Inclusions

Contrasting inclusions:
• Small areas of Keener or Lonon soils that have fewer rock fragments and more clay in the subsoil than the Northcove soil

Similar inclusions:
• Small areas that consist mostly of stones, cobbles, or boulders and have very little soil material

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because areas of this soil are so steep, narrow, and rocky, agricultural production of any type is virtually prohibited.

Pasture and hay

Suitability: Unsuited
Management concerns and considerations:
• Because of the low available water capacity, the high content of rock fragments in and on the soil, and an equipment limitation on extremely steep slopes, the establishment and maintenance of hay and pasture are difficult.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• The slope causes a severe erosion hazard during harvesting and reforestation.
• The slope and the rock fragments in and on the soil limit the safe operation of equipment and the types of equipment that may be used.
• Seedling mortality is a concern due to a moisture deficiency and is worse on south- and west-facing slopes.
• Plant competition is a concern unless competing vegetation is controlled.
• Eastern white pine is suitable for planting.

Urban development

Suitability: Poorly suited

Management concerns and considerations:
- The slope and the large stones in the soil are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7s

PgE—Pigeonroost gravelly loam, 7 to 35 percent slopes, very stony

Setting

Landscape position: Summits, shoulders, and backslopes
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderate
Available water capacity: Moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to moderately acid
Depth to bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 5 inches—dark yellowish brown gravelly loam

Subsoil:
5 to 24 inches—strong brown clay loam
24 to 37 inches—strong brown sandy loam

Substratum:
37 to 45 inches—weathered gneiss bedrock

Inclusions

Contrasting inclusions:
- Edneyville soils that have bedrock at a depth of more than 60 inches and have less clay in the subsoil than the Pigeonroost soil
- Areas of rock outcrop

Similar inclusions:
- Areas of soils that have redder colors in the subsoil
- Areas that have a dark surface layer

Use and Management

Row crops, small grain, and hay

Suitability: Unsuited
Management concerns and considerations:
- There is a severe hazard of erosion in the steeper areas. Because of this hazard and the stones on the soil surface, the production of cultivated crops is impractical.

Pasture

Suitability: Poorly suited
Management concerns and considerations:
- Rock fragments on the soil surface interfere with the use of disks and other equipment needed for pasture maintenance.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
- There is an erosion hazard and an equipment limitation in the steeper areas.
- Because of the limited depth to bedrock, there is a windthrow hazard in established stands and a susceptibility to seedling mortality due to inadequate moisture, which is worse on south- and west-facing slopes.
- Plant competition is a concern unless competing vegetation is controlled.
- Trees suitable for planting include eastern white pine and white oak.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
- The depth to bedrock is the main limitation affecting urban uses. The slope is a limitation in the steeper areas. Because of the severity of these limitations, there would be considerable expense in the design and construction of buildings and facilities that function properly.

Interpretive Group

Land capability subclass: 7e

PgF—Pigeonroost gravelly loam, 35 to 55 percent slopes, very stony

Setting

Landscape position: Shoulders and backslopes
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderate
Available water capacity: Moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained

Flood hazard: None
Soil reaction: Extremely acid to moderately acid
Depth to bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 5 inches—dark yellowish brown gravelly loam

Subsoil:
5 to 24 inches—strong brown clay loam
24 to 37 inches—strong brown sandy loam

Substratum:
37 to 45 inches—weathered gneiss bedrock

Inclusions

Contrasting inclusions:
• Edneyville soils that have bedrock at a depth of more than 60 inches and have less clay in the subsoil than the Pigeonroost soil
• Areas of rock outcrop

Similar inclusions:
• Areas of soils that have redder colors in the subsoil
• Areas that have a dark surface layer

Use and Management

Row crops, small grain, and pasture and hay

Suitability: Unsuited
Management concerns and considerations:
• There is a severe hazard of erosion. Because of this hazard and the stones on the soil surface, the production of cultivated crops is impractical and pasture maintenance is difficult.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• There is a severe erosion hazard during harvesting and reforestation and an equipment limitation on very steep slopes.
• Because of the limited depth to bedrock, there is a windthrow hazard in established stands and a susceptibility to seedling mortality due to inadequate moisture, which is worse on south- and west-facing slopes.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include eastern white pine and white oak.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The depth to bedrock and the slope are the main limitations affecting urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings and facilities that function properly.

Interpretive Group

Land capability subclass: 7e

PnF—Pineola loam, 35 to 55 percent slopes, very stony

Setting

Landscape position: Backslopes and shoulders
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderate
Available water capacity: Moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to moderately acid
Depth to bedrock: 20 to 40 inches

Typical Profile

Surface layer:
0 to 10 inches—very dark grayish brown loam

Subsurface layer:
10 to 15 inches—brown loam

Subsoil:
15 to 26 inches—yellowish brown gravelly clay loam

Substratum:
26 to 29 inches—yellowish brown gravelly sandy loam
29 to 45 inches—weathered graywacke

Inclusions

Contrasting inclusions:
• Soils that have less clay and a higher content of rock fragments throughout than the Pineola soil
• Soils that have bedrock at a depth of less than 20 inches

Similar inclusions:
• Soils that have redder colors in the subsoil
• Pigeonroost soils that have a lighter colored surface layer

Use and Management

Row crops, small grain, and pasture and hay

Suitability: Unsuited

Management concerns and considerations:
• There is a severe hazard of erosion. Because of this hazard and the stones on the soil surface, the production of cultivated crops is impractical and pasture maintenance is difficult.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• There is a severe erosion hazard during harvesting and reforestation and an equipment limitation on very steep slopes.
• Because of the limited depth to bedrock, there is a windthrow hazard in established stands and a susceptibility to seedling mortality due to inadequate moisture, which is worse on south- and west-facing slopes.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include eastern white pine and white oak.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The depth to bedrock and the slope are the main limitations affecting urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings and facilities that function properly.

Interpretive Group

Land capability subclass: 7e

PoE—Porters loam, 15 to 30 percent slopes, stony

Setting

Landscape position: Crests and shoulders of mountain ridges
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Very strongly acid to slightly acid
Depth to bedrock: 40 to 60 inches

Typical Profile

Surface layer:
0 to 11 inches—very dark grayish brown and dark brown loam

Subsurface layer:
11 to 18 inches—brown stony loam

Subsoil:
18 to 35 inches—strong brown and brown stony loam

Substratum:
35 to 42 inches—yellowish brown and strong brown saprolite that crushes to loam
42 inches—gneiss bedrock

Inclusions

Contrasting inclusions:
• Areas of Greenlee soils that have a high content of rock fragments throughout and have bedrock at a depth of more than 60 inches
• Areas of Cleveland soils that have bedrock at a depth of less than 20 inches

Similar inclusions:
• Small areas of soils that do not have a dark surface layer and/or have more clay and less sand in the subsoil
• Small areas of Chestnut or Ashe soils that have bedrock between depths of 20 and 40 inches

Use and Management

Row crops and small grain

Suitability: Poorly suited
Management concerns and considerations:
• Erosion is a severe hazard if cultivated crops are grown.
• Rock fragments in the surface layer seriously hinder or prevent tillage operations in many areas.
• Conservation tillage, crop residue management, contour farming, crop rotations, and the use of cover crops are important practices in controlling erosion and maintaining productivity.
• The use of contour strips, grassed waterways, field borders, and filter strips helps to prevent sediment in runoff water from entering streams and bodies of water.

Pasture and hay

Suitability: Poorly suited
Management concerns and considerations:
• The rock fragments on the soil surface hinder or prevent the use of mowers, disks, and other equipment needed for hay cutting or pasture renovation in most areas.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation.
• The slope and the rock fragments on the soil limit the operation of equipment.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include eastern white pine and yellow-poplar.
• Christmas tree species suitable for planting include Fraser fir, Scotch pine, and Norway spruce.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope is a limitation affecting most urban uses. Because of the severity of this limitation, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 6e

PsF—Porters stony loam, 25 to 65 percent slopes

Setting

Landscape position: Side slopes of mountain ridges
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Very strongly acid to slightly acid
Depth to bedrock: 40 to 60 inches

Typical Profile

Surface layer:
0 to 11 inches—very dark grayish brown and dark brown stony loam

Subsurface layer:
11 to 18 inches—brown stony loam

Subsoil:
18 to 35 inches—strong brown and brown stony loam

Substratum:
35 to 42 inches—yellowish brown and strong brown saprolite that crushes to loam
42 inches—gneiss bedrock

Inclusions

Contrasting inclusions:
• Areas of Greenlee soils that have a high content of rock fragments throughout and have bedrock at depth of more than 60 inches
• Areas of Cleveland soils that have bedrock at a depth of less than 20 inches

Similar inclusions:
• Small areas of soils that do not have a dark surface layer and/or have more clay and less sand in the subsoil
• Small areas of Chestnut or Ashe soils that have bedrock between depths of 20 and 40 inches

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
• Ensuring proper fertility and maintaining an adequate stand help to increase production and reduce sediment and nutrient runoff on steep and very steep pastures.
• Good pasture management is essential in controlling erosion and maintaining productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• The slope causes a severe erosion hazard during harvesting and reforestation and limits the safe operation of equipment and the types of equipment that may be used.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include eastern white pine and yellow-poplar.
• Christmas tree species suitable for planting include Fraser fir and Scotch pine.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope is a limitation affecting most urban uses. Because of the severity of this limitation, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

SaC—Saunook loam, 8 to 15 percent slopes

Setting

Landscape position: Benches and footslopes
Major uses: Most areas are cleared and used as pasture or for hay and crop production; some areas are in woodland

Soil Properties and Features

Permeability: Moderate
Available water capacity: High
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to moderately acid in the surface layer, unless limed, and very strongly acid to slightly acid in the subsoil
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 8 inches—dark brown loam

Subsoil:
8 to 35 inches—dark yellowish brown loam
35 to 60 inches—yellowish brown fine sandy loam

Inclusions

Contrasting inclusions:
• Areas of soils that have a high content of rock fragments throughout

Similar inclusions:
• Areas of soils that do not have a dark surface layer
• Areas of soils that have less clay and more sand in the subsoil

Use and Management

Row crops and small grain

Suitability: Poorly suited
Management concerns and considerations:
• Erosion is a severe hazard if cultivated crops are grown.
• Conservation tillage, crop residue management, contour farming, crop rotations, and the use of cover crops are important practices in controlling erosion and maintaining productivity.
• The use of contour strips, grassed waterways, field borders, and filter strips helps to prevent sediment in runoff water from entering streams and bodies of water.

Pasture and hay

Suitability: Moderately suited
Management concerns and considerations:
• Proper stocking rates, pasture rotation, deferred grazing, and a well planned clipping and harvesting schedule are important management practices.
• The slope may limit the use of this soil for hayland in some areas.

Woodland

Suitability: Well suited
Management concerns and considerations:
• Plant competition is the only significant management concern. Seeds and seedlings grow well if competing vegetation is controlled.
• Trees suitable for planting include yellow-poplar and northern red oak.
• Fraser fir is a Christmas tree species suitable for planting.

Urban development

Suitability: Moderately suited
Management concerns and considerations:
• The slope is a limitation in some areas. This limitation can often be overcome by the special design of structures and facilities.

Interpretive Group

Land capability subclass: 4e

ScC—Shelocta silt loam, 5 to 12 percent slopes

Setting

Landscape position: Benches and footslopes
Major uses: Some areas are in woodland, but many areas are cleared and used for pasture, hay, or crops

Soil Properties and Features

Permeability: Moderate

Available water capacity: High
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to strongly acid, except in limed areas
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 2 inches—partially decomposed forest litter
2 to 4 inches—brown silt loam

Subsurface layer:
4 to 12 inches—yellowish brown silt loam

Subsoil:
12 to 26 inches—yellowish brown silt loam
26 to 47 inches—strong brown silty clay loam
47 to 65 inches—strong brown channery silt loam

Inclusions

Contrasting inclusions:
- Areas of Northcove soils that have a high content of rock fragments throughout
- Areas of Cataska soils that have a high content of rock fragments and have bedrock at a depth of less than 20 inches
- Small areas of soils that have bedrock between depths of 20 and 48 inches

Similar inclusions:
- Areas of Keener soils that have more sand and less silt in the subsoil

Use and Management

Row crops and small grain

Suitability: Moderately suited
Management concerns and considerations:
- Erosion is a moderate hazard if cultivated crops are grown.
- The use of terraces, grassed waterways, field borders, and filter strips in the appropriate places can help to prevent sediment in runoff water from entering streams and bodies of water.
- Conservation tillage, crop residue management, contour farming, and the use of cover crops help to control erosion, increase infiltration rates, and maintain soil tilth.

Pasture and hay

Suitability: Well suited
Management concerns and considerations:
- This soil has few limitations affecting pasture and hayland.

Woodland

Suitability: Well suited
Management concerns and considerations:
- Plant competition is the only significant management concern. Seeds and seedlings grow well if competing vegetation is controlled.
- Trees suitable for planting include yellow-poplar and northern red oak.

Urban development

Suitability: Moderately suited
Management concerns and considerations:
- The slope is a limitation in some areas. This limitation can often be overcome by the special design of structures and facilities.

Interpretive Group

Land capability subclass: 3e

ScD—Shelocta silt loam, 12 to 20 percent slopes

Setting

Landscape position: Benches and footslopes
Major uses: Many areas are in woodland, but some areas are cleared and used for pasture, hay, or crops

Soil Properties and Features

Permeability: Moderate
Available water capacity: High
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to strongly acid, except in limed areas
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 2 inches—partially decomposed forest litter
2 to 4 inches—brown silt loam

Subsurface layer:
4 to 12 inches—yellowish brown silt loam

Subsoil:
12 to 26 inches—yellowish brown silt loam
26 to 47 inches—strong brown silty clay loam
47 to 65 inches—strong brown channery silt loam

Inclusions

Contrasting inclusions:
• Areas of Northcove soils that have a high content of rock fragments throughout
• Areas of Cataska soils that have a high content of rock fragments and have bedrock at a depth of less than 20 inches
• Small areas of soils that have bedrock between depths of 20 and 48 inches

Similar inclusions:
• Areas of Keener soils that have more sand and less silt in the subsoil

Use and Management

Row crops and small grain

Suitability: Poorly suited
Management concerns and considerations:
• Erosion is a severe hazard if cultivated crops are grown.
• The use of contour strips, grassed waterways, field borders, and filter strips on moderately steep slopes helps to prevent sediment in runoff water from entering streams and bodies of water.
• Conservation tillage, crop residue management, contour farming, crop rotations, and the use of cover crops are important practices in controlling erosion and maintaining productivity.

Pasture and hay

Suitability: Moderately suited
Management concerns and considerations:
• The slope may limit the use of this soil for hayland in some areas.
• Proper stocking rates, pasture rotation, deferred grazing, and a well planned clipping and harvesting schedule are important management practices.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation and limits the operation of equipment.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include yellow-poplar and northern red oak.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope is a limitation affecting most urban uses. Because of the severity of this limitation, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 4e

ScE—Shelocta silt loam, 20 to 35 percent slopes

Setting

Landscape position: Coves, benches, and footslopes
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderate
Available water capacity: High
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to strongly acid, except in limed areas
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 2 inches—partially decomposed forest litter
2 to 4 inches—brown silt loam

Subsurface layer:
4 to 12 inches—yellowish brown silt loam

Subsoil:
12 to 26 inches—yellowish brown silt loam
26 to 47 inches—strong brown silty clay loam
47 to 65 inches—strong brown channery silt loam

Inclusions

Contrasting inclusions:
• Areas of Northcove soils that have a high content of rock fragments throughout
• Areas of Cataska soils that have a high content of rock fragments and have bedrock at a depth of less than 20 inches
• Small areas of soils that have bedrock between depths of 20 and 48 inches

Similar inclusions:
• Areas of Keener soils that have more sand and less silt in the subsoil

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability: Poorly suited
Management concerns and considerations:
• Ensuring proper fertility and maintaining an adequate stand help to increase production and reduce sediment and nutrient runoff on steep pastures and hayland.
• Good pasture management is recommended to control erosion and maintain productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation and limits the operation of equipment.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include yellow-poplar and northern red oak.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope is a limitation affecting most urban uses. Because of the severity of this limitation, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 6e

ScF—Shelocta silt loam, 35 to 50 percent slopes

Setting

Landscape position: Mountain coves
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderate
Available water capacity: High
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to strongly acid, except in limed areas
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 2 inches—partially decomposed forest litter
2 to 4 inches—brown silt loam

Subsurface layer:
4 to 12 inches—yellowish brown silt loam

Subsoil:
12 to 26 inches—yellowish brown silt loam
26 to 47 inches—strong brown silty clay loam
47 to 65 inches—strong brown channery silt loam

Inclusions

Contrasting inclusions:
• Areas of Northcove soils that have a high content of rock fragments throughout
• Areas of Cataska soils that have a high content of rock fragments and have bedrock at a depth of less than 20 inches
• Small areas of soils that have bedrock between depths of 20 and 48 inches

Similar inclusions:
• Areas of Keener soils that have more sand and less silt in the subsoil

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
• Good pasture management is recommended to control erosion and maintain productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• The slope causes a severe erosion hazard during harvesting and reforestation and limits the safe operation of equipment and the types of equipment that may be used.
• Plant competition is a concern unless competing vegetation is controlled.
• Trees suitable for planting include yellow-poplar and northern red oak.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope is a limitation affecting most urban uses. Because of the severity of this limitation, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

SoE—Soco fine sandy loam, 20 to 35 percent slopes

Setting

Landscape position: Crests and shoulders of mountain ridges
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to strongly acid
Depth to bedrock: 20 to 40 inches to weathered bedrock and more than 40 inches to hard bedrock

Typical Profile

Surface layer:
0 to 1 inch—partially decomposed forest litter
1 to 4 inches—dark grayish brown fine sandy loam

Subsoil:
4 to 24 inches—yellowish brown loam
24 to 30 inches—yellowish brown loam

Substratum:
30 inches—weathered metasandstone bedrock

Inclusions

Contrasting inclusions:
• Areas of Unicoi soils that have a high content of rock fragments and have bedrock at a depth of less than 20 inches
• Areas of soils that have a high content of rock fragments throughout

Similar inclusions:
• Areas of Ditney soils that have very similar morphology but have hard bedrock between depths of 20 and 40 inches

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
• Good pasture management is essential in controlling erosion and maintaining productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Moderately suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation and limits the operation of equipment.
• Susceptibility to windthrow is a concern in established stands due to the limited rooting depth.
• Plant competition is a concern unless competing vegetation is controlled.
• Eastern white pine is suitable for planting.
• Christmas tree species suitable for planting include Norway spruce and Fraser fir.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and depth to bedrock are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

SoF—Soco fine sandy loam, 35 to 50 percent slopes

Setting

Landscape position: Shoulders and side slopes of mountain ridges
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to strongly acid
Depth to bedrock: 20 to 40 inches to weathered bedrock and more than 40 inches to hard bedrock

Typical Profile

Surface layer:
0 to 1 inch—partially decomposed forest litter
1 to 4 inches—dark grayish brown fine sandy loam

Subsoil:
4 to 24 inches—yellowish brown loam
24 to 30 inches—yellowish brown loam

Substratum:
30 inches—weathered metasandstone bedrock

Inclusions

Contrasting inclusions:
• Areas of Unicoi soils that have a high content of rock fragments and have bedrock at a depth of less than 20 inches
• Areas of soils that have a high content of rock fragments throughout

Similar inclusions:
• Areas of Ditney soils that have very similar morphology but have hard bedrock between depths of 20 and 40 inches

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability for pasture: Poorly suited
Suitability for hay: Unsuited
Management concerns and considerations:
• Good pasture management is essential in controlling erosion and maintaining productivity. It includes liming and fertilizing according to soil test recommendations, controlling weeds, and avoiding overgrazing.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• The slope causes an erosion hazard during harvesting and reforestation and limits the safe operation of equipment.
• Susceptibility to windthrow is a concern in established stands due to the limited rooting depth.
• Plant competition is a concern unless competing vegetation is controlled.
• Eastern white pine is suitable for planting.
• Christmas tree species suitable for planting include Norway spruce and Fraser fir.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and depth to bedrock are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

SoG—Soco fine sandy loam, 50 to 80 percent slopes

Setting

Landscape position: Shoulders and side slopes of mountain ridges
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: Moderate
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to strongly acid
Depth to bedrock: 20 to 40 inches to weathered bedrock and more than 40 inches to hard bedrock

Typical Profile

Surface layer:
0 to 1 inch—partially decomposed forest litter
1 to 4 inches—dark grayish brown fine sandy loam

Subsoil:
4 to 24 inches—yellowish brown loam
24 to 30 inches—yellowish brown loam

Substratum:
30 inches—weathered metasandstone bedrock

Inclusions

Contrasting inclusions:
• Areas of Unicoi soils that have a high content of rock fragments and have bedrock at a depth of less than 20 inches
• Areas of soils that have a high content of rock fragments throughout

Similar inclusions:
• Areas of Ditney soils that have very similar morphology but have hard bedrock between depths of 20 and 40 inches

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because of the severe hazard of erosion and an equipment limitation caused by the slope, crop production is impractical.

Pasture and hay

Suitability: Unsuited
Management concerns and considerations:
• Because of the equipment limitation on extremely steep slopes, the establishment and maintenance of hay and pasture are difficult.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• The slope causes a severe erosion hazard during harvesting and reforestation and limits the safe operation of equipment and the types of equipment that may be used.
• Susceptibility to windthrow is a concern in established stands due to the limited rooting depth.
• Plant competition is a concern unless competing vegetation is controlled.
• Eastern white pine is suitable for planting.
• Christmas tree species suitable for planting include Norway spruce and Fraser fir.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope and depth to bedrock are limitations affecting most urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings or facilities that function properly.

Interpretive Group

Land capability subclass: 7e

SrB—Statler loam, 1 to 4 percent slopes

Setting

Landscape position: Low stream terraces
Major uses: Most areas are cleared and used for cropland, pasture, or hay

Soil Properties and Features

Permeability: Moderate
Available water capacity: High
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Strongly acid or moderately acid
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 10 inches—dark brown and dark yellowish brown loam

Subsoil:
10 to 27 inches—strong brown sandy clay loam and loam

Substratum:
27 to 60 inches—yellowish brown gravelly fine sandy loam

Inclusions

Contrasting inclusions:
• Areas of soils in depressions and low-lying areas that are moderately well drained or somewhat poorly drained
• Areas of soils that have a high content of rock fragments throughout

Similar inclusions:
• Areas of soils that have less clay and more sand in the subsoil
• Areas of soils that do not have a dark surface layer

Use and Management

Row crops and small grain

Suitability: Well suited
Management concerns and considerations:
• This soil is suited to all of the crops, grasses, and legumes that are adapted to the local climate.
• Conservation tillage, crop residue management, contour farming, and the use of cover crops help to control erosion, increase infiltration rates, and maintain soil tilth.
• The use of terraces, grassed waterways, field borders, and filter strips in the appropriate places can help to prevent sediment in runoff water from entering streams and bodies of water.

Pasture and hay

Suitability: Well suited
Management concerns and considerations:
• This soil has few limitations affecting pasture and hayland.

Woodland

Suitability: Well suited
Management concerns and considerations:
• Plant competition is the only significant management concern. Seeds and seedlings grow well if competing vegetation is controlled.
• Trees suitable for planting include yellow-poplar and walnut.

Urban development

Suitability: Well suited
Management concerns and considerations:
• This soil has few limitations affecting urban uses.

Interpretive Group

Land capability subclass: 2e

SyF—Sylco-Sylvatus complex, 35 to 55 percent slopes

Composition

Sylco soil: Averaging about 47 percent of map units, but ranging between 45 to 50 percent of each mapped area
Sylvatus soil: Averaging about 33 percent of map units, but ranging between 30 to 35 percent of each mapped area

Setting

Landscape position: Shoulders and backslopes
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Sylco—moderate; Sylvatus—moderately rapid
Available water capacity: Very low
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Extremely acid to strongly acid
Depth to bedrock: Sylco—20 to 40 inches; Sylvatus—10 to 20 inches

Typical Profile

Sylco

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

Subsoil:
4 to 22 inches—brown very channery silt loam

Substratum:
22 to 27 inches—brown extremely channery silt loam
27 inches—hard phyllite bedrock

Sylvatus

Surface layer:
0 to 2 inches—dark yellowish brown channery silt loam

Subsoil:
2 to 11 inches—yellowish brown very channery silt loam

Substratum:
11 to 16 inches—yellowish brown extremely channery silt loam
16 inches—hard phyllite bedrock

Inclusions

Contrasting inclusions:
• Areas of soils that have more clay and fewer rock fragments in the subsoil than the Sylco and Sylvatus soils
• Areas of Keener soils that formed in colluvium and have bedrock at a depth of more than 60 inches
• Areas of rock outcrop

Similar inclusions:
• Areas of soils that have numerous cobbles or flagstones on the soil surface

Use and Management

Row crops, small grain, and pasture and hay

Suitability: Unsuited

Management concerns and considerations:
• There is a severe hazard of erosion. Because of this hazard and the droughty nature of the soils, the production of cultivated crops is impractical and pasture maintenance is difficult.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• There is a severe erosion hazard during harvesting and reforestation and an equipment limitation on very steep slopes.
• Because of the limited depth to bedrock, there is a windthrow hazard in established stands and a susceptibility to seedling mortality due to inadequate moisture, which is worse on south- and west-facing slopes.
• Plant competition is a concern unless competing vegetation is controlled.
• Eastern white pine is suitable for planting.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The depth to bedrock and the slope are the main limitations affecting urban uses. Because of the severity of the limitations, there would be considerable expense in the design and construction of buildings and facilities that function properly.

Interpretive Group

Land capability subclass: 7e

TsD—Tusquitee loam, 8 to 15 percent slopes

Setting

Landscape position: Mountain coves, benches, and footslopes
Major uses: Woodland in most areas

Soil Properties and Features

Permeability: Moderately rapid
Available water capacity: High
Depth to high water table: More than 6 feet
Drainage class: Well drained
Flood hazard: None
Soil reaction: Very strongly acid to slightly acid
Depth to bedrock: More than 60 inches

Typical Profile

Surface layer:
0 to 10 inches—dark brown loam

Subsurface layer:
10 to 18 inches—dark yellowish brown loam

Subsoil:
18 to 42 inches—strong brown loam
42 to 56 inches—strong brown loam

Substratum:
56 to 60 inches—yellowish brown and grayish brown cobbly fine sandy loam

Inclusions

Contrasting inclusions:
• Areas of Greenlee soils that contain a high content of rock fragments throughout
• Areas of Ashe or Chestnut soils that have bedrock at a depth of less than 40 inches

Similar inclusions:
• Areas of Porters soils that have bedrock between depths of 20 and 40 inches
• Areas of soils that do not have a dark surface layer

Use and Management

Row crops and small grain

Suitability: Poorly suited
Management concerns and considerations:
• Erosion is a severe hazard if cultivated crops are grown.
• The use of contour strips, grassed waterways, field borders, and filter strips helps to prevent sediment in runoff water from entering streams and bodies of water.
• Conservation tillage, crop residue management, contour farming, crop rotations, and the use of cover crops are important practices in controlling erosion and maintaining productivity.

Pasture and hay

Suitability: Moderately suited
Management concerns and considerations:
• Proper stocking rates, pasture rotation, deferred grazing, and a well planned clipping and harvesting schedule are important management practices.

Woodland

Suitability: Well suited
Management concerns and considerations:
• Plant competition is the only significant management concern. Seeds and seedlings grow well if competing vegetation is controlled.
• Trees suitable for planting include yellow-poplar and eastern white pine.
• Christmas tree species suitable for planting are Fraser fir, Norway spruce, and Scotch pine.

Urban development

Suitability: Moderately suited
Management concerns and considerations:
• The slope is a limitation in some areas. This limitation can often be overcome by the special design of structures and facilities.

Interpretive Group

Land capability subclass: 4e

UcG—Unicoi-Rock outcrop complex, 50 to 80 percent slopes

Composition

Unicoi soil: Averaging about 60 percent of map units, but ranging between 45 and 75 percent of each mapped area
Rock outcrop: Averaging about 30 percent of map units, but ranging between 15 and 45 percent of each mapped area

Setting

Landscape position: Shoulders and side slopes of mountain ridges
Major uses: Woodland in most areas

Properties and Features of the Unicoi Soil

Permeability: Moderately rapid
Available water capacity: Very low
Depth to high water table: More than 6 feet
Drainage class: Excessively drained
Flood hazard: None
Soil reaction: Extremely acid to strongly acid
Depth to bedrock: 7 to 20 inches

Typical Profile

Unicoi

Surface layer:
0 to 2 inches—partially decomposed and highly decomposed forest litter
2 to 3 inches—very dark grayish brown very cobbly sandy loam

Subsurface layer:
3 to 7 inches—brown very cobbly sandy loam

Subsoil:
7 to 15 inches—yellowish brown very cobbly sandy loam

Substratum:
15 inches—hard metasandstone

Rock outcrop

Sandstone rock outcrops occur as individual rocks, ledges, or bluffs. Some loose stones or boulders also occur scattered on the soil surface in some areas.

Inclusions

Contrasting inclusions:
• Small areas of Ditney soils that have fewer rock fragments than the Unicoi soil and have bedrock at a depth of more than 20 inches

Similar inclusions:
• Areas of Cataska soils that are underlain by siltstone bedrock

Use and Management

Row crops and small grain

Suitability: Unsuited
Management concerns and considerations:
• Because areas of this map unit are so steep, droughty, and rocky, agricultural production of any type is virtually prohibited.

Pasture and hay

Suitability: Unsuited
Management concerns and considerations:
• Because of a moisture deficiency, caused by the limited depth to bedrock and rocks in the soil, and an equipment limitation, caused by the rock outcrops and extremely steep slopes, the establishment and maintenance of hay and pasture are difficult.

Woodland

Suitability: Poorly suited
Management concerns and considerations:
• The slope causes a severe erosion hazard during harvesting and reforestation.
• The slope and the rock outcrops limit the safe operation of equipment and the types of equipment that may be used.
• Because of the shallow depth to bedrock, there is a windthrow hazard in established stands and a susceptibility to seedling mortality due to inadequate moisture.
• Virginia pine is suitable for planting.

Urban development

Suitability: Poorly suited
Management concerns and considerations:
• The slope, shallow depth to bedrock, and large stones in the soil are limitations that are extremely difficult to overcome.

Interpretive Group

Land capability subclass: 7s

W—Water

Setting

This map unit consists of small to large, constructed or natural bodies of water. It includes small tributaries, creeks, and rivers. It occurs throughout the survey area. This unit makes up 2,594 acres in Johnson County. Individual areas are irregular in shape and range from 3 to more than 89 acres in size.

Composition

This map unit includes small ponds and a portion of Watauga Lake. The Watauga River runs through a small portion of the county, and Roane, Forge, and Doe Creeks are the major streams dissecting the survey area.

Use and Management

This map unit is used for fishing, canoeing, and other recreational activities and for fire protection.

Interpretive Group

Land capability subclass: None assigned

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 forestland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; for agricultural waste management; and as wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

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

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

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

Crops and Pasture

According to the latest Census of Agriculture, cropland makes up 28,000 acres in Johnson County. Of this total, 10,400 acres are harvested cropland and 17,600 acres are in permanent pasture.

Almost all of the steep to extremely steep mountainous regions remain in forest consisting of upland oak, yellow-poplar, Virginia pine, white pine, and various minor species. Small areas of pasture exist in these areas. Most pasture mixtures include tall fescue and white clover. A hay mixture of fescue, orchardgrass, and red clover is the most common. The largest acreages of crops are in the lower-lying valleys. The primary row crops are corn and tobacco. Corn and small grains are grown for hay, silage, or grain. Alfalfa is not commonly grown and makes up less than 100 acres in the county.

Many of the soils in the survey area are suited to pasture, provided that the appropriate pasture management techniques are practiced. Legumes should be seeded with grasses when pastures are established. Pastures should be periodically renovated to keep legumes in the stand. Legumes significantly increase the quality of the pasture. More information on pasture seeding and renovation is available from the local office of the Tennessee Agricultural Extension Service or the Natural Resources Conservation Service.

Bledsoe, Chagrin, Dillard, Statler, and Keener soils are widely used for crop and pasture production. There is also a significant acreage of Lonon soils used for pasture and hay production. Erosion-control measures, such as contouring, stripcropping, conservation tillage, filter strips, crop residue management, and conservation cropping systems, should be used on agricultural land to minimize erosion and maintain long-term soil productivity.

On livestock farms which require pasture and hay, the use of legume and grass forage crops in crop rotations reduces the hazard of erosion on sloping land, provides nitrogen, and improves tilth for the following crop. Using erosion-control measures improves water infiltration, conserves moisture, and prevents surface runoff.

Erosion-control measures help to maintain production levels of the soil. They also improve water quality by decreasing the amount of sediment and nutrients entering streams and lakes. Information on the design and installation of erosion-control measures and assistance in conservation planning are available from the local office of the Natural Resources Conservation Service.

On all soils in the survey area, additions of lime, fertilizer, and pesticides should be based on a soil test, the needs of the crops, expected yield levels, and the label directions provided for the specific products. The soil testing laboratory of the Tennessee Agricultural Extension Service can help in determining the kinds and amounts of lime, fertilizer, and pesticides to apply.

Most of the soils in the survey area that are well suited to crop production are also suited to urban uses. Data on specific soils in this survey can be used to determine future land use priorities. Risk or loss of important farmland should be weighed against limitations and benefits of urban development. The Natural Resources Conservation Service assists landowners and developers in making Farmland Conversion Impact Ratings under the Farmland Protection Policy Act.

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 table because of variations in rainfall and other climatic factors. The land capability classification of each map unit also is shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

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

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. 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 land forming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland and engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey.

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

Class 1 soils have few limitations that restrict their use.

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

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

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

Class 5 soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation.

Class 7 soils have very severe limitations that make them unsuitable for cultivation.

Class 8 soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter *e, w,* or *s,* 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); and *s* shows that the soil is limited mainly because it is shallow, droughty, or stony.

In class 1 there are no subclasses because the soils of this class have few limitations. The capability classification of each map unit is given in the section "Detailed Soil Map Units" and in table 5.

Prime Farmland

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

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it is not frequently flooded during the growing season or is protected from flooding. The 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.

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.

The map units in the survey area that are considered prime farmland are listed in table 6. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, or droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

Woodland Management and Productivity

Originally, most, if not all, of Johnson County was forested. As the county was settled, land was cleared for agricultural purposes. Many of the soils in the county can produce good or excellent stands of commercial hardwood and pulpwood species. In most areas, additional management is needed to achieve the best potential production. On better sites, plant competition from undesirable species is a major concern when establishing a new forest crop. Thinning out mature trees and undesirable species improves production on most established sites. Species conversion and increased stocking are also needed in some areas to improve production. Protection from grazing and fire and control of disease and insects also can improve the stands. Common commercial species in the county are yellow-poplar, oak, hickory, maple, white pine, and Virginia pine. Upland oaks, maple, hickory, yellow-poplar, and American chestnut were dominant in the original native forests. All of these species, except American chestnut, can be found in naturally revegetated stands.

Soils vary in their ability to produce trees. Available water capacity and depth of the root zone have major effects on tree growth. In addition to soils, elevation, aspect, and climate determine the kinds of trees that can be grown on a site. The Natural Resources Conservation Service, the Tennessee Division of Forestry, and the Cooperative Extension Service can help to determine specific forestland management needs.

Woodland owners or forest managers can use table 7 in planning the use of soils for wood crops. The table lists the ordination symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

In table 7, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Erosion hazard is the probability that damage will occur as a result of site preparation and cutting where the soil is exposed along roads, skid trails, and fire lanes and in log-handling areas. Forests that have been burned or overgrazed are also subject to erosion. Ratings of the erosion hazard are based on the percent of the slope. A rating of *slight* indicates that no particular prevention measures are needed under ordinary conditions. A rating of *moderate* indicates that erosion-control measures are needed in certain silvicultural activities. A rating of *severe* indicates that special precautions are needed to control erosion in most silvicultural activities.

Equipment limitation reflects the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. The chief characteristics and conditions considered in the ratings are slope, stones on the surface, rock outcrops, soil wetness, and texture of the surface layer. A rating of *slight* indicates that under normal conditions the kind of equipment and season of use are not significantly restricted by soil factors. Soil wetness can restrict equipment use, but the wet period does not exceed 1 month. A rating of *moderate* indicates that equipment use is moderately restricted because of one or more soil factors. If the soil is wet, the wetness restricts equipment use for a period of 1 to 3 months. A rating of *severe* indicates that equipment use is severely restricted either as to the kind of equipment that can be used or the season of use. If the soil is wet, the wetness restricts equipment use for more than 3 months.

Seedling mortality refers to the death of naturally occurring or planted tree seedlings, as influenced by the kinds of soil, soil wetness, or topographic conditions. The factors used in rating the soils for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the period when the water table is high, rock fragments in the surface layer, effective rooting depth, and slope aspect. A rating of *slight* indicates that seedling mortality is not likely to be a problem under normal conditions. Expected mortality is less than 25 percent. A rating of *moderate* indicates that some problems from seedling mortality can be expected. Extra precautions are advisable. Expected mortality is 25 to 50 percent. A rating of *severe* indicates that seedling mortality is a serious problem. Extra precautions are important. Replanting may be necessary. Expected mortality is more than 50 percent.

Windthrow hazard is the likelihood that trees will be uprooted by the wind because the soil is not deep enough for adequate root anchorage. The main restrictions that affect rooting are a seasonal high water table and the depth to bedrock, a fragipan, or other limiting layers. A rating of *slight* indicates that under normal conditions no trees are blown down by the wind. Strong winds may damage trees, but they do not uproot them. A rating of *moderate* indicates that some trees can be blown down during periods when the soil is wet and winds are moderate or strong. A rating of *severe* indicates that many trees can be blown down during these periods.

Plant competition ratings indicate the degree to which undesirable species are expected to invade and grow when openings are made in the tree canopy. The main factors that affect plant competition are depth to the water table and the available water capacity. A rating of *slight* indicates that competition from undesirable plants is not likely to prevent natural regeneration or suppress the more desirable species. Planted seedlings can become established without undue competition. A rating of *moderate* indicates that competition may delay the establishment of desirable species. Competition may hamper stand development, but it will not prevent the eventual development of fully stocked stands. A rating of *severe* indicates that competition can be expected to prevent regeneration unless precautionary measures are applied.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index* and as a *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 woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important trees. This number, expressed as cubic feet per acre per year, indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

The first tree listed under *common trees* for a soil is the indicator species for that soil.

Suggested trees to plant are those that are suitable for commercial production.

Recreation

Johnson County has numerous recreational facilities, some of which are privately owned. Hunting and related outdoor activities are the dominant types of recreation in the county. The Tennessee Valley Authority provides public picnic areas and boat launching ramps on Watauga Lake.

Numerous county and local parks, such as the Backbone Rock Recreation Area, are open to the public. There are extensive recreational areas, including campgrounds. Other facilities in the survey area include a golf course, swimming pools, and rod and gun clubs. In addition, the Cherokee National Forest and Appalachian Scenic Trail occupy portions of Johnson County and the U.S. Forest Service maintains several recreational facilities in the county.

The survey area has high potential for many types of recreational development. Attention should be given to such soil characteristics as depth, permeability, texture, slope, and drainage when recreational enterprises are developed.

The soils of the survey area are rated in table 8 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures. The information in table 8 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

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

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

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

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

Wildlife Habitat

Michael E. Zeman, State Biologist, Natural Resources Conservation Service, Nashville, helped prepare this section.

Wildlife is an important natural resource in Johnson County, providing a source of revenue through sport hunting and recreational opportunities such as photography and bird watching. Popular game species include cottontail rabbit, whitetail deer, ruffed grouse, eastern wild turkey, gray squirrel, and fox squirrel.

The whitetail deer is the most popular game animal in the county. Deer populations have experienced substantial growth during the past few years. Harvest records indicate that a four-fold increase in deer numbers occurred from the mid 1970’s to 1990. Only a few eastern wild turkeys were present in the 1950’s, but nucleus flocks have been restored by the Tennessee Wildlife Resources Agency (TWRA) through restocking efforts and sound management practices. Records indicate that harvests have increased five fold since 1983, when huntable populations were considered restored. The forested, mountainous habitat type is excellent for the ruffed grouse. Grouse numbers are moderate or high throughout the county. There are two species of cottontail rabbit in the county—the eastern cottontail and the New England cottontail. The eastern cottontail occurs in fair numbers in agricultural areas along Doe Creek and Roan Creek and in Shady Valley. The New England cottontail occurs in low numbers in forests at the higher elevations. There are five species of squirrels in the county—the southern flying squirrel, the northern flying squirrel, the pine squirrel (or “boomer”), the fox squirrel, and the gray squirrel. The gray squirrel is the most common and has good to excellent numbers in hardwood forests. The fox squirrel is less numerous. It inhabits areas where small woodlots and brushy fencerows occur near cropland. The southern flying squirrel inhabits forests at low elevations. The “boomer” inhabits areas at high elevations in the Unaka Mountain Range. Small populations of black bear have part of their large home range in the county.

Waterfowl numbers are low. The highest numbers are around Watauga Lake, where open water provides resting and feeding habitat. Several species of furbearers occur in the county. Wetland furbearers include mink, muskrat, and beaver. Wetland furbearers occur in low or moderate numbers along streams, small lakes, farm ponds, and Watauga Lake. Upland furbearers are abundant throughout the county. Species include bobcat, opossum, raccoon, gray fox, and the striped skunk. Many non-game species are abundant in the county. Various species of songbirds are found associated with different plant communities. Woodland birds include the Carolina chickadee, tufted titmouse, pileated woodpecker, and wood thrush. Openland birds include robins, meadowlarks, and various sparrows. Common birds of prey are the red-tailed hawk, sparrow hawk, barred owl, and screech owl. Reptiles and amphibians common in the survey area include the eastern box turtle, skinks, eastern hognose snakes, copperhead snakes, bullfrogs, and black-bellied salamanders. Common mammals are Hispid cotton rats, moles, and other small rodents. The relative abundance of non-game species depends on the type and quality of habitat available.

The county has some soil types suitable for impounding water with embankment ponds and some suitable for pit type ponds. Many of the soils have limitations, including seepage, piping, and slope. Most ponds are stocked for recreational fishing with rainbow trout, largemouth bass, bluegill sunfish, or channel catfish. Water quality in ponds is typically acidic, which limits fish production. The largest lake in the county is Watauga Lake, a 6,430-acre reservoir lying mostly in Carter County but extending into Johnson County.

Popular sport fish found in Watauga Lake include smallmouth bass, crappie, channel catfish, bluegill sunfish, striped bass, and walleye.

Johnson County has a total of 64 miles of warm-water streams that provide approximately 151 acres of aquatic habitat. Most streams in the county are also cold enough to support trout. Common fish species that occur in streams include smallmouth bass, rock bass, bluegill sunfish, green sunfish, channel catfish, and several species of darters and minnows. Rainbow trout are stocked in several streams, including Laurel Bloomery, Beaverdam, Forge, Upper Roan, and Doe Creeks. TWRA usually stocks these streams from March through June. Because of cooler water temperatures, most streams are only moderately productive for warm-water fishes, which have fair populations.

A few small cold-water streams at the higher elevations in the mountains can support the only indigenous trout of Tennessee, the brook trout. However, brown trout and rainbow trout now occupy most of the suitable brook trout habitat in the county. Watauga Lake has a cold, well oxygenated understory that is suitable for trout, and rainbows have been stocked.

Currently, there is no commercial aquaculture in the county. Overall, the terrain is steep, and the soils are generally unsuitable for extensive pond construction. Where high spring flows occur, the potential for commercial trout production is high due to the good water quality.

There are very few wetlands remaining in Johnson County, excluding artificial wetlands such as upland ponds. The wetlands that do occur are primarily non-woody meadows and seep areas that are dominated by rushes and sedges on Hatboro and Dunning soils. The highest potential for wetland restoration exists in restoring these bottomland soils to hardwoods.

Bottomland hardwoods are generally some of the most productive wildlife habitat. Bottomland hardwoods improve the water quality of streams by removing nutrients, trapping sediment from runoff, lowering water temperatures through shading, and providing leaf litter that feeds aquatic insects. Currently, the last remaining wooded wetlands are also some of the last cranberry bogs in Tennessee. These bogs are in Shady Valley and are unique shrub communities occurring on “second bottoms,” where seeps and wetness persist.

Conservation practices can improve or provide quality wildlife habitat. On cropland, planned crop rotations and crop residue use can provide food and needed winter cover for many species of wildlife. Deferred grazing by livestock and fencing can protect food plots, nesting cover, and even fish habitat by providing stream protection. Field borders and filter strips along streams can protect water quality and provide food, cover, and travel lanes for many species. Selective thinning of woodlands can protect den and quality mast-producing trees. Other practices that can improve wildlife habitat include wildlife upland habitat management, wildlife wetland habitat management, fish pond management, pasture and hayland management, livestock exclusion, and woodland improvement.

Some common practices are harmful to wildlife. These harmful practices include indiscriminate burning or use of chemicals, heavy grazing, clean mowing early in the growing (nesting) season, clean fall plowing, extensive clear cutting of timber, the drainage of wetlands, and the removal of den and mast-producing trees.

Technical assistance in the planning or application of wildlife conservation practices is available from the Natural Resources Conservation Service, the University of Tennessee Agricultural Extension Service, the Tennessee Wildlife Resources Agency, and the Tennessee Division of Forestry.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture also are considerations. Examples of grasses and legumes are fescue, lovegrass, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, wheatgrass, and grama.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness.

Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian-olive, autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, cedar, and juniper.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, wildrice, saltgrass, cordgrass, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, pheasant, meadowlark, field sparrow, cottontail rabbit, and red fox.

Habitat for woodland wildlife consists of areas of deciduous and/or coniferous plants and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, deer, and bear.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, and beaver.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the “Soil Properties” section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 10 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, or a very firm dense layer; stone content; soil texture; and slope. The depth to a seasonal high water table and the susceptibility of the soil to flooding affect the time of the year that excavations can be made. Soil texture and depth to the water table affect the resistance of the excavation walls or banks to sloughing or caving.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, and shrinking and swelling can cause the movement of footings. A high water table, depth to bedrock, large stones, slope, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock, and the available water capacity in the upper 40 inches affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 11 shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and the limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 11 also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock, and flooding affect absorption of the effluent. Large stones and bedrock interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 11 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock, flooding, and large stones.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. Slope and bedrock can cause construction problems, and large stones can hinder compaction of the lagoon floor.

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

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

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

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to wind erosion.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 12 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as *probable* or *improbable* sources of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. Large stones, a high water table, and slope affect the ease of excavation. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 12, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, and bedrock.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are naturally fertile or respond well to fertilizer and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel or stones, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel or stones, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

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

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

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

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders. 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 and permeability of the aquifer. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; and susceptibility to flooding. Depth to bedrock, large stones, slope, and the hazard of cutbanks caving affect excavating and grading and the stability of ditchbanks. The productivity of the soil after drainage may be adversely affected by acidity. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. Large stones and depth to bedrock affect the construction of a system. The depth of the root zone and soil reaction affect the performance of a system.

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

Grassed waterways are natural or constructed channels, generally broad and shallow, which conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock affect the construction of grassed waterways. Low available water capacity, restricted rooting depth, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

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

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

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

Engineering Index Properties

Table 14 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

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

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

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and

Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical Properties

Table 15 shows estimates of some physical properties that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

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.

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.

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

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

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

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^{1}/_{3}$-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Bulk densities 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.

Permeability (K_{sat}) 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 inches per hour, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

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

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 amount and type of clay minerals in the soil influence volume change.

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 table 15, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Erosion factors are shown in table 15 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 several factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict 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.

Chemical Properties

Table 16 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.

Soil Features

Table 17 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 or chemical 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, and dense layers. *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 dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel or concrete in installations that are entirely within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low, moderate,* or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

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 clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

The *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. Table 18 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.

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.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(4, 5)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 19 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. 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 Inceptisols.

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 Ochrepts (*Och*, meaning light-colored surface layer, plus *ept,* from Inceptisol).

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 Dystrochrepts (*Dyst,* meaning low base status, plus *ochrepts,* the suborder of the Inceptisols that has a light-colored surface layer).

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 Dystrochrepts.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle size, mineral content, soil temperature regime, soil depth, reaction, and clay activity. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is coarse-loamy, mixed, mesic Typic Dystrochrepts.

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.

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” *(6)*. Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” *(4)* and in “Keys to Soil Taxonomy” *(5)*. Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section “Detailed Soil Map Units.”

Ashe Series

Depth class: Moderately deep
Drainage class: Somewhat excessively drained
Slope range: Moderately steep to extremely steep (12 to 95 percent)

Landscape position: Mountain ridge crests, shoulders, and side slopes
Parent material: Residuum weathered from crystalline rocks and affected by creep in the upper part in some areas

Typical Pedon

Ashe gravelly fine sandy loam, 25 to 65 percent slopes; 1,500 feet west from the corner of Tennessee, Virginia, and North Carolina:

A—0 to 4 inches; brown (10YR 4/3) gravelly fine sandy loam; weak medium granular structure; very friable; many fine and medium roots; 20 percent gravel; few fine mica flakes; strongly acid; clear smooth boundary.
BA—4 to 10 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; common fine and medium pores; 5 percent gravel; few fine mica flakes; very strongly acid; gradual smooth boundary.
Bw—10 to 26 inches; yellowish brown (10YR 5/6) loam; weak medium subangular blocky structure; friable; few fine and medium roots; many fine and medium pores; 10 percent gravel; few fine mica flakes; very strongly acid; clear smooth boundary.
BC—26 to 32 inches; yellowish brown (10YR 5/4) fine sandy loam; massive; very friable; 10 percent gravel and cobbles; few fine mica flakes; very strongly acid; abrupt wavy boundary.
R—32 inches; hard schist.

Range in Characteristics

Depth to bedrock: 20 to 40 inches to hard bedrock
Content and size of rock fragments: 5 to 25 percent; gravel, cobbles, or stones
Soil reaction: Very strongly acid to moderately acid, except in limed areas
Other characteristics: Few or common mica flakes throughout the profile

A horizon:
Hue—10YR or 2.5Y
Value—3 or 4
Chroma—2 to 6
Texture of fine-earth fraction—fine sandy loam, loam, or sandy loam
Other features—where value is 3, the horizon is less than 7 inches thick

BA horizon (if it occurs):
Hue—10YR
Value—4 or 5
Chroma—4 or 6
Texture of fine-earth fraction—fine sandy loam, loam, or sandy loam

Bw horizon:
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—4 to 8
Texture of fine-earth fraction—fine sandy loam, loam, or sandy loam

BC horizon (if it occurs):
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—4 or 6
Texture of fine-earth fraction—loam or fine sandy loam

R layer:
Bedrock—commonly tilted, jointed, and fractured hard crystalline rock, such as granite and gneiss

Bledsoe Series

Depth class: Deep
Drainage class: Well drained
Slope range: Sloping to steep (5 to 35 percent)
Landscape position: Side slopes and footslopes of upland ridges
Parent material: Colluvium derived from limestone

Typical Pedon

Bledsoe silt loam, 20 to 35 percent slopes; from Mountain City, north on Highway 91 to Cole Spring Road, 1.7 miles on the road to Jenkins Hollow Road, left and 0.3 mile to a gravel road, to the end of the gravel road, 1,000 feet south and 45 degrees east from the end of the gravel road:

A—0 to 7 inches; brown (7.5YR 4/4) silt loam; many fine faint strong brown (7.5YR 5/6) mottles; weak fine granular structure; very friable; many fine and medium roots; moderately acid; abrupt smooth boundary.
Bt1—7 to 15 inches; strong brown (7.5YR 5/6) silty clay loam; common fine faint brown (7.5YR 4/4) mottles; strong fine subangular blocky structure; firm; many fine and medium roots; many fine and medium pores; common distinct clay films on faces of peds and lining pores; 2 percent gravel; common fine black concretions; moderately acid; gradual wavy boundary.
Bt2—15 to 45 inches; strong brown (7.5YR 5/6) silty clay loam; many fine distinct brownish yellow (10YR 6/8) and yellowish red (5YR 5/8) mottles;

strong fine subangular blocky structure; firm; common fine and medium roots; common fine and medium pores; common distinct clay films on faces of peds and lining pores; 3 percent gravel; common fine black concretions; moderately acid; gradual wavy boundary.

Bt3—45 to 54 inches; strong brown (7.5YR 5/8) silty clay loam; many fine distinct brownish yellow (10YR 6/8) mottles; moderate fine subangular blocky structure; friable; few fine and medium roots; common fine and medium pores; common distinct clay films on faces of peds and lining pores; 15 percent shale channers; common fine black concretions; moderately acid; clear smooth boundary.

BC—54 to 60 inches; strong brown (7.5YR 5/8) silty clay loam; many medium distinct brownish yellow (10YR 6/8) mottles; weak fine subangular blocky structure; friable; common fine pores; 10 percent shale channers; common fine black concretions; moderately acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Content and size of rock fragments: 0 to 25 percent in the upper 40 inches and as much as 40 percent below a depth of 40 inches; limestone, siltstone, shale, or sandstone fragments as much as 15 inches across
Soil reaction: Moderately acid to mildly alkaline

A or Ap horizon:
Hue—7.5YR or 10YR
Value—3 or 4
Chroma—2 to 4
Texture of fine-earth fraction—silt loam or loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 8
Texture of fine-earth fraction—silty clay loam, clay loam, silty clay, or clay

BC horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 8
Texture of fine-earth fraction—silty clay loam, clay loam, silty clay, or clay

Brookshire Series

Depth class: Very deep
Drainage class: Well drained
Slope range: Steep and very steep (20 to 50 percent)
Landscape position: North- and east-facing mountain coves
Parent material: Colluvium from metasedimentary rocks

Typical Pedon

Brookshire silt loam, 35 to 50 percent slopes; 2,000 feet north and 47 degrees west from where the Iron Mountain Trail intersects the Forest Service road at Shady Gap:

Oe—0 to 1 inch; partially decomposed forest litter.

A1—1 to 6 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine granular structure; very friable; many fine and medium roots; 10 percent gravel; strongly acid; clear smooth boundary.

A2—6 to 8 inches; dark brown (10YR 3/3) loam; weak medium granular structure; very friable; common fine and medium roots; 12 percent gravel; strongly acid; clear smooth boundary.

Bw1—8 to 18 inches; strong brown (7.5YR 4/6) loam; weak medium subangular blocky structure parting to weak medium granular; friable; common fine and medium and few coarse roots; many fine and medium pores; 15 percent gravel; strongly acid; gradual smooth boundary.

Bw2—18 to 31 inches; strong brown (7.5YR 5/8) gravelly loam; weak medium subangular blocky structure; friable; few fine, medium, and coarse roots; many fine and medium pores; 20 percent gravel; strongly acid; gradual smooth boundary.

Bw3—31 to 53 inches; strong brown (7.5YR 5/8) gravelly loam; weak medium subangular blocky structure; friable; few fine, medium, and coarse roots; few fine and medium pores; 25 percent gravel and cobbles; strongly acid; gradual smooth boundary.

C—53 to 65 inches; reddish yellow (7.5YR 6/8) gravelly loam; massive; friable; 30 percent gravel and cobbles; strongly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Content of rock fragments: 10 to 35 percent throughout the profile; amount typically increases as depth increases
Soil reaction: Strongly acid

A horizon:
Hue—10YR
Value—3
Chroma—2 or 3
Texture of fine-earth fraction—silt loam or loam

Bw horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 to 8
Texture of fine-earth fraction—loam or silt loam

C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 8
Texture of fine-earth fraction—loam or silt loam

Burton Series

Depth class: Moderately deep
Drainage class: Well drained
Slope range: Moderately steep to extremely steep (15 to 95 percent)
Landscape position: Ridge crests, shoulders, and side slopes at high mountain elevations
Parent material: Residuum from crystalline rocks

Typical Pedon

Burton loam in an area of Burton-Wayah complex, windswept, 15 to 30 percent slopes, stony; 10.7 miles northeast of Boone on North Carolina Highway 194, about 1.0 mile northwest on Secondary Road 1346, about 2.5 miles northwest on a farm road, 400 feet northwest of the road, in a wooded area of pasture. (This pedon is in Watauga County, North Carolina, where Burton soils occur extensively. The extent of this soil type in Johnson County is limited to areas adjoining North Carolina. Data from the soil survey of Watauga County were used to represent Burton soils in Johnson County.)

A1—0 to 9 inches; very dark brown (10YR 2/2) loam; weak medium granular structure; friable; common fine and medium roots; few fine mica flakes; very strongly acid; clear wavy boundary.
A2—9 to 14 inches; dark brown (10YR 3/3) loam; weak medium granular structure; friable; common fine and medium roots; few fine mica flakes; strongly acid; abrupt wavy boundary.
Bw—14 to 21 inches; dark yellowish brown (10YR 4/6) fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; common fine mica flakes; 10 percent gravel and cobbles; strongly acid; clear wavy boundary.
C—21 to 28 inches; dark yellowish brown (10YR 4/6) and yellowish brown (10YR 5/8) loamy fine sand saprolite; massive; friable; common fine mica flakes; 10 percent gravel and cobbles; strongly acid; abrupt wavy boundary.
R—28 inches; unweathered fractured, amphibolite bedrock.

Range in Characteristics

Depth to bedrock: 20 to 40 inches
Content and size of rock fragments: 0 to 15 percent in the A horizon, 0 to 35 percent in the B horizon, and 0 to 50 percent in the C horizon; gravel, cobbles, or stones
Soil reaction: Extremely acid to moderately acid
Other characteristics: Few or common mica flakes in the A and B horizons and few to many mica flakes in the C horizon

A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

Bw horizon:
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—3 to 8
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

C horizon:
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—3 to 8
Texture of fine-earth fraction—loam, fine sandy loam, sandy loam, loamy fine sand, or loamy sand
Other features—horizon may be profusely mottled in shades of brown, yellow, red, and gray in some pedons

R layer:
Bedrock—hard, unweathered crystalline rock

Calvin Series

Depth class: Moderately deep
Drainage class: Well drained
Slope range: Moderately steep to very steep (12 to 50 percent)
Landscape position: Ridgetops, shoulders, and side slopes
Parent material: Residuum from noncalcareous shale or siltstone

Typical Pedon

Calvin channery silt loam, 20 to 35 percent slopes;

from Mountain City, north on Highway 91 to Cole Springs Road, 1.7 miles on the road to Jenkins Hollow Road, turn and go 0.4 mile, 100 feet east of the road:

A—0 to 3 inches; reddish brown (5YR 4/3) channery silt loam; common fine prominent very dark grayish brown (10YR 3/2) mottles; weak fine granular structure; very friable; many fine and medium roots; 17 percent shale channers; moderately acid; clear smooth boundary.

BA—3 to 8 inches; reddish brown (5YR 4/4) channery loam; weak fine subangular blocky structure; very friable; many fine and medium roots; common fine and medium pores; 20 percent shale channers; very strongly acid; gradual wavy boundary.

Bw1—8 to 22 inches; reddish brown (2.5YR 4/4) very channery loam; moderate medium subangular blocky structure; very friable; common fine and medium roots; many fine and medium pores; 40 percent shale channers; very strongly acid; gradual wavy boundary.

Bw2—22 to 33 inches; reddish brown (2.5YR 4/4) very channery loam; moderate medium subangular blocky structure; friable; common fine and medium roots; common fine and medium pores; 40 percent shale channers; very strongly acid; gradual irregular boundary.

C—33 to 38 inches; reddish brown (2.5YR 4/4) extremely channery loam; massive; very friable; common medium roots; 70 percent shale channers; very strongly acid; gradual wavy boundary.

Cr—38 inches; tilted, fractured siltstone; thin lenses of reddish brown loam in voids and fractures.

Range in Characteristics

Depth to bedrock: 20 to 40 inches
Content of rock fragments: 5 to 25 percent in the A horizon, 25 to 55 percent in subhorizons of the B horizon, and 40 to 80 percent in the C horizon
Soil reaction: Very strongly acid to moderately acid

A horizon:
Hue—5YR or 7.5YR
Value—2 to 5
Chroma—2 to 4
Texture of fine-earth fraction—silt loam or loam

BA horizon (if it occurs):
Hue—2.5YR or 5YR
Value—4 or 5
Chroma—3 to 6
Texture of fine-earth fraction—silt loam or loam

Bw horizon:
Hue—2.5YR or 5YR
Value—4 or 5
Chroma—2 to 8
Texture of fine-earth fraction—silt loam or loam

C horizon:
Hue—2.5YR or 5YR
Value—3 to 5
Chroma—2 to 4
Texture of fine-earth fraction—silt loam or loam

Cr layer:
Bedrock—tilted and fractured siltstone that can be removed with difficulty using hand tools

Caneyville Series

Depth class: Moderately deep
Drainage class: Well drained
Slope range: Extremely steep (50 to 80 percent)
Landscape position: Side slopes of upland ridges
Parent material: Residuum from limestone

Typical Pedon

Caneyville silty clay loam in an area of Caneyville-Rock outcrop complex, 50 to 80 percent slopes; from Highway 321, north on Gregg's Bridge Road, about 1.5 miles to the lake shore, 100 feet east of the road, in woods:

A—0 to 4 inches; brown (10YR 4/3) silty clay loam; many fine faint yellowish brown (10YR 5/6) mottles; moderate fine granular structure; friable; common fine and medium roots; strongly acid; clear smooth boundary.

Bt1—4 to 9 inches; yellowish red (5YR 5/6) silty clay; many fine distinct strong brown (7.5YR 5/6) mottles; moderate medium angular blocky structure; firm; common fine and few medium roots; common fine and medium pores; common distinct clay films on faces of peds; strongly acid; gradual smooth boundary.

Bt2—9 to 29 inches; yellowish red (5YR 4/6) silty clay; strong medium and coarse angular blocky structure; very firm; few fine roots; few fine pores; common distinct clay films on faces of peds; slightly acid; abrupt wavy boundary.

R—29 inches; limestone bedrock.

Range in Characteristics

Depth to bedrock: 20 to 40 inches
Content of rock fragments: 0 to 10 percent in the upper horizons and 0 to 35 percent in the horizon just above bedrock
Soil reaction: Very strongly acid to neutral

A horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—2 or 3
Texture of fine-earth fraction—loam, silt loam, or silty clay loam

Bt horizon:
Hue—2.5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Texture of fine-earth fraction—silty clay loam or silty clay

R layer:
Bedrock—hard, unweathered limestone

Cataska Series

Depth class: Shallow
Drainage class: Excessively drained
Slope range: Steep to extremely steep (20 to 80 percent)
Landscape position: Mountain crests, shoulders, and side slopes
Parent material: Residuum from siltstone or metasandstone

Typical Pedon

Cataska channery silt loam, 35 to 50 percent slopes; 2.6 miles from Highway 91 on Cross Mountain Road, 200 feet north of the road:

Oi—0 to 1 inch; slightly decomposed hardwood leaves and twigs.
A—1 to 2 inches; dark brown (10YR 3/3) channery silt loam; weak medium granular structure; very friable; many fine and medium and few coarse roots; 20 percent siltstone channers; strongly acid; clear smooth boundary.
BE—2 to 5 inches; yellowish brown (10YR 5/4) channery silt loam; weak medium granular structure; very friable; many fine and medium and few coarse roots; 20 percent siltstone channers; strongly acid; gradual smooth boundary.
Bw1—5 to 11 inches; strong brown (7.5YR 5/6) very channery silt loam; weak medium subangular blocky structure; friable; common fine and many medium and coarse roots; common fine and medium pores; 40 percent siltstone channers; strongly acid; clear wavy boundary.
Bw2—11 to 18 inches; strong brown (7.5YR 5/4) very channery silt loam; weak medium subangular blocky structure; friable; few fine and coarse and common medium roots; few fine pores; 50 percent siltstone channers; strongly acid; clear wavy boundary.
Cr—18 inches; weathered, fractured siltstone; thin lenses of strong brown (7.5YR 5/4) silt loam and fine roots filling fractures and voids.

Range in Characteristics

Depth to bedrock: 10 to 20 inches to weathered bedrock and 20 inches to 4 feet or more to hard bedrock
Content and size of rock fragments: 15 to 45 percent in the A horizon and 35 to 80 percent in the B and C horizons; fragments as much as 24 inches across
Soil reaction: Extremely acid to strongly acid

A horizon:
Hue—7.5YR or 10YR
Value—2 to 4
Chroma—2 to 4
Texture of fine-earth fraction—loam or silt loam

BE horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 or 6
Texture of fine-earth fraction—loam or silt loam

Bw horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture of fine-earth fraction—loam or silt loam

Cr layer:
Bedrock—typically tilted siltstone or metasandstone
Other features—small amounts of soil material commonly occur in bedrock fractures

Chagrin Series

Depth class: Deep
Drainage class: Well drained
Slope range: Nearly level (0 to 2 percent)
Landscape position: Flood plains
Parent material: Mixed alluvium

Typical Pedon

Chagrin loam, rarely flooded; south on Highway 421 from Mountain City, right onto State Route 167 to its intersection with Minning Town Road, 1,400 feet south and 63 degrees east from the intersection, south of Roan Creek:

Ap—0 to 7 inches; brown (10YR 4/3) loam; weak fine subangular blocky structure; very friable; many fine and medium roots; common fine and medium pores; slightly acid; abrupt smooth boundary.

Bw1—7 to 20 inches; dark yellowish brown (10YR 4/4) loam; weak fine subangular blocky structure; very friable; common fine and medium roots; common fine and medium pores; 2 percent gravel; moderately acid; gradual wavy boundary.

Bw2—20 to 30 inches; dark yellowish brown (10YR 4/4) sandy loam; weak fine subangular blocky structure; very friable; common fine roots; common fine and medium pores; 2 percent gravel; slightly acid; gradual wavy boundary.

BC—30 to 40 inches; dark yellowish brown (10YR 4/4) sandy loam; weak coarse subangular blocky structure; few fine roots; 5 percent gravel; moderately acid; clear smooth boundary.

C—40 to 60 inches; brown (10YR 4/3) gravelly loamy fine sand; massive; friable; 25 percent gravel; moderately acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Content of rock fragments: 0 to 35 percent in the Ap horizon, 0 to 15 percent to a depth of 40 inches, and 0 to 25 percent below a depth of 40 inches
Soil reaction: Moderately acid to neutral

Ap horizon:
Hue—7.5YR or 10YR
Value—4
Chroma—2 to 4
Texture of fine-earth fraction—loam or silt loam

Bw horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture of fine-earth fraction—commonly silt loam or loam; range includes sandy loam, fine sandy loam, sandy clay loam, clay loam, and silty clay loam

BC horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture of fine-earth fraction—commonly silt loam or loam; range includes sandy loam, fine sandy loam, sandy clay loam, clay loam, and silty clay loam

C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—2 to 6
Texture of fine-earth fraction—silt loam, loam, or sandy loam
Other features—in some pedons the horizon is mottled in shades of brown, yellow, or gray below a depth of 48 inches; in some pedons textures are highly stratified

Chestnut Series

Depth class: Moderately deep
Drainage class: Well drained
Slope range: Moderately steep to extremely steep (15 to 95 percent)
Landscape position: Crests, shoulders, and side slopes of mountain ridges
Parent material: Residuum from crystalline rocks

Typical Pedon

Chestnut fine sandy loam in an area of Chestnut-Edneyville complex, 30 to 50 percent slopes, stony; 11.2 miles northwest of Boone, North Carolina, on U.S. Highway 321, about 1.5 miles north on Secondary Road 1202, about 3.8 miles northeast on Secondary Road 1201, about 1.9 miles north on Secondary Road 1221, about 0.6 mile northwest on Secondary Road 1223, about 0.1 mile southwest on a private road, in a road cut. (This pedon is in Watauga County, North Carolina, where Chestnut soils occur extensively. It is in a slope unit not recognized in Johnson County. The extent of this soil type in Johnson County is limited to areas adjoining North Carolina. Data from the soil survey of Watauga County were used to represent Chestnut soils in Johnson County.)

Oe—0 to 2 inches; partially decomposed forest litter.

A1—2 to 3 inches; dark brown (10YR 3/3) fine sandy loam; weak medium granular structure; friable; many fine and medium roots; few fine mica flakes; 5 percent gravel; very strongly acid; clear wavy boundary.

A2—3 to 8 inches; yellowish brown (10YR 5/4) fine sandy loam; weak medium granular structure; friable; many fine and medium roots; common fine mica flakes; 5 percent gravel; very strongly acid; clear wavy boundary.

Bw—8 to 16 inches; yellowish brown (10YR 5/6) gravelly sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; common fine mica flakes; 20 percent gravel; very strongly acid; clear wavy boundary.

C—16 to 29 inches; brownish yellow (10YR 6/8) sandy loam; massive; very friable; few fine roots;

common fine mica flakes; 10 percent gravel; very strongly acid; clear wavy boundary.
Cr—29 to 60 inches; soft granitic gneiss bedrock that is partly consolidated but can be removed with difficulty using hand tools.

Range in Characteristics

Depth to bedrock: 20 to 40 inches to soft bedrock and more than 40 inches to hard bedrock
Content and size of rock fragments: 5 to 15 percent in the A horizon and 5 to 35 percent in the Bw and C horizons; gravel or cobbles
Soil reaction: Very strongly acid to moderately acid
Other characteristics: Few to many mica flakes in each horizon

A horizon:
Hue—7.5YR to 2.5Y
Value—2 to 6
Chroma—1 to 6
Texture of fine-earth fraction—fine sandy loam or loam
Other features—where hue is 2 or 3, the horizon is less than 7 inches thick

Bw horizon:
Hue—5YR to 2.5Y
Value—4 to 6
Chroma—4 to 8
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

C horizon:
Hue—5YR to 2.5Y
Value—4 to 6
Chroma—4 to 8
Texture of fine-earth fraction—sandy loam, fine sandy loam, loam, loamy fine sand, or loamy sand

Cr layer:
Bedrock—partially weathered bedrock that can be removed with difficulty using hand tools

Cleveland Series

Depth class: Shallow
Drainage class: Somewhat excessively drained
Slope range: Extremely steep (50 to 95 percent)
Landscape position: Side slopes of mountain ridges
Parent material: Residuum from crystalline rocks

Typical Pedon

Cleveland cobbly fine sandy loam in an area of Ashe-Cleveland-Rock outcrop complex, 50 to 95 percent slopes; 1.3 miles south of Vilas on North Carolina Highway 194, about 0.6 mile east on Secondary Road 1113, about 300 feet east on a private road, 2,000 feet southeast to the end of a logging road, 1,000 feet southwest, in forest. (This pedon is in Watauga County, North Carolina, where Cleveland soils occur extensively. The extent of this soil type in Johnson County is limited to areas adjoining North Carolina. Data from the soil survey of Watauga County were used to represent Cleveland soils in Johnson County.)

Oi—0 to 1 inch; partially decomposed forest litter.
A—1 to 4 inches; brown (10YR 4/3) cobbly fine sandy loam; weak medium granular structure; friable; many fine roots; few fine mica flakes; very strongly acid; clear wavy boundary.
Bw—4 to 15 inches; yellowish brown (10YR 5/6) cobbly sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; common fine mica flakes; very strongly acid; abrupt wavy boundary.
R—15 inches; hard granitic gneiss bedrock.

Range in Characteristics

Depth to bedrock: 10 to 20 inches
Content of rock fragments: 15 to 35 percent in the A horizon and 5 to 35 percent in the Bw horizon
Soil reaction: Very strongly acid to moderately acid
Other characteristics: Few or common mica flakes throughout the profile

A horizon:
Hue—7.5YR or 10YR
Value—2 to 4
Chroma—1 to 3
Texture of fine-earth fraction—sandy loam, fine sandy loam, or loam

Bw horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 or 4
Texture of fine-earth fraction—sandy loam, fine sandy loam, or loam

R layer:
Bedrock—hard, unweathered crystalline rock

Craggey Series

Depth class: Shallow
Drainage class: Somewhat excessively drained
Slope range: Steep to extremely steep (30 to 95 percent)
Landscape position: Ridge crests, shoulders, and side slopes at high mountain elevations
Parent material: Residuum from crystalline rocks

Typical Pedon

Craggey muck in an area of Burton-Craggey-Rock outcrop complex, windswept, 15 to 30 percent slopes; 8.7 miles northwest of Boone, North Carolina, on U.S. Highway 421, about 2.3 miles west on Secondary Road 1306, about 2.2 miles north on a farm road to Potato Hill, 100 feet west of the road, near a transmitter tower. (This pedon is in Watauga County, North Carolina, where Craggey soils occur extensively. It is in a slope unit not recognized in Johnson County. The extent of this soil type in Johnson County is limited to areas adjoining North Carolina. Data from the soil survey of Watauga County were used to represent Craggey soils in Johnson County.)

Oa—0 to 4 inches; black (10YR 2/1) broken, crushed, and rubbed muck (sapric material); about 30 percent fiber, 15 percent rubbed; many fine and medium roots; very strongly acid; clear wavy boundary.

A—4 to 9 inches; very dark brown (10YR 2/2) mucky loam; weak fine granular structure; friable; many fine and medium roots; few fine mica flakes; 20 percent gravel; very strongly acid; clear wavy boundary.

AB—9 to 11 inches; dark brown (10YR 3/3) gravelly fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; few fine mica flakes; 20 percent gravel; moderately acid; abrupt wavy boundary.

R—11 to 25 inches; unweathered, fractured, amphibolite bedrock.

Range in Characteristics

Depth to bedrock: 10 to 20 inches
Content and size of rock fragments: 5 to 35 percent throughout the profile; gravel, cobbles, or stones
Soil reaction: Extremely acid to moderately acid throughout the profile
Other characteristics: None to common mica flakes

Oa horizon:
Hue—10YR
Value—2
Chroma—1 or 2
Texture—muck or mucky peat

A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture of fine-earth fraction—mucky loam, loam, fine sandy loam, or sandy loam

AB horizon (if it occurs):
Hue—5YR to 10YR
Value—3
Chroma—3 or 4
Texture of fine-earth fraction—loam or fine sandy loam

R layer:
Bedrock—hard, unweathered crystalline rock

Craigsville Series

Depth class: Very deep
Drainage class: Well drained
Slope range: Nearly level (0 to 3 percent)
Landscape position: Mountain flood plains
Parent material: Coarse textured alluvium from metasedimentary rocks

Typical Pedon

Craigsville cobbly sandy loam, frequently flooded; off of State Route 133, southwest of the Sutherland Community, about 900 feet east from where Haunted Hollow drains into Beaverdam Creek:

Oe—0 to 1 inch; partially decomposed forest litter.

A—1 to 4 inches; dark grayish brown (10YR 4/2) cobbly sandy loam; weak fine granular structure; very friable; many fine, medium, and coarse roots; 35 percent cobbles and gravel; strongly acid; clear smooth boundary.

BA—4 to 9 inches; dark yellowish brown (10YR 4/4) very cobbly sandy loam; weak medium granular structure; very friable; many fine and medium and few coarse roots; 40 percent cobbles and gravel; strongly acid; clear smooth boundary.

Bw1—9 to 22 inches; yellowish brown (10YR 5/6) very cobbly sandy loam; weak medium subangular blocky structure; friable; common fine and medium and few coarse roots; 50 percent cobbles, gravel, and stones; strongly acid; clear smooth boundary.

Bw2—22 to 40 inches; yellowish brown (10YR 5/6) very cobbly sandy loam; weak medium subangular blocky structure; friable; few fine and medium roots; 55 percent cobbles, gravel, and stones; strongly acid; clear smooth boundary.

BC—40 to 63 inches; yellowish brown (10YR 5/6) extremely cobbly sandy loam; weak fine subangular blocky structure; very friable; few fine and medium roots; 70 percent cobbles, gravel, and stones; strongly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Content of rock fragments: 5 to 60 percent in the A

horizon and 35 to 70 percent in the B and C horizons

Soil reaction: Very strongly acid or strongly acid, except in limed areas

A horizon:
Hue—7.5YR or 10YR
Value—3 or 4
Chroma—2 to 4
Texture of fine-earth fraction—sandy loam, fine sandy loam, or loam

BA horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 or 6
Texture of fine-earth fraction—sandy loam or loam

Bw horizon:
Hue—5YR to 10YR
Value—4 or 5
Chroma—4 or 6
Texture of fine-earth fraction—sandy loam or loam

BC horizon (if it occurs):
Hue—5YR to 10YR
Value—4 or 5
Chroma—4 or 6
Texture of fine-earth fraction—sandy loam or loam

C horizon (if it occurs):
Hue—5YR to 10YR
Value—4 or 5
Chroma—3 to 6
Texture of fine-earth fraction—sandy loam or loamy sand

Cullasaja Series

Depth class: Very deep
Drainage class: Well drained
Slope range: Moderately steep and steep (15 to 30 percent)
Landscape position: Benches and footslopes
Parent material: Colluvium derived from crystalline rocks

Typical Pedon

Cullasaja very cobbly loam, 15 to 30 percent slopes, very stony; 7.4 miles west of Boone on U.S. Highway 321, about 3.9 miles south on Secondary Road 1122, about 1.0 mile south on Secondary Road 1129, about 1,200 feet northwest on a private road, in a road cut. (This pedon is in Watauga County, North Carolina, where Cullasaja soils occur extensively. The extent of this soil type in Johnson County is limited to areas adjoining North Carolina. Data from the soil survey of Watauga County were used to represent Cullasaja soils in Johnson County.)

Oi—0 to 1 inch; slightly decomposed forest litter.
Oe—1 to 2 inches; partially decomposed forest litter.
A1—2 to 12 inches; very dark brown (7.5YR 3/2) very cobbly loam; weak medium granular structure; friable; many fine and medium roots; few fine mica flakes; very strongly acid; clear wavy boundary.
A2—12 to 15 inches; dark yellowish brown (10YR 3/4) very cobbly fine sandy loam; weak medium granular structure; friable; many medium and coarse roots; few fine mica flakes; very strongly acid; clear wavy boundary.
Bw1—15 to 31 inches; dark yellowish brown (10YR 4/4) very cobbly fine sandy loam; weak medium subangular blocky structure; friable; many fine roots; few fine mica flakes; very strongly acid; clear wavy boundary.
Bw2—31 to 46 inches; yellowish brown (10YR 5/4) very cobbly fine sandy loam; weak medium subangular blocky structure; friable; common fine roots; few fine mica flakes; very strongly acid; gradual wavy boundary.
C—46 to 60 inches; yellowish brown (10YR 5/4) very cobbly loamy sand; massive; very friable; few fine roots; few fine mica flakes; very strongly acid.

Range in Characteristics

Depth to bedrock: More than 72 inches
Content of rock fragments: 35 to 60 percent in the A horizon and 35 to 80 percent in the B and C horizons
Soil reaction: Very strongly acid to moderately acid
Other characteristics: Few or common mica flakes throughout the profile

A horizon:
Hue—5YR to 10YR
Value—2 or 3
Chroma—1 to 3
Texture of fine-earth fraction—loam or fine sandy loam

Bw horizon:
Hue—5YR to 10YR
Value—3 to 6
Chroma—3 to 8
Texture of fine-earth fraction—fine sandy loam, sandy loam, loam, or sandy clay loam

C horizon:
Hue—5YR to 10YR

Value—3 to 6
Chroma—4 to 8
Texture of fine-earth fraction—loamy sand or sandy loam

Dillard Series

Depth class: Very deep
Drainage class: Moderately well drained
Slope range: Nearly level (0 to 3 percent)
Landscape position: Low stream terraces and toeslopes
Parent material: Mixed alluvium

Typical Pedon

Dillard loam, rarely flooded; in the Little Doe Community, about 950 feet north and 29 degrees east from where Robinson Hollow Road intersects State Route 67:

Ap—0 to 6 inches; brown (10YR 4/3) loam; weak fine granular and subangular blocky structure; very friable; many very fine and fine roots; mildly alkaline; gradual smooth boundary.

AB—6 to 10 inches; dark yellowish brown (10YR 4/4) loam; moderate fine subangular blocky structure; friable; many very fine and fine roots; few fine pores; 2 percent gravel; few fine black concretions; mildly alkaline; abrupt smooth boundary.

Bt1—10 to 19 inches; yellowish brown (10YR 5/6) clay loam; moderate fine subangular blocky structure; friable; common very fine and fine roots; many fine pores; common distinct clay films on faces of peds and lining pores; 2 percent gravel; common fine black concretions; strongly acid; gradual wavy boundary.

Bt2—19 to 30 inches; light yellowish brown (10YR 6/4) clay loam; moderate fine subangular blocky structure; firm; common very fine and fine roots; few fine and medium pores; common distinct clay films on faces of peds and lining pores; 2 percent gravel; common fine black (10YR 2/1) manganese concentrations; common medium distinct strong brown (7.5YR 5/6) iron accumulations and gray (10YR 6/1) iron depletions; strongly acid; clear wavy boundary.

BCg—30 to 42 inches; gray (10YR 6/1) clay loam; common coarse yellowish brown (10YR 5/6) mottles; weak fine and medium subangular blocky structure; very friable; few fine roots; few fine and medium pores; 5 percent gravel; common coarse distinct strong brown (7.5YR 5/6) iron accumulations; strongly acid; clear wavy boundary.

Cg—42 to 60 inches; mottled gray (10YR 6/1), strong brown (7.5YR 5/6), and yellowish brown (10YR 5/6) gravelly sandy loam; massive; loose; 35 percent gravel and cobbles; strongly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Content of rock fragments: 0 to 5 percent in the A horizon and the lower part of the Bt horizon, 0 to 15 percent in the upper part of the Bt horizon, and 0 to 35 percent in the C horizon
Soil reaction: Strongly acid or moderately acid, except in limed areas
Other characteristics: Few or common mica flakes

A or Ap horizon:
Hue—10YR
Value—3 to 5
Chroma—3 or 4
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

AB horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4
Texture of fine-earth fraction—loam or fine sandy loam

Bt horizon:
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—4 to 8
Texture of fine-earth fraction—clay loam or sandy clay loam
Other features—common or many mottles or redoximorphic features in shades of gray and brown in the lower part of horizon

BCg horizon (if it occurs):
Hue—10YR to 5Y
Value—5 to 7
Chroma—1 or 2
Texture of fine-earth fraction—sandy loam or fine sandy loam

Cg horizon:
Hue—10YR to 5Y
Value—5 to 7
Chroma—1 or 2
Texture of fine-earth fraction—sandy loam or fine sandy loam
Other features—horizon may have common or many mottles or redoximorphic features in shades of red, brown, yellow, or gray

Ditney Series

Depth class: Moderately deep
Drainage class: Well drained
Slope range: Steep to extremely steep (20 to 95 percent)
Landscape position: Mountain ridge crests, shoulders, and side slopes
Parent material: Residuum from metasedimentary rocks

Typical Pedon

Ditney sandy loam, 35 to 50 percent slopes; about 1,000 feet north and 9 degrees west from where the Iron Mountain Trail intersects the Forest Service road at Shady Gap:

Oe—0 to 1 inch; partially decomposed forest litter.
A—1 to 4 inches; dark grayish brown (10YR 4/2) sandy loam; weak fine granular structure; very friable; many fine and medium and few coarse roots; 5 percent gravel; strongly acid; clear smooth boundary.
BE—4 to 8 inches; yellowish brown (10YR 5/6) sandy loam; weak medium granular structure; very friable; many fine and medium and few coarse roots; 5 percent gravel; strongly acid; gradual smooth boundary.
Bw1—8 to 18 inches; yellowish brown (10YR 5/6) cobbly loam; weak medium subangular blocky structure; friable; common fine and medium and few coarse roots; many fine and medium pores; 20 percent cobbles and gravel; very strongly acid; gradual smooth boundary.
Bw2—18 to 24 inches; yellowish brown (10YR 5/6) cobbly loam; weak medium subangular blocky structure; friable; few fine and medium roots; many fine and medium pores; 30 percent cobbles and gravel; very strongly acid; abrupt smooth boundary.
Cr—24 to 27 inches; partially weathered metasandstone.
R—27 inches; hard metasandstone.

Range in Characteristics

Depth to bedrock: 20 to 40 inches
Content of rock fragments: 5 to 20 percent in the A horizon and 10 to 30 percent in the subsoil
Soil reaction: Extremely acid to strongly acid

A horizon:
Hue—10YR
Value—3 or 4
Chroma—2 or 3
Texture of fine-earth fraction—loam or sandy loam

BE horizon (if it occurs):
Hue—7.5YR or 10YR
Value—5
Chroma—6
Texture of fine-earth fraction—loam or sandy loam

Bw horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 to 6
Texture of fine-earth fraction—loam or sandy loam

Cr layer (if it occurs):
Bedrock—partially weathered sandstone that can be removed with difficulty using hand tools

R layer:
Bedrock—hard metasandstone

Dunning Series

Depth class: Very deep
Drainage class: Poorly drained
Slope range: Nearly level (0 to 3 percent)
Landscape position: Flood plains and areas at stream heads
Parent material: Mixed alluvium

Typical Pedon

Dunning silt loam, occasionally flooded; in Shady Valley, 2,200 feet north and 4 degrees east from where Brinkley Road intersects Orchard Road:

Apg—0 to 12 inches; very dark gray (10YR 3/1) silt loam; common fine distinct dark grayish brown (2.5Y 4/2) mottles; moderate fine subangular blocky structure parting to moderate medium granular; very friable; common fine and medium roots; few medium brown (10YR 4/3) and black (10YR 2/1) concentrations and stains; mildly alkaline; abrupt smooth boundary.
Bg—12 to 32 inches; grayish brown (2.5Y 5/2) clay; many medium faint light olive brown (2.5Y 5/4) mottles; weak coarse subangular blocky structure; firm; few very fine and fine roots; few fine and medium pores; common medium brown (10YR 4/3) and black (10YR 2/1) concentrations and stains; common fine faint gray (2.5Y N/0) iron depletions; common medium prominent strong brown (7.5YR 5/8) iron accumulations; mildly alkaline; gradual smooth boundary.
Cg—32 to 60 inches; grayish brown (2.5Y 5/2) silty clay loam; many medium faint olive (5Y 5/4) mottles; massive; firm; 2 percent gravel; common medium prominent yellowish red (5YR 5/8) and

strong brown (7.5YR 5/8) iron accumulations; mildly alkaline.

Range in Characteristics

Depth to bedrock: More than 60 inches
Content of rock fragments: Generally none in the solum; subhorizons of the C horizon can contain as much as 30 percent
Soil reaction: Moderately acid to mildly alkaline
Other characteristics: Thickness of the mollic epipedon ranges from 10 to 24 inches

Ap horizon:
Hue—neutral or 10YR to 5Y
Value—2 or 3
Chroma—1 to 3
Texture of fine-earth fraction—silt loam, silty clay loam, or silty clay
Other features—horizon commonly has mottles or redoximorphic features in shades of red, brown, olive, or gray

Bg horizon:
Hue—neutral, 7.5YR, 10YR, 2.5Y, 5Y, or 5GY
Value—3 to 6
Chroma—1 or 2
Texture of fine-earth fraction—silty clay loam, silty clay, or clay
Other features—horizon commonly has mottles or redoximorphic features in shades of red, brown, olive, or gray

Cg horizon:
Hue—neutral, 7.5YR, 10YR, 2.5Y, 5Y, or 5GY
Value—3 to 6
Chroma—1 or 2
Texture of fine-earth fraction—silty clay loam, silty clay, or clay

Edneyville Series

Depth class: Very deep
Drainage class: Well drained
Slope range: Moderately steep to very steep (12 to 45 percent)
Landscape position: Mountain ridge crests, shoulders, and side slopes
Parent material: Residuum weathered from crystalline rocks and affected in the upper part by soil creep on the steeper slopes

Typical Pedon

Edneyville loam, 25 to 45 percent slopes; 1 mile southwest of Grayson on State Road 1325, about 1,000 feet southeast of the junction of State Roads 1325 and 1389. (This pedon is in Ashe County, North Carolina, where Edneyville soils occur extensively. The extent of this soil type in Johnson County is limited to areas adjoining North Carolina. Data from the soil surveys of Ashe and Watauga Counties, North Carolina, were used to represent Edneyville soils in Johnson County.)

Ap—0 to 8 inches; dark brown (10YR 4/3) loam; moderate medium granular structure; very friable; many fine roots; few fine mica flakes; 5 percent gravel; strongly acid; abrupt smooth boundary.
Bw1—8 to 12 inches; brown (7.5YR 5/4) loam; weak fine and medium subangular blocky structure; friable; few fine roots; few fine mica flakes; many fine pores; 5 percent gravel; strongly acid; clear smooth boundary.
Bw2—12 to 22 inches; strong brown (7.5YR 5/6) loam; weak fine and medium subangular blocky structure; friable; few fine roots; few fine mica flakes; many fine pores; 5 percent gravel; very strongly acid; clear smooth boundary.
BC—22 to 28 inches; strong brown (7.5YR 5/6) sandy loam; weak medium subangular blocky structure; friable; many fine pores; few fine mica flakes; 10 percent gravel; very strongly acid; gradual wavy boundary.
C—28 to 62 inches; dark yellowish brown (10YR 4/4) and dark gray (10YR 4/1) saprolite that crushes to fine sandy loam; massive; friable; few fine mica flakes; strongly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Content and size of rock fragments: Dominantly 0 to 35 percent but as much as 50 percent in the A and C horizons in some pedons; gravel, cobbles, or stones
Soil reaction: Very strongly acid to moderately acid
Other characteristics: Few or common mica flakes throughout the profile

A or Ap horizon:
Hue—7.5YR to 2.5Y
Value—2 to 5
Chroma—1 to 4
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

Bw horizon:
Hue—7.5YR to 2.5Y
Value—4 to 7
Chroma—3 to 8
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

BC horizon (if it occurs):
Hue—7.5YR to 2.5Y
Value—4 to 7
Chroma—3 to 8
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

C horizon:
Color—horizon has hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 3 to 8, or it is multicolored
Texture of fine-earth fraction—saprolite that crushes and rubs to fine sandy loam, sandy loam, loam, loamy fine sand, or loamy sand

Greenlee Series

Depth class: Very deep
Drainage class: Well drained
Slope range: Very steep and extremely steep (35 to 80 percent)
Landscape position: Mountain coves and benches
Parent material: Colluvium weathered from crystalline rocks

Typical Pedon

Greenlee very cobbly loam, 35 to 55 percent slopes, very stony; 200 feet south of a four-wheel-drive road between Flat Springs Branch and Bear Pen Ridge, 4,000 feet south and 72 degrees west from the corner of Johnson County, Tennessee, and Grayson and Washington Counties, Virginia:

A—0 to 6 inches; brown (10YR 4/3) very cobbly loam; weak fine granular structure; very friable; many fine and medium roots; 40 percent cobbles, gravel, and stones; very strongly acid; abrupt smooth boundary.
Bw1—6 to 22 inches; dark yellowish brown (10YR 4/4) very cobbly loam; weak fine subangular blocky structure; very friable; many fine and medium roots; 45 percent cobbles, gravel, and stones; very strongly acid; clear smooth boundary.
Bw2—22 to 47 inches; dark yellowish brown (10YR 4/6) very cobbly fine sandy loam; weak fine subangular blocky structure; very friable; common fine and few medium roots; 50 percent cobbles, gravel, and stones; very strongly acid; gradual smooth boundary.
C—47 to 65 inches; brownish yellow (10YR 6/6) extremely cobbly sandy loam; massive; loose; 75 percent cobbles, gravel, and stones; very strongly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Content of rock fragments: Typically 35 to 60 percent in the A and B horizons and 35 to 80 percent in the C horizon
Soil reaction: Extremely acid to moderately acid
Other characteristics: None to common mica flakes throughout the profile

A horizon:
Hue—7.5YR or 10YR
Value—2 to 5
Chroma—1 to 4
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam
Other features—where both value and chroma are 3 or less, the horizon is less than 7 inches thick

Bw horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 8
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Texture of fine-earth fraction—loam, fine sandy loam, sandy loam, or loamy sand

Hatboro Series

Depth class: Very deep
Drainage class: Poorly drained
Slope range: Nearly level (0 to 3 percent)
Landscape position: Flood plains
Parent material: Mixed alluvium

Typical Pedon

Hatboro loam, occasionally flooded; in Shady Valley, along Green Mountain Branch, about 1,000 feet south and 38 degrees west from the intersection of Highways 91 and 421:

Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) loam; weak fine subangular blocky structure parting to moderate medium granular; very friable; many fine and medium roots; few fine pores; few fine brown (10YR 4/3) and black (10YR 2/1) concentrations and stains; slightly acid; abrupt smooth boundary.
Bg1—10 to 24 inches; dark grayish brown (2.5Y 4/2) clay loam; common fine faint olive brown (2.5Y 4/4) mottles; weak fine subangular blocky structure; friable; few fine roots; few fine pores; common fine and medium brown (10YR 4/3) and

black (10YR 2/1) concretions and stains; common medium prominent strong brown (7.5YR 5/8) iron accumulations; strongly acid; gradual wavy boundary.

Bg2—24 to 32 inches; grayish brown (2.5Y 5/2) clay loam; weak fine subangular blocky structure; very friable; few fine roots; few fine and medium pores; common fine prominent strong brown (7.5YR 5/8) iron accumulations; strongly acid; gradual wavy boundary.

Cg—32 to 60 inches; grayish brown (2.5Y 5/2) stratified sandy loam and loamy sand; massive; loose; common fine prominent strong brown (7.5YR 5/8) iron accumulations; moderately acid.

Range in Characteristics

Depth to bedrock: More than 60 inches

Content of rock fragments: 0 to 10 percent in the A and B horizons and 0 to 80 percent in the C horizon

Soil reaction: Very strongly acid to neutral above a depth of 30 inches and moderately acid to slightly acid below a depth of 30 inches

A horizon:

Hue—10YR

Value—3 or 4

Chroma—2 or 3

Texture of fine-earth fraction—loam, silt loam, or sandy loam

Bg horizon:

Hue—neutral or 10YR to 5Y

Value—4 to 7

Chroma—1 or 2

Texture of fine-earth fraction—clay loam, sandy clay loam, silty clay loam, or silt loam

Cg horizon:

Hue—neutral or 10YR to 5Y

Value—4 to 7

Chroma—1 or 2

Texture of fine-earth fraction—stratified sandy, silty, or clayey material or gravelly sediments

Jeffrey Series

Depth class: Moderately deep

Drainage class: Well drained

Slope range: Moderately steep to very steep (15 to 50 percent)

Landscape position: Tops and sides of mountain ridges

Parent material: Residuum from metasedimentary rocks

Typical Pedon

Jeffrey cobbly loam, 15 to 30 percent slopes, very stony; 7.6 miles northeast of Vilas on U.S. Highway 421, about 2.5 miles southwest on Secondary Road 1233 to Mabel, 3.6 miles northwest on Secondary Road 1227, about 100 feet west on Secondary Road 1225, about 2,100 feet north on a private road to Vaught Gap, 1,900 feet west along the State line. (This pedon is in Watauga County, North Carolina, where Jeffrey soils occur extensively. The extent of this soil type in Johnson County is limited to areas adjoining North Carolina. Data from the soil survey of Watauga County were used to represent Jeffrey soils in Johnson County.)

Oi—0 to 2 inches; slightly decomposed forest litter.

Oe—2 to 4 inches; partially decomposed forest litter.

A1—4 to 9 inches; dark brown (10YR 3/3) cobbly loam; weak medium granular structure; friable; many fine and medium roots; few fine mica flakes; 30 percent cobbles and gravel; extremely acid; clear wavy boundary.

A2—9 to 13 inches; dark yellowish brown (10YR 3/4) cobbly loam; weak medium granular structure; friable; many fine and medium roots; few fine mica flakes; 20 percent cobbles and gravel; very strongly acid; abrupt wavy boundary.

Bw—13 to 29 inches; dark yellowish brown (10YR 4/6) cobbly sandy loam; weak medium subangular blocky structure; friable; common fine roots; few fine mica flakes; 30 percent cobbles and gravel; very strongly acid; abrupt wavy boundary.

R—29 inches; hard quartzite bedrock.

Range in Characteristics

Depth to bedrock: 20 to 40 inches

Content of rock fragments: 15 to 30 percent in the A horizon and 5 to 30 percent in the Bw and C horizons

Soil reaction: Very strongly acid or strongly acid throughout the profile

Other characteristics: None or few mica flakes throughout the profile

A horizon:

Hue—10YR

Value—2 or 3

Chroma—2 or 3

Texture of fine-earth fraction—loam or fine sandy loam

Bw horizon:

Hue—10YR

Value—4 or 5

Chroma—3 to 6

Texture of fine-earth fraction—sandy loam, fine sandy loam, or loam

R layer:
Bedrock—hard, unweathered quartzite or metasandstone

Keener Series

Depth class: Very deep
Drainage class: Well drained
Slope range: Sloping to very steep (5 to 50 percent)
Landscape position: Footslopes, benches, colluvial fans, and mountain coves
Parent material: Colluvium from metasedimentary rocks

Typical Pedon

Keener loam, 20 to 35 percent slopes; about 1,100 feet south and 3 degrees west from where Cross Mountain Road intersects the Forest Service road to Shady Gap:

A—0 to 2 inches; very dark grayish brown (10YR 3/2) loam; weak medium granular structure; very friable; many fine and medium roots; 15 percent gravel and cobbles; strongly acid; abrupt irregular boundary.
BA—2 to 7 inches; yellowish brown (10YR 5/4) loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.
Bt1—7 to 23 inches; yellowish brown (10YR 5/6) clay loam; weak medium subangular blocky structure; friable; common fine and medium and few coarse roots; common fine and medium pores; few faint clay films on faces of peds; strongly acid; clear smooth boundary.
Bt2—23 to 45 inches; strong brown (7.5YR 5/6) clay loam; moderate medium subangular blocky structure; friable; common fine and medium roots; common fine and medium pores; few faint clay films on faces of peds; strongly acid; clear smooth boundary.
BC—45 to 63 inches; strong brown (7.5YR 5/6) very cobbly loam; weak fine subangular blocky structure; friable; 50 percent cobbles and gravel; strongly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Content of rock fragments: 0 to 35 percent in the A horizon, 0 to 30 percent in the Bt horizon, and 10 to 50 percent in the BC horizon
Soil reaction: Extremely acid to moderately acid
Other characteristics: In some pedons, a discontinuity below the control section that has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 5 to 8 and is loam, clay loam, or clay in the fine-earth fraction

A horizon:
Hue—10YR
Value—3 or 4
Chroma—2 to 4
Texture of fine-earth fraction—loam or fine sandy loam

BA horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 or 6
Texture of fine-earth fraction—loam or fine sandy loam

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6
Chroma—6 or 8
Texture of fine-earth fraction—loam, clay loam, or sandy clay loam

BC horizon (if it occurs):
Hue—7.5YR or 10YR
Value—5 or 6
Chroma—6 or 8
Texture of fine-earth fraction—loam, clay loam, or sandy clay loam

Lonon Series

Depth class: Very deep
Drainage class: Well drained
Slope range: Moderately steep and steep (12 to 35 percent)
Landscape position: Benches, footslopes, and toeslopes
Parent material: Colluvium weathered from metasedimentary rocks

Typical Pedon

Lonon loam, 20 to 35 percent slopes; off State Route 133 in the Sutherland Community, about 1,000 feet north and 65 degrees east from the north end of a tunnel at Backbone Rock:

A—0 to 2 inches; brown (10YR 4/3) loam; weak fine granular structure; very friable; many fine and medium and few coarse roots; strongly acid; clear smooth boundary.
BA—2 to 6 inches; strong brown (7.5YR 5/6) loam; moderate medium granular structure; very friable;

many fine, medium, and coarse roots; strongly acid; gradual smooth boundary.

Bt1—6 to 14 inches; yellowish red (5YR 5/6) loam; weak medium subangular blocky structure; friable; many fine, medium, and coarse roots; few faint clay films on faces of peds; strongly acid; gradual smooth boundary.

Bt2—14 to 29 inches; yellowish red (5YR 5/8) loam; moderate medium subangular blocky structure; friable; few fine and medium roots; many fine and medium pores; few faint clay films on faces of peds; strongly acid; gradual smooth boundary.

Bt3—29 to 50 inches; yellowish red (5YR 5/8) clay loam; moderate medium subangular blocky structure; friable; common fine and medium pores; common faint clay films on faces of peds; strongly acid; clear smooth boundary.

BC—50 to 65 inches; red (2.5YR 4/8) loam; common medium prominent brownish yellow (10YR 6/8) and strong brown (7.5YR 5/8) mottles; massive; friable; strongly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Content and size of rock fragments: 0 to 35 percent in the upper 40 inches and 0 to 60 percent below a depth of 40 inches; content and size of fragments typically increase as depth increases
Soil reaction: Extremely acid to moderately acid, except in limed areas

A or Ap horizon:
Hue—5YR to 10YR
Value—2 to 5
Chroma—2 to 4
Texture of fine-earth fraction—loam or fine sandy loam
Other features—where both value and chroma are 3 or less, the horizon is less than 7 inches thick

BA horizon (if it occurs):
Hue—5YR to 10YR
Value—4 or 5
Chroma—4 or 6
Texture of fine-earth fraction—loam or fine sandy loam

Bt horizon:
Hue—2.5YR or 5YR
Value—4 to 6
Chroma—4 to 8
Texture of fine-earth fraction—loam, clay loam, or sandy clay loam

BC horizon (if it occurs):
Hue—2.5YR or 5YR
Value—4 to 6
Chroma—4 to 8
Texture of fine-earth fraction—loam, clay loam, or sandy clay loam

Maymead Series

Depth class: Very deep
Drainage class: Well drained
Slope range: Steep and very steep (20 to 50 percent)
Landscape position: Mountain coves, footslopes, and benches
Parent material: Colluvium from metasedimentary rocks

Typical Pedon

Maymead loam, 35 to 50 percent slopes; along Morgan Branch, about 4,100 feet south and 51 degrees east from where Old Draft Road intersects Draught Creek Road:

Oi—0 to 2 inches; partially decomposed forest litter.

A—2 to 4 inches; dark brown (10YR 3/3) loam; weak fine granular structure; very friable; many fine, medium, and coarse roots; 15 percent gravel; moderately acid; abrupt smooth boundary.

BA—4 to 8 inches; dark yellowish brown (10YR 4/4) loam; weak medium granular structure; friable; many fine and medium and few coarse roots; 15 percent gravel; moderately acid; clear smooth boundary.

Bw1—8 to 18 inches; strong brown (7.5YR 4/6) loam; weak fine subangular blocky structure; friable; many fine and medium and few coarse roots; common fine and medium pores; 15 percent gravel; strongly acid; clear smooth boundary.

Bw2—18 to 28 inches; strong brown (7.5YR 5/6) gravelly loam; weak medium subangular blocky structure; friable; common fine and medium and few coarse roots; 25 percent gravel; strongly acid; gradual smooth boundary.

Bw3—28 to 38 inches; strong brown (7.5YR 5/6) gravelly loam; weak medium subangular blocky structure; friable; common fine and medium and few coarse roots; 30 percent gravel and cobbles; strongly acid; gradual smooth boundary.

C—38 to 63 inches; yellowish brown (10YR 5/6) extremely gravelly loam; massive; very friable; 65 percent gravel and cobbles; strongly acid.

Range in Characteristics

Depth to bedrock: More than 40 inches
Content of rock fragments: 15 to 30 percent in the A

and Bw horizons and 30 to 70 percent in the C horizon
Soil reaction: Very strongly acid or strongly acid

A horizon:
Hue—10YR
Value—4 or 5
Chroma—2 or 3
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

BA horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

Bw horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 or 6
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

C horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 or 6
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

Northcove Series

Depth class: Very deep
Drainage class: Well drained
Slope range: Very steep and extremely steep (35 to 80 percent)
Landscape position: Mountain coves, footslopes, and benches
Parent material: Colluvium from metasedimentary rocks

Typical Pedon

Northcove very stony sandy loam, 35 to 50 percent slopes; in the Sutherland Community, along Reservoir Branch, about 3,700 feet north and 82 degrees east from the north side of the Backbone Rock tunnel:

Oi—0 to 1 inch; partially decomposed forest litter.
A—1 to 2 inches; dark brown (10YR 3/3) very stony sandy loam; weak fine granular structure; very friable; many fine, medium, and coarse roots; 40 percent stones, cobbles, and gravel; moderately acid; clear smooth boundary.
BA—2 to 5 inches; dark yellowish brown (10YR 4/4) very stony sandy loam; weak medium granular structure; very friable; many fine and medium and few coarse roots; 40 percent stones, cobbles, and gravel; moderately acid; clear smooth boundary.
Bw1—5 to 13 inches; yellowish brown (10YR 5/6) very stony sandy loam; weak medium subangular blocky structure; friable; common fine and medium and few coarse roots; 50 percent stones, cobbles, and gravel; moderately acid; clear smooth boundary.
Bw2—13 to 24 inches; yellowish brown (10YR 5/6) very stony sandy loam; weak medium subangular blocky structure; friable; few fine and medium roots; 55 percent stones, cobbles, and gravel; strongly acid; clear smooth boundary.
Bw3—24 to 38 inches; yellowish brown (10YR 5/6) extremely stony sandy loam; weak fine subangular blocky structure; very friable; few fine and medium roots; 70 percent stones, cobbles, and gravel; strongly acid; clear smooth boundary.
C—38 to 63 inches; yellowish brown (10YR 5/6) extremely cobbly sandy loam; massive; very friable; few fine roots; 75 percent cobbles, gravel, and stones; strongly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Content and size of rock fragments: 35 to 60 percent in the A and Bw horizons and and 35 to 80 percent in the C horizon; size ranges from gravel or channers to boulders
Soil reaction: Extremely acid to moderately acid

A horizon:
Hue—7.5YR or 10YR
Value—2 to 5
Chroma—2 to 4
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

BA horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 8
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

Bw horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 8
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

C horizon:
Hue—7.5YR or 10YR

Value—4 to 6
Chroma—3 to 8
Texture of fine-earth fraction—fine sandy loam, sandy loam, or loamy sand

Pigeonroost Series

Depth class: Moderately deep
Drainage class: Well drained
Slope range: Sloping to very steep (7 to 55 percent)
Landscape position: Summits, shoulders, and backslopes
Parent material: Residuum derived from gneiss, schist, and granite

Typical Pedon

Pigeonroost loam, 15 to 35 percent slopes; about 2.25 miles southeast of Providence, Virginia, approximately 0.45 mile northeast of the intersection of Highways VA-637 and VA-636, approximately 0.9 mile northwest of the intersection of Highways VA-637 and VA-631. (This pedon is in Grayson County, Virginia, where Pigeonroost soils occur extensively. It is in a surface texture phase and a slope phase not recognized in Johnson County. The extent of this soil type in Johnson County is limited to a small area adjoining Virginia. Data from the soil survey of Grayson County were used to represent Pigeonroost soils in Johnson County.)

A—0 to 5 inches; dark yellowish brown (10YR 3/4) loam; weak fine granular structure; friable; many very fine and fine roots; strongly acid; abrupt smooth boundary.
Bt—5 to 24 inches; strong brown (7.5YR 5/8) clay loam; moderate medium subangular blocky structure; friable; common very fine and fine roots; common distinct clay films on faces of peds; very strongly acid; clear wavy boundary.
BC—24 to 37 inches; strong brown (7.5YR 5/8) sandy loam; weak fine subangular blocky structure; friable; few very fine roots; very strongly acid; abrupt wavy boundary.
Cr—37 to 45 inches; weathered gneiss bedrock.

Range in Characteristics

Depth to bedrock: 20 to 40 inches to soft bedrock and more than 60 inches to hard bedrock
Content of rock fragments: 0 to 35 percent in the A and Bt horizons and 0 to 15 percent in the BC horizon
Soil reaction: Extremely acid to moderately acid

A horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—2 to 6
Texture of fine-earth fraction—loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture of fine-earth fraction—sandy clay loam, loam, clay loam, or silty clay loam

BC horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture of fine-earth fraction—sandy clay loam, loam, or clay loam

Cr layer:
Bedrock—weathered gneiss bedrock that can be removed with difficulty using hand tools

Pineola Series

Depth class: Moderately deep
Drainage class: Well drained
Slope range: Very steep and extremely steep (35 to 55 percent)
Landscape position: Summits, shoulders, and backslopes
Parent material: Residuum from metasedimentary rocks, such as metasandstone, metagraywacke, and phyllite

Typical Pedon

Pineola loam, 15 to 35 percent slopes; about 2.15 miles southwest of Whitetop, Virginia, approximately 2.1 miles southwest of the intersection of Highways VA-755 and VA-726, about 0.83 mile northeast of the North Carolina corner. (This pedon is in Grayson County, Virginia, where Pineola soils occur extensively. It is in a slope phase not recognized in Johnson County. The extent of this soil type in Johnson County is limited to a small area adjoining Virginia. Data from the soil survey of Grayson County were used to represent Pineola soils in Johnson County.)

A—0 to 10 inches; very dark grayish brown (10YR 3/2) loam; weak fine granular structure; very friable; many fine and common medium roots; 10 percent gravel; strongly acid; clear wavy boundary.
BA—10 to 15 inches; brown (10YR 4/3) loam; weak medium subangular blocky structure; friable; many fine and few medium roots; 10 percent gravel; strongly acid; gradual wavy boundary.
Bt—15 to 26 inches; yellowish brown (10YR 5/6) clay

loam; moderate fine subangular blocky structure; friable; common fine and few medium roots; common distinct clay films on faces of peds; 15 percent gravel; strongly acid; clear wavy boundary.

C—26 to 29 inches; yellowish brown (10YR 5/6) gravelly sandy loam; massive; friable; 25 percent gravel; strongly acid; abrupt wavy boundary.

Cr—29 to 45 inches; weathered metagraywacke.

Range in Characteristics

Depth to bedrock: 20 to 40 inches to soft bedrock and more than 60 inches to hard bedrock

Content of rock fragments: 0 to 35 percent in the A and Bt horizons and 0 to 50 percent in the C horizon

Soil reaction: Extremely acid to moderately acid

A horizon:
Hue—7.5YR or 10YR
Value—2 or 3
Chroma—1 to 4
Texture of fine-earth fraction—loam

BA horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4
Texture of fine-earth fraction—loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture of fine-earth fraction—sandy clay loam, loam, or clay loam

C horizon:
Hue—7.5YR or 10YR
Value—3 to 8
Chroma—1 to 8
Texture of fine-earth fraction—sandy loam, fine sandy loam, or loam

Cr layer:
Bedrock—weathered metagraywacke that can be removed with difficulty using hand tools

Porters Series

Depth class: Deep

Drainage class: Well drained

Slope range: Moderately steep to extremely steep (15 to 65 percent)

Landscape position: Mountain ridges and side slopes

Parent material: Residuum weathered from crystalline rocks and affected by soil creep in the upper part on the steeper slopes

Typical Pedon

Porters stony loam, 25 to 65 percent slopes; 3 miles northwest of Todd on Old Field Ball Mountain, on the east side of a private road. (This pedon is in Ashe County, North Carolina, where Porters soils occur extensively. The extent of this soil type in Johnson County is limited to areas adjoining North Carolina. Data from the soil surveys of Ashe and Watauga Counties, North Carolina, were used to represent Porters soils in Johnson County.)

A1—0 to 7 inches; very dark grayish brown (10YR 3/2) stony loam; moderate medium granular structure; very friable; many fine roots; few fine mica flakes; 20 percent stones, gravel, and cobbles; strongly acid; clear smooth boundary.

A2—7 to 11 inches; dark brown (10YR 3/3) stony loam; weak medium granular structure; very friable; common fine roots; few fine mica flakes; 20 percent stones, gravel, and cobbles; strongly acid; clear smooth boundary.

BA—11 to 18 inches; brown (7.5YR 5/4) stony loam; weak medium subangular blocky structure; friable; few fine roots; few fine mica flakes; 25 percent gravel, cobbles, and stones; moderately acid; clear smooth boundary.

Bw—18 to 30 inches; strong brown (7.5YR 5/6) stony loam; weak fine subangular blocky structure; friable; few fine mica flakes; 20 percent gravel, cobbles, and stones; moderately acid; clear smooth boundary.

BC—30 to 35 inches; brown (7.5YR 4/4) stony loam; weak medium subangular blocky structure; friable; few fine mica flakes; 35 percent gravel, cobbles, and stones; moderately acid; gradual wavy boundary.

C—35 to 42 inches; mottled yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) saprolite that crushes to very gravelly loam; massive; friable; few fine mica flakes; moderately acid.

R—42 inches; gneiss bedrock.

Range in Characteristics

Depth to bedrock: 40 to 60 inches

Content and size of rock fragments: Commonly 0 to 15 percent but can range to as much as 35 percent; gravel, cobbles, or stones

Soil reaction: Very strongly acid to slightly acid

Other characteristics: Few or common mica flakes in the A and B horizons and few to many mica flakes in the C horizon

A or Ap horizon:
Hue—7.5YR or 10YR
Value—2 or 3
Chroma—1 to 4
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

BA horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 or 6
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

Bw horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 8
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

BC horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 8
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

C horizon:
Color—variable; commonly multicolored; may be similar to the B horizon
Texture of fine-earth fraction—loam, fine sandy loam, sandy loam, or loamy sand saprolite

R layer:
Bedrock—hard crystalline bedrock, such as granite or gneiss

Saunook Series

Depth class: Very deep
Drainage class: Well drained
Slope range: Sloping and moderately steep (8 to 15 percent)
Landscape position: Benches and footslopes
Parent material: Colluvium derived from crystalline rocks

Typical Pedon

Saunook loam, 8 to 15 percent slopes; 6.9 miles east of Boone on U.S. Highway 421, about 2.8 miles northwest on Secondary Road 1359, about 0.2 mile northwest on Secondary Road 1100, about 800 feet southwest on a farm road, 400 feet south of the road. (This pedon is in Watauga County, North Carolina, where Saunook soils occur extensively. The extent of this soil type in Johnson County is limited to areas adjoining North Carolina. Data from the soil survey of Watauga County were used to represent Saunook soils in Johnson County.)

Ap—0 to 8 inches; dark brown (10YR 3/3) loam; weak medium granular structure; friable; abundant fine roots; common fine mica flakes; strongly acid; abrupt wavy boundary.
Bt—8 to 35 inches; dark yellowish brown (10YR 4/6) loam; weak medium subangular blocky structure; friable; few fine roots; common fine mica flakes; strongly acid; gradual wavy boundary.
BC—35 to 60 inches; yellowish brown (10YR 5/6) fine sandy loam; weak fine subangular blocky structure; friable; few fine roots; common fine mica flakes; very strongly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Content of rock fragments: As much as 35 percent in the A and Bt horizons and as much as 60 percent in the substratum
Soil reaction: Extremely acid to moderately acid in the A horizon, unless limed, and very strongly acid to slightly acid in the B and C horizons
Other characteristics: Few or common mica flakes throughout the profile

Ap or A horizon:
Hue—7.5YR or 10YR
Value—2 or 3
Chroma—2 to 4
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture of fine-earth fraction—loam, clay loam, or sandy clay loam

BC horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture of fine-earth fraction—loam or fine sandy loam

Shelocta Series

Depth class: Very deep
Drainage class: Well drained
Slope range: Gently sloping to very steep (5 to 50 percent)

Landscape position: Mountain coves, footslopes, and benches
Parent material: Mixed colluvium from metasedimentary rocks

Typical Pedon

Shelocta silt loam, 35 to 50 percent slopes; from State Route 67 in the Doeville Community, turn on Old Stage Road, turn on Campbell Hollow Road, about 1 mile on the road to its intersection with Arnold Hollow Road, about 3,300 feet south and 77 degrees west of the intersection:

Oi—0 to 2 inches; partially decomposed forest litter.
A—2 to 4 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine and medium roots; 5 percent channers; strongly acid; clear smooth boundary.
BE—4 to 12 inches; yellowish brown (10YR 5/6) silt loam; weak fine subangular blocky and weak medium granular structure; friable; common fine and medium and few coarse roots; many fine and medium pores; 10 percent channers; strongly acid; gradual smooth boundary.
Bt1—12 to 26 inches; yellowish brown (10YR 5/6) silt loam; weak fine subangular blocky structure parting to weak medium granular; common medium and coarse roots; many fine and medium pores; few faint clay films on faces of peds; 10 percent channers; strongly acid; gradual smooth boundary.
Bt2—26 to 40 inches; strong brown (7.5YR 5/8) silty clay loam; moderate medium subangular blocky structure; friable; common medium and coarse roots; many fine and medium pores; few faint clay films on faces of peds; 15 percent channers; strongly acid; gradual smooth boundary.
Bt3—40 to 47 inches; strong brown (7.5YR 5/8) silty clay loam; moderate medium subangular blocky structure; friable; few fine and medium roots; common fine and medium pores; few faint clay films on faces of peds; 15 percent channers; strongly acid; gradual smooth boundary.
BC—47 to 65 inches; strong brown (7.5YR 5/8) channery silt loam; weak medium subangular blocky structure; friable; few fine and medium roots; 20 percent channers; strongly acid.

Range in Characteristics

Depth to bedrock: More than 48 inches
Content of rock fragments: 2 to 35 percent in the A horizon and 5 to 60 percent in subhorizons of the Bt horizon
Soil reaction: Extremely acid to strongly acid, except in limed areas

A horizon:
Hue—10YR or 2.5Y
Value—3 or 4
Chroma—1 to 3
Texture of fine-earth fraction—silt loam or loam

BE horizon (if it occurs):
Hue—10YR to 2.5Y
Value—4 to 6
Chroma—4 to 8
Texture of fine-earth fraction—silt loam or loam

Bt horizon:
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—4 to 8
Texture of fine-earth fraction—silty clay loam or silt loam

BC horizon (if it occurs):
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—4 to 8
Texture of fine-earth fraction—silty clay loam or silt loam

Soco Series

Depth class: Moderately deep
Drainage class: Well drained
Slope range: Steep to extremely steep (20 to 80 percent)
Landscape position: Mountain ridge crests and side slopes
Parent material: Residuum from metasedimentary rocks

Typical Pedon

Soco fine sandy loam, 35 to 50 percent slopes; from State Route 133, about 2.9 miles on Birch Branch Road, 600 feet west of the road:

Oi—0 to 1 inch; partially decomposed forest litter.
A—1 to 4 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; very friable; many fine and medium and few coarse roots; 5 percent gravel; strongly acid; clear smooth boundary.
Bw1—4 to 15 inches; yellowish brown (10YR 5/6) loam; weak medium subangular blocky structure; friable; common fine and medium and few coarse roots; many fine and medium pores; 5 percent gravel; very strongly acid; gradual smooth boundary.
Bw2—15 to 24 inches; yellowish brown (10YR 5/6) loam; weak medium subangular blocky structure;

friable; few fine and medium roots; many fine and medium pores; 10 percent gravel; very strongly acid; abrupt smooth boundary.

BC—24 to 30 inches; yellowish brown (10YR 5/4) fine sandy loam; massive; very friable; 10 percent gravel and cobbles; very strongly acid; clear wavy boundary.

Cr—30 to 45 inches; partially weathered metasandstone that can be removed with difficulty using hand tools.

Range in Characteristics

Depth to bedrock: 20 to 40 inches to weathered bedrock and more than 40 inches to hard bedrock
Content of rock fragments: 0 to 35 percent throughout the profile
Soil reaction: Extremely acid to strongly acid

A horizon:
Hue—7.5YR to 2.5Y
Value—2 to 5
Chroma—2 to 6
Texture of fine-earth fraction—fine sandy loam or loam
Other features—where both value and chroma are 3 or less, the horizon is less than 7 inches thick

Bw horizon:
Hue—5YR to 2.5Y
Value—4 to 6
Chroma—3 to 8
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

BC horizon (if it occurs):
Hue—7.5YR to 10YR
Value—4 to 6
Chroma—3 to 8
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

Cr layer:
Bedrock—multicolored weathered bedrock that is partly consolidated but can be removed with difficulty using hand tools

Statler Series

Depth class: Very deep
Drainage class: Well drained
Slope range: Nearly level and gently sloping (1 to 4 percent)
Landscape position: Low stream terraces
Parent material: Mixed alluvium

Typical Pedon

Statler loam, 1 to 4 percent slopes; from State Route 67, take Doe Creek Road to Roan Creek Road, turn left and go 1.5 miles, 375 feet north of the road:

Ap—0 to 7 inches; dark brown (10YR 3/3) loam; weak fine granular structure; very friable; many very fine and fine roots; common very fine pores; 5 percent gravel; slightly acid; clear smooth boundary.

BA—7 to 10 inches; dark yellowish brown (10YR 4/4) loam; weak medium granular structure; very friable; common very fine and fine roots; common fine and medium pores; 5 percent gravel; moderately acid; abrupt smooth boundary.

Bt—10 to 22 inches; strong brown (7.5YR 4/6) sandy clay loam; few fine faint yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; very friable; common fine and medium roots; common fine and medium pores; few faint clay films on faces of peds; 5 percent gravel; strongly acid; clear smooth boundary.

BC—22 to 27 inches; strong brown (7.5YR 4/6) loam; weak coarse subangular blocky structure; very friable; common fine and medium roots; common fine and medium pores; 5 percent gravel; strongly acid; gradual smooth boundary.

C—27 to 60 inches; yellowish brown (10YR 5/8) gravelly fine sandy loam; massive; very friable; common fine pores; 25 percent gravel; very strongly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Content of rock fragments: 0 to 15 percent in the A and Bt horizons and 0 to 30 percent in the C horizon
Soil reaction: Strongly acid or moderately acid, except in limed areas

A or Ap horizon:
Hue—7.5YR or 10YR
Value—2 or 3
Chroma—2 to 4
Texture of fine-earth fraction—loam or fine sandy loam

BA horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4
Texture of fine-earth fraction—loam or fine sandy loam

Bt horizon:
Hue—5YR to 10YR
Value—4 to 6

Chroma—3 to 8
Texture of fine-earth fraction—sandy clay loam, clay loam, or loam
Other features—in some pedons, the lower part of the horizon has mottles in shades of brown, yellow, or gray

BC horizon (if it occurs):
Hue—5YR to 10YR
Value—4 to 6
Chroma—3 to 8
Texture of fine-earth fraction—sandy clay loam, clay loam, or loam

C horizon:
Hue—5YR to 10YR
Value—4 to 6
Chroma—3 to 8
Texture of fine-earth fraction—sandy clay loam, clay loam, or loam

Sylco Series

Depth class: Moderately deep
Drainage class: Well drained
Slope range: Very steep and extremely steep (35 to 55 percent)
Landscape position: Shoulders and backslopes
Parent material: Residuum weathered from phyllite and metasandstone

Typical Pedon

Sylco channery silt loam in an area of Sylco-Sylvatus complex, 7 to 15 percent slopes; about 3.5 miles southeast of Cripple Creek, Virginia, approximately 2.0 miles west of the intersection of Highways VA-602 and VA-738, approximately 0.2 mile north of Cold Springs Church and cemetery. (This pedon is in Grayson County, Virginia, where Sylco soils occur extensively. It is in a slope phase not recognized in Johnson County. The extent of this soil type in Johnson County is limited to a small area adjoining Virginia. Data from the soil survey of Grayson County were used to represent Sylco soils in Johnson County.)

A—0 to 4 inches; dark yellowish brown (10YR 4/4) channery silt loam; weak medium granular structure; friable; many very fine roots; 20 percent channers; strongly acid; abrupt smooth boundary.
Bw—4 to 22 inches; brown (7.5YR 5/4) very channery silt loam; weak fine subangular blocky structure; friable; common very fine roots; 45 percent channers; strongly acid; clear smooth boundary.
C—22 to 27 inches; brown (7.5YR 5/4) extremely channery silt loam; massive; friable; few fine roots; 70 percent channers; strongly acid; clear wavy boundary.
R—27 inches; hard phyllite bedrock.

Range in Characteristics

Depth to bedrock: 20 to 40 inches
Content of rock fragments: 15 to 45 percent in the A and Bw horizons and 40 to 70 percent in the C horizon
Soil reaction: Extremely acid to strongly acid

A horizon:
Hue—10YR
Value—3 or 4
Chroma—2 to 4
Texture of fine-earth fraction—silt loam

Bw horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—3 to 6
Texture of fine-earth fraction—silt loam, loam, or silty clay loam

C horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—3 to 6
Texture of fine-earth fraction—silt loam, loam, or silty clay loam

R layer:
Bedrock—hard phyllite

Sylvatus Series

Depth class: Shallow
Drainage class: Well drained
Slope range: Very steep and steep (35 to 55 percent)
Landscape position: Shoulders and backslopes
Parent material: Residuum weathered from phyllite and metasandstone

Typical Pedon

Sylvatus channery silt loam in an area of Sylco-Sylvatus complex, 15 to 35 percent slopes; about 3.0 miles southeast of Cripple Creek, Virginia, approximately 0.7 mile east of the intersection of Highways VA-602 and VA-653, approximately 2 miles west of Faith Church. (This pedon is in Grayson County, Virginia, where Sylvatus soils occur extensively. It is in a slope phase not recognized in Johnson County. The extent of this soil type in Johnson County is limited to a small area adjoining Virginia. Data from the soil survey of Grayson County were used to represent Sylvatus soils in Johnson County.)

A—0 to 2 inches; dark yellowish brown (10YR 3/4) channery silt loam; weak fine granular structure; friable; many fine and very fine roots; 20 percent channers; very strongly acid; abrupt smooth boundary.

Bw—2 to 11 inches; yellowish brown (10YR 5/6) very channery silt loam; weak fine subangular blocky structure; friable; common fine and very fine roots; 50 percent channers; very strongly acid; clear smooth boundary.

C—11 to 16 inches; yellowish brown (10YR 5/6) extremely channery silt loam; weak fine subangular blocky structure; friable; 70 percent channers; very strongly acid; clear wavy boundary.

R—16 inches; hard phyllite bedrock.

Range in Characteristics

Depth to bedrock: 10 to 20 inches

Content of rock fragments: 15 to 75 percent in the A and Bw horizons and 45 to 90 percent in the C horizon

Soil reaction: Extremely acid or very strongly acid

A horizon:
Hue—10YR
Value—2 to 5
Chroma—1 to 4
Texture of fine-earth fraction—silt loam

Bw horizon:
Hue—7.5YR or 10YR
Value—5 or 6
Chroma—4 to 8
Texture of fine-earth fraction—silt loam, loam, silty clay loam, or clay loam

C horizon:
Hue—7.5YR or 10YR
Value—3 to 6
Chroma—1 to 8
Texture of fine-earth fraction—silt loam, loam, silty clay loam, or clay loam

R layer:
Bedrock—hard phyllite

Tusquitee Series

Depth class: Very deep

Drainage class: Well drained

Slope range: Sloping and moderately steep (8 to 15 percent)

Landscape position: Mountain coves, benches, and footslopes

Parent material: Colluvium weathered from crystalline rocks

Typical Pedon

Tusquitee loam, 8 to 15 percent slopes; 0.6 mile east of Clifton, 0.3 mile south of North Carolina Highway 88 on State Road 1128, about 200 yards southeast of the road. (This pedon is in Ashe County, North Carolina, where Tusquitee soils occur extensively. The extent of this soil type in Johnson County is limited to areas adjoining North Carolina. Data from the soil survey of Ashe County were used to represent Tusquitee soils in Johnson County.)

Ap—0 to 10 inches; dark brown (10YR 3/3) loam; weak medium granular structure; very friable; many fine and medium roots; 5 percent cobbles; moderately acid; clear smooth boundary.

BA—10 to 18 inches; dark yellowish brown (10YR 4/4) loam; weak medium subangular blocky structure; friable; few fine roots; few fine mica flakes; 5 percent cobbles; strongly acid; clear smooth boundary.

Bw—18 to 42 inches; strong brown (7.5YR 5/6) loam; weak medium subangular blocky structure; friable; few fine and medium roots; few fine mica flakes; 5 percent cobbles; strongly acid; clear smooth boundary.

BC—42 to 56 inches; strong brown (7.5YR 5/6) loam; common fine distinct dark brown (7.5YR 3/2) mottles; weak medium subangular blocky structure; friable; few fine mica flakes; 10 percent cobbles; strongly acid; gradual wavy boundary.

2C—56 to 60 inches; mottled yellowish brown (10YR 5/6) and grayish brown (10YR 5/2) cobbly fine sandy loam; massive; friable; 30 percent cobbles; strongly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches

Content of rock fragments: 0 to 35 percent above a depth of 40 inches and 0 to 60 percent below a depth of 40 inches

Soil reaction: Very strongly acid to slightly acid

Other characteristics: Few or common mica flakes

A or Ap horizon:
Hue—5YR to 10YR
Value—2 or 3
Chroma—1 to 4
Texture of fine-earth fraction—loam or fine sandy loam

BA horizon (if it occurs):
Hue—5YR to 10YR
Value—4
Chroma—4 or 6
Texture of fine-earth fraction—loam or fine sandy loam

Bw horizon:
Hue—5YR to 10YR
Value—4 to 6
Chroma—3 to 8
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

BC horizon (if it occurs):
Hue—5YR to 10YR
Value—4 to 6
Chroma—3 to 8
Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

C horizon:
Color—similar to the B horizon or mottled or multicolored
Texture of fine-earth fraction—fine sandy loam, sandy loam, loam, or loamy sand

Unicoi Series

Depth class: Shallow
Drainage class: Somewhat excessively drained
Slope range: Extremely steep (50 to 95 percent)
Landscape position: Side slopes of mountain ridges
Parent material: Residuum from metasedimentary rocks

Typical Pedon

Unicoi very cobbly sandy loam in an area of Unicoi-Rock outcrop complex, 50 to 80 percent slopes; 800 feet south and 40 degrees east from McQueen Knob Lookout:

Oe—0 to 1 inch; partially decomposed forest litter.
Oa—1 to 2 inches; highly decomposed litter in a fibrous root mat.
A—2 to 3 inches; very dark grayish brown (10YR 3/2) very cobbly sandy loam; weak fine granular structure; very friable; many fine and medium and few coarse roots; 40 percent cobbles and gravel; strongly acid; abrupt wavy boundary.
BE—3 to 7 inches; brown (10YR 5/3) very cobbly sandy loam; weak fine and medium granular structure; very friable; many fine and medium and few coarse roots; 40 percent cobbles and gravel; strongly acid; clear wavy boundary.
Bw—7 to 15 inches; yellowish brown (10YR 5/6) very cobbly sandy loam; weak fine subangular blocky structure; very friable; common fine, medium, and coarse roots; 50 percent cobbles and gravel; strongly acid; abrupt clear boundary.
R—15 inches; hard metasandstone.

Range in Characteristics

Depth to bedrock: 7 to 20 inches
Content of rock fragments: Averages between 35 and 65 percent
Soil reaction: Extremely acid to strongly acid

A horizon:
Hue—10YR
Value—3 to 6
Chroma—1 to 4
Texture of fine-earth fraction—sandy loam, fine sandy loam, or loam

BE horizon (if it occurs):
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 or 4
Texture of fine-earth fraction—sandy loam, fine sandy loam, or loam

Bw horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 8
Texture of fine-earth fraction—sandy loam, fine sandy loam, or loam

R layer:
Bedrock—hard metasandstone

Wayah Series

Depth class: Very deep
Drainage class: Well drained
Slope range: Moderately steep and steep (15 to 30 percent)
Landscape position: Ridge crests at high mountain elevations
Parent material: Residuum weathered from crystalline rocks

Typical Pedon

Wayah loam in an area of Burton-Wayah complex, windswept, 30 to 60 percent slopes, stony; 10.7 miles northeast of Boone on North Carolina Highway 194, about 1.0 mile northwest on Secondary Road 1346, about 2.3 miles northwest on a farm road, 1,400 feet northwest on another farm road, 100 feet northeast of the road, in a wooded area of pasture. (This pedon is in Watauga County, North Carolina, where Wayah soils occur extensively. It is in a slope unit not recognized in Johnson County. The extent of this soil type in Johnson County is limited to areas adjoining North Carolina. Data from the soil survey of Watauga County were used to represent Wayah soils in Johnson County.)

A1—0 to 6 inches; very dark brown (10YR 2/2) loam; weak medium granular structure; friable; common fine roots; few fine mica flakes; very strongly acid; clear wavy boundary.

A2—6 to 12 inches; dark brown (10YR 3/3) loam; weak medium granular structure; friable; common fine roots; common fine mica flakes; very strongly acid; abrupt wavy boundary.

Bw—12 to 24 inches; dark yellowish brown (10YR 4/6) sandy loam; weak medium subangular blocky structure; friable; few fine roots; common fine mica flakes; 5 percent gravel and cobbles; very strongly acid; clear wavy boundary.

C—24 to 61 inches; yellowish brown (10YR 5/6) loamy sand saprolite; common streaks of black and white minerals; massive; friable; common fine mica flakes; 5 percent gravel and cobbles; strongly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches

Content and size of rock fragments: 0 to 15 percent in the A horizon and 0 to 35 percent in the B and C horizons; gravel, cobbles, or stones

Soil reaction: Extremely acid to moderately acid throughout the profile

Other characteristics: Few or common mica flakes in the A and B horizons and few to many mica flakes in the C horizon

A horizon:

Hue—7.5YR or 10YR

Value—2 or 3

Chroma—1 to 3

Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

Bw horizon:

Hue—7.5YR to 2.5Y

Value—4 to 6

Chroma—3 to 8

Texture of fine-earth fraction—loam, fine sandy loam, or sandy loam

C horizon:

Hue—7.5YR to 2.5Y

Value—4 to 6

Chroma—3 to 8

Texture of fine-earth fraction—loam, fine sandy loam, sandy loam, or loamy sand

References

(1) American Association of State Highway and Transportation Officials. 1986. Standard specifications for highway materials and methods of sampling and testing. Ed. 14, 2 vols.

(2) American Society for Testing and Materials. 1993. Standard classification of soils for engineering purposes. ASTM Stand. D 2487.

(3) United States Department of Agriculture. 1956. Soil survey of Johnson County, Tennessee.

(4) United States Department of Agriculture, Soil Conservation Service. 1975. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. U.S. Dep. Agric. Handb. 436.

(5) United States Department of Agriculture, Soil Conservation Service. 1992. Keys to soil taxonomy. 5th ed. Soil Surv. Staff, Soil Manage. Support Serv. Tech. Monogr. 19.

(6) United States Department of Agriculture, Soil Conservation Service. 1993. Soil survey manual. Soil Surv. Staff, U.S. Dep. Agric. Handb. 18.

Glossary

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvial fan. The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction in which a slope faces.

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 40-inch profile or to a limiting layer is expressed as:

Very low	0 to 2 inches
Low	2 to 4 inches
Moderate	4 to 6 inches
High	more than 6 inches

Backslope. The geomorphic component that forms the steepest inclined surface and principal element of many hillsides. Backslopes in profile are commonly steep, are linear, and may or may not include cliff segments.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

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.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

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.

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 of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Channery soil material. Soil material that is, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that is 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material is 35 to 60 percent of these rock fragments, and extremely cobbly soil material is more than 60 percent.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil 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.

Compressible (in tables). Excessive decrease in volume of soft soil under load.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane that typically takes the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Crystalline rock. A term describing both igneous and metamorphic rocks such as granite, gneiss, or schist.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth, 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 soils, 20 to 40 inches; shallow soils, 10 to 20 inches; and very shallow soils, less than 10 inches.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

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.

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, through either drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

Drainage, surface. Runoff, or surface flow of water, from an area.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

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. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Foothill. A steeply sloping upland that has relief of as much as 1,000 feet (300 meters) and fringes a mountain range or high-plateau escarpment.

Footslope. The inclined surface at the base of a hill.

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.

Fragile (in tables). A soil that is easily damaged by use or disturbance.

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.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

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.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

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.

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 natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

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 formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

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.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Irrigation. Application of water to soils to assist in production of crops.

Karst (topography). The relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions or small basins.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. 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.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Low strength. The soil is not strong enough to support loads.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Metasedimentary rock. Sedimentary rock such as shale, siltstone, or sandstone that has been slightly altered by metamorphic processes such as heat and pressure. Such rocks retain much of their original appearance and physical properties but have altered mineralogical characteristics. Examples are metasandstone and arkose.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

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 natural elevation of the land surface, rising more than 1,000 feet 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.

Munsell notation. A designation of color by degrees of three simple variables hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

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.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse-grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

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 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.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Extremely acid	less than 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments ranging from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Saprolite. Unconsolidated residual material underlying the soil and grading to hard bedrock below.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Second bottom. The first terrace above the normal flood plain (or first bottom) of a river.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

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 depression in the landscape where limestone has been dissolved.

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.

Slippage (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

Slope. The inclination of the land surface from the horizontal. Percent slope is vertical distance divided by horizontal distance, then multiplied by 100. Thus, a 20 percent slope is a vertical change of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Nearly level	0 to 2 percent or 0 to 3 percent
Gently sloping	2 to 5 percent
Sloping	5 to 12 percent
Moderately steep	12 to 20 percent
Steep	20 to 35 percent
Very steep	35 to 50 percent
Extremely steep	more than 50 percent

Other slope breaks are used for some of the map units in this survey. This is done to facilitate joining soil maps with adjacent survey areas.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to 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).

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.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The outermost inclined surface at the base of a hill; part of a footslope.

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.

Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse-grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.—Temperature and Precipitation

(Recorded in the period 1951-88 at Bristol, Tennessee)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have-- Maximum temp. higher than--	2 years in 10 will have-- Minimum temp. lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January--	43.8	24.8	34.3	70	-5	18	3.35	2.10	4.47	9	6.5
February-	48.5	27.5	38.0	74	2	24	3.47	2.07	4.73	8	5.1
March----	57.8	34.8	46.3	80	14	70	3.84	2.17	5.31	9	2.4
April----	68.0	43.6	55.8	86	25	194	3.39	1.90	4.70	8	0.6
May------	76.2	52.4	64.3	89	34	443	3.65	2.12	5.00	8	0.0
June-----	83.0	60.2	71.6	93	44	648	3.44	1.93	4.76	8	0.0
July-----	85.5	64.3	74.9	95	52	772	4.31	2.40	6.00	8	0.0
August---	85.0	63.3	74.2	95	50	750	3.18	1.85	4.35	7	0.0
September	79.9	56.8	68.4	92	40	552	3.03	1.62	4.26	6	0.0
October--	69.2	44.7	57.0	85	26	248	2.38	0.98	3.56	5	0.0
November-	57.7	35.5	46.6	78	15	56	3.02	1.94	4.00	7	1.2
December-	48.1	28.5	38.3	73	5	21	3.38	1.92	4.67	8	2.8
Yearly:											
Average	66.9	44.7	55.8	---	---	---	---	---	---	---	---
Extreme	---	---	---	97	-7	---	---	---	---	---	---
Total--	---	---	---	---	---	3,796	40.44	35.60	45.14	91	18.6

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

Table 2.—Freeze Dates in Spring and Fall

(Recorded in the period 1951-88 at Bristol, Tennessee)

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--	Apr. 7	Apr. 17	May 1
2 years in 10 later than--	Mar. 31	Apr. 13	Apr. 26
5 years in 10 later than--	Mar. 18	Apr. 3	Apr. 16
First freezing temperature in fall:			
1 year in 10 earlier than--	Nov. 1	Oct. 17	Oct. 10
2 years in 10 earlier than--	Nov. 6	Oct. 23	Oct. 14
5 years in 10 earlier than--	Nov. 15	Nov. 3	Oct. 23

Table 3.—Growing Season

(Recorded for the period 1951-88 at Bristol, Tennessee)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	219	192	174
8 years in 10	227	199	179
5 years in 10	242	213	189
2 years in 10	257	227	198
1 year in 10	265	234	203

Table 4.—Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
AcF	Ashe-Cleveland-Rock outcrop complex, 50 to 95 percent slopes, extremely bouldery	726	0.4
AsE	Ashe gravelly fine sandy loam, 12 to 25 percent slopes	3,817	2.0
AsF	Ashe gravelly fine sandy loam, 25 to 65 percent slopes	5,850	3.0
BeC	Bledsoe silt loam, 5 to 12 percent slopes	1,319	0.7
BeD	Bledsoe silt loam, 12 to 20 percent slopes	1,123	0.6
BeE	Bledsoe silt loam, 20 to 35 percent slopes	2,644	1.4
BsE	Brookshire silt loam, 20 to 35 percent slopes	176	*
BsF	Brookshire silt loam, 35 to 50 percent slopes	320	0.2
BtD	Burton loam, 7 to 15 percent slopes, stony	20	*
BtE	Burton loam, 15 to 35 percent slopes, very stony	21	*
BtF	Burton loam, 35 to 55 percent slopes, very stony	20	*
BuF	Burton-Craggey-Rock outcrop complex, windswept, 30 to 95 percent slopes	1,968	1.0
BwD	Burton-Wayah complex, windswept, 15 to 30 percent slopes, stony	20	*
CaD	Calvin channery silt loam, 12 to 20 percent slopes	5,077	2.6
CaE	Calvin channery silt loam, 20 to 35 percent slopes	4,764	2.5
CaF	Calvin channery silt loam, 35 to 50 percent slopes	4,913	2.5
CbrG	Caneyville-Rock outcrop complex, 50 to 80 percent slopes	1,073	0.6
CcE	Cataska channery silt loam, 20 to 35 percent slopes	1,978	1.0
CcF	Cataska channery silt loam, 35 to 50 percent slopes	3,034	1.6
CcG	Cataska channery silt loam, 50 to 80 percent slopes	2,221	1.1
Cg	Chagrin loam, rarely flooded	1,559	0.8
ChE	Chestnut loam, 20 to 35 percent slopes	216	0.1
ChF	Chestnut loam, 35 to 50 percent slopes	684	0.4
ChG	Chestnut-Ashe complex, 50 to 95 percent slopes, very stony	24	*
CjD	Chestnut-Edneyville complex, 15 to 30 percent slopes, stony	73	*
CjE	Chestnut-Edneyville complex, 30 to 50 percent slopes, stony	90	*
Cs	Craigsville cobbly sandy loam, frequently flooded	2,484	1.3
CuD	Cullasaja very cobbly loam, 15 to 30 percent slopes, very stony	477	0.2
Di	Dillard loam, rarely flooded	798	0.4
DjF	Ditney-Unicoi complex, 50 to 95 percent slopes, very rocky	110	*
DtE	Ditney sandy loam, 20 to 35 percent slopes	9,185	4.7
DtF	Ditney sandy loam, 35 to 50 percent slopes	16,318	8.4
DtG	Ditney sandy loam, 50 to 80 percent slopes	4,874	2.5
Du	Dunning silt loam, occasionally flooded	430	0.2
EdE	Edneyville loam, 12 to 25 percent slopes	324	0.2
EdF	Edneyville loam, 25 to 45 percent slopes	784	0.4
EvE	Edneyville-Chestnut complex, 30 to 50 percent slopes, stony	208	0.1
GrE	Greenlee very cobbly loam, 15 to 35 percent slopes, very stony	1,437	0.7
GrF	Greenlee very cobbly loam, 35 to 55 percent slopes, very stony	2,233	1.2
GrG	Greenlee very cobbly loam, 55 to 80 percent slopes, very stony	713	0.4
Ht	Hatboro loam, occasionally flooded	1,153	0.6
Hu	Hatboro sandy loam, frequently flooded	15	*
JeD	Jeffrey cobbly loam, 15 to 30 percent slopes, very stony	369	0.2
JeE	Jeffrey cobbly loam, 30 to 50 percent slopes, very stony	52	*
KeC	Keener loam, 5 to 12 percent slopes	2,982	1.5
KeD	Keener loam, 12 to 20 percent slopes	5,171	2.7
KeE	Keener loam, 20 to 35 percent slopes	9,482	4.9
KeF	Keener loam, 35 to 50 percent slopes	9,200	4.7
LoD	Lonon loam, 12 to 20 percent slopes	9,282	4.8
LoE	Lonon loam, 20 to 35 percent slopes	6,089	3.1
MaE	Maymead loam, 20 to 35 percent slopes	1,287	0.7
MaF	Maymead loam, 35 to 50 percent slopes	6,049	3.1
NcF	Northcove very stony sandy loam, 35 to 50 percent slopes	3,625	1.9
NcG	Northcove very stony sandy loam, 50 to 80 percent slopes	5,502	2.8
PgE	Pigeonroost gravelly loam, 7 to 35 percent slopes, very stony	29	*
PgF	Pigeonroost gravelly loam, 35 to 55 percent slopes, very stony	32	*
PnF	Pineola loam, 35 to 55 percent slopes, very stony	31	*

See footnote at end of table.

Table 4.—Acreage and Proportionate Extent of the Soils—Continued

Map symbol	Soil name	Acres	Percent
PoE	Porters loam, 15 to 30 percent slopes, stony	296	0.2
PsF	Porters stony loam, 25 to 65 percent slopes	243	0.1
SaC	Saunook loam, 8 to 15 percent slopes	846	0.4
ScC	Shelocta silt loam, 5 to 12 percent slopes	2,428	1.3
ScD	Shelocta silt loam, 12 to 20 percent slopes	3,150	1.6
ScE	Shelocta silt loam, 20 to 35 percent slopes	2,588	1.3
ScF	Shelocta silt loam, 35 to 50 percent slopes	732	0.4
SoE	Soco fine sandy loam, 20 to 35 percent slopes	1,606	0.8
SoF	Soco fine sandy loam, 35 to 50 percent slopes	4,238	2.2
SoG	Soco fine sandy loam, 50 to 80 percent slopes	1,512	0.8
SrB	Statler loam, 1 to 4 percent slopes	2,974	1.5
SyF	Sylco-Sylvatus complex, 35 to 55 percent slopes	71	*
TsD	Tusquitee loam, 8 to 15 percent slopes	2,367	1.2
UcG	Unicoi-Rock outcrop complex, 50 to 80 percent slopes	23,661	12.2
W	Water	2,594	1.3
	Total	193,761	100.0

* Less than 0.1 percent.

Table 5.—Land Capability and Yields per Acre of Crops and Pasture

(Yields are those that can be expected under a high level of management. 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	Corn	Corn silage	Grass-legume hay	Tall fescue-ladino	Tobacco
		Bu	Tons	Tons	AUM*	Lbs
AcF: Ashe-Cleveland-Rock outcrop	7e	---	---	---	3.50	---
AsE: Ashe	6e	---	---	2.00	4.00	---
AsF: Ashe	7e	---	---	---	3.50	---
BeC: Bledsoe	4e	75.00	20.00	5.50	6.00	1,800.00
BeD: Bledsoe	6e	50.00	15.00	4.00	5.50	1,300.00
BeE: Bledsoe	7e	---	---	---	5.00	---
BsE: Brookshire	6e	---	---	---	5.50	---
BsF: Brookshire	7e	---	---	---	---	---
BtD: Burton	4e	---	---	---	---	---
BtE, BtF: Burton	7e	---	---	---	---	---
BuF: Burton-Craggey-Rock outcrop	7e	---	---	---	---	---
BwD: Burton-Wayah	7e	---	---	---	5.00	---
CaD: Calvin	4e	60.00	12.00	5.00	6.00	---
CaE: Calvin	6e	---	---	---	4.50	---
CaF: Calvin	7e	---	---	---	---	---
CbrG: Caneyville-Rock outcrop	7e	---	---	---	---	---

See footnote at end of table.

Table 5.—Land Capability and Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Corn	Corn silage	Grass-legume hay	Tall fescue-ladino	Tobacco
		Bu	Tons	Tons	AUM*	Lbs
CcE, CcF, CcG------ Cataska	7e	---	---	---	---	---
Cg----------------- Chagrin	1	135.00	30.00	5.00	8.00	2,200.00
ChE---------------- Chestnut	7e	---	---	---	4.00	---
ChF---------------- Chestnut	7e	---	---	---	3.50	---
ChG---------------- Chestnut-Ashe	7e	---	---	---	---	---
CjD---------------- Chestnut-Edneyville	6e	---	---	2.50	4.50	---
CjE---------------- Chestnut-Edneyville	7e	---	---	---	4.00	---
Cs----------------- Craigsville	3s	70.00	12.00	1.50	4.50	---
CuD---------------- Cullasaja	7s	60.00	10.00	1.50	4.50	---
Di----------------- Dillard	2w	100.00	18.00	7.00	7.00	1,900.00
DjF---------------- Ditney-Unicoi	7s	---	---	---	---	---
DtE---------------- Ditney	7e	---	---	---	3.00	---
DtF, DtG----------- Ditney	7e	---	---	---	---	---
Du----------------- Dunning	3w	120.00	20.00	4.00	6.00	---
EdE---------------- Edneyville	6e	---	---	3.00	5.00	---
EdF---------------- Edneyville	7e	---	---	---	---	---
EvE---------------- Edneyville-Chestnut	7e	---	---	---	4.00	---
GrE, GrF, GrG------ Greenlee	7s	---	---	---	---	---

See footnote at end of table.

Table 5.—Land Capability and Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Corn	Corn silage	Grass-legume hay	Tall fescue-ladino	Tobacco
		Bu	Tons	Tons	AUM*	Lbs
Ht: Hatboro	3w	115.00	23.00	3.50	6.00	---
Hu: Hatboro	4w	110.00	20.00	3.50	5.00	---
JeD: Jeffrey	6e	---	---	---	6.00	---
JeE: Jeffrey	7e	---	---	---	5.00	---
KeC: Keener	3e	95.00	15.00	3.40	7.00	2,500.00
KeD: Keener	4e	85.00	12.00	3.20	6.00	2,300.00
KeE: Keener	6e	---	---	2.50	5.50	---
KeF: Keener	7e	---	---	---	4.50	---
LoD: Lonon	4e	75.00	13.00	4.00	5.00	2,000.00
LoE: Lonon	6e	---	---	2.50	4.50	---
MaE: Maymead	6e	---	---	---	5.50	---
MaF: Maymead	7e	---	---	---	---	---
NcF: Northcove	7s	---	---	---	2.50	---
NcG: Northcove	7s	---	---	---	---	---
PgE: Pigeonroost	7e	---	---	---	3.50	---
PgF: Pigeonroost	7e	---	---	---	3.00	---
PnF: Pineola	7e	---	---	---	3.00	---
PoE: Porters	6e	---	---	---	6.00	---
PsF: Porters	7e	---	---	---	---	---

See footnote at end of table.

Table 5.—Land Capability and Yields per Acre of Crops and Pasture—Continued

Map symbol and soil name	Land capability	Corn	Corn silage	Grass-legume hay	Tall fescue-ladino	Tobacco
		Bu	Tons	Tons	AUM*	Lbs
SaC---------------- Saunook	4e	90.00	15.00	5.00	7.00	2,400.00
ScC---------------- Shelocta	3e	100.00	15.00	4.50	8.00	2,300.00
ScD---------------- Shelocta	4e	80.00	13.00	4.00	7.00	2,000.00
ScE---------------- Shelocta	6e	---	---	---	6.00	---
ScF---------------- Shelocta	7e	---	---	---	5.00	---
SoE---------------- Soco	7e	---	---	---	3.50	---
SoF---------------- Soco	7e	---	---	---	3.00	---
SoG---------------- Soco	7e	---	---	---	---	---
SrB---------------- Statler	2e	125.00	22.00	5.00	7.00	2,400.00
SyF---------------- Sylco-Sylvatus	7e	---	---	---	---	---
TsD---------------- Tusquitee	4e	90.00	15.00	3.50	6.00	2,400.00
UcG---------------- Unicoi-Rock outcrop	7s	---	---	---	---	---
W. Water						

* Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Table 6.—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	Soil name
Cg	Chagrin loam, rarely flooded
Di	Dillard loam, rarely flooded
SrB	Statler loam, 1 to 4 percent slopes

Table 7.—Woodland Management and Productivity

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber	Suggested trees to plant
									cu ft/ac	
AcF:										
Ashe----------	4R	Severe	Severe	Moderate	Moderate	Moderate	Virginia pine-------	62	100	Fraser fir, eastern white pine
							chestnut oak--------	70	57	
							eastern white pine--	81	143	
							northern red oak----	---	---	
							pitch pine----------	57	---	
							scarlet oak---------	---	---	
							shortleaf pine------	57	86	
Cleveland----	3R	Severe	Severe	Moderate	Severe	Slight	Virginia pine-------	57	86	eastern white pine, shortleaf pine
							chestnut oak--------	45	29	
							eastern white pine--	70	114	
							hickory-------------	---	---	
							northern red oak----	60	43	
							pitch pine----------	---	---	
							scarlet oak---------	---	---	
Rock outcrop.										
AsE:										
Ashe----------	4R	Moderate	Moderate	Moderate	Moderate	Moderate	Virginia pine-------	62	100	Fraser fir, eastern white pine
							chestnut oak--------	70	57	
							eastern white pine--	81	143	
							northern red oak----	---	---	
							pitch pine----------	57	---	
							scarlet oak---------	---	---	
							shortleaf pine------	57	86	
AsF:										
Ashe----------	4R	Severe	Severe	Moderate	Moderate	Moderate	Virginia pine-------	62	100	Fraser fir, eastern white pine
							chestnut oak--------	70	57	
							eastern white pine--	81	143	
							northern red oak----	---	---	
							pitch pine----------	57	---	
							scarlet oak---------	---	---	
							shortleaf pine------	57	86	
BeC:										
Bledsoe------	8A	Slight	Slight	Slight	Slight	Moderate	black walnut--------	---	---	northern red oak, white ash, white oak, yellow-poplar
							sugar maple---------	---	---	
							white ash-----------	---	---	
							yellow-poplar-------	104	114	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Volume of wood fiber	Suggested trees to plant
									cu ft/ac	
BeD:										
Bledsoe------	8R	Moderate	Moderate	Slight	Slight	Severe	black walnut--------	---	---	northern red oak, white ash, white oak, yellow-poplar
							sugar maple---------	---	---	
							white ash-----------	---	---	
							yellow-poplar-------	104	114	
BeE:										
Bledsoe------	8R	Moderate	Moderate	Slight	Slight	Severe	black cherry--------	---	---	northern red oak, white ash, white oak, yellow-poplar
							black walnut--------	---	---	
							slippery elm--------	---	---	
							sugar maple---------	---	---	
							white ash-----------	---	---	
							yellow-poplar-------	104	114	
BsE:										
Brookshire---	8R	Moderate	Moderate	Slight	Slight	Moderate	northern red oak----	80	57	black walnut, eastern white pine, yellow-poplar
							yellow-poplar-------	100	114	
BsF:										
Brookshire---	8R	Severe	Severe	Slight	Slight	Moderate	northern red oak----	80	57	black walnut, eastern white pine, yellow-poplar
							yellow-poplar-------	100	114	
BtD, BtE, BtF:										
Burton-------	2R	Moderate	Moderate	Severe	Moderate	Slight	Fraser fir----------	---	---	---
							northern red oak----	40	29	
							red spruce----------	---	---	
BuF:										
Burton-------	2R	Severe	Severe	Severe	Moderate	Slight	Fraser fir----------	---	---	---
							northern red oak----	40	29	
							red spruce----------	---	---	
Craggey------	2R	Severe	Severe	Severe	Severe	Slight	Fraser fir----------	---	---	---
							northern red oak----	40	29	
							red spruce----------	---	---	
Rock outcrop.										

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Volume of wood fiber	Suggested trees to plant
									cu ft/ac	
BwD:										
Burton	2R	Moderate	Moderate	Severe	Moderate	Slight	Fraser fir	---	---	---
							northern red oak	40	29	
							red spruce	---	---	
Wayah	2R	Moderate	Moderate	Severe	Slight	Slight	Fraser fir	---	---	---
							northern red oak	40	29	
							red spruce	---	---	
CaD, CaE:										
Calvin	5F	Slight	Moderate	Moderate	Slight	Severe	northern red oak	77	57	Virginia pine, eastern white pine, red pine
							yellow-poplar	80	72	
CaF:										
Calvin	5R	Moderate	Severe	Moderate	Slight	Severe	northern red oak	77	57	Virginia pine, eastern white pine, red pine
							yellow-poplar	80	72	
CbrG:										
Caneyville	4R	Severe	Severe	Slight	Slight	Moderate	black oak	71	57	eastern white pine, northern red oak, white ash, white oak, yellow-poplar
							eastern redcedar	46	57	
							hickory	---	---	
							sugar maple	---	---	
							white ash	72	43	
							white oak	64	43	
							yellow-poplar	90	86	
Rock outcrop.										
CcE:										
Cataska	2R	Slight	Moderate	Moderate	Severe	Moderate	chestnut oak	50	29	Virginia pine
							pitch pine	50	---	
							scarlet oak	50	29	
CcF, CcG:										
Cataska	2R	Moderate	Severe	Moderate	Severe	Moderate	chestnut oak	50	29	Virginia pine
							pitch pine	50	---	
							scarlet oak	50	29	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Volume of wood fiber	Suggested trees to plant
									cu ft/ac	
Cg:										
Chagrin------	5A	Slight	Slight	Slight	Slight	Severe	black cherry--------	---	---	black walnut, eastern white pine, northern red oak, red pine, white ash, white oak, yellow-poplar
							black walnut--------	---	---	
							northern red oak----	86	72	
							sugar maple---------	86	57	
							white ash-----------	---	---	
							white oak-----------	---	---	
							yellow-poplar-------	96	100	
ChE:										
Chestnut-----	10R	Moderate	Moderate	Slight	Moderate	Moderate	black oak-----------	71	57	Fraser fir, eastern white pine, shortleaf pine, yellow-poplar
							chestnut oak--------	69	57	
							eastern white pine--	78	143	
							northern red oak----	80	57	
							pitch pine----------	---	---	
							scarlet oak---------	68	57	
							shortleaf pine------	---	---	
							white oak-----------	70	57	
							yellow-poplar-------	97	100	
ChF:										
Chestnut-----	10R	Severe	Severe	Slight	Moderate	Moderate	black oak-----------	71	57	Fraser fir, eastern white pine, shortleaf pine, yellow-poplar
							chestnut oak--------	69	57	
							eastern white pine--	78	143	
							northern red oak----	80	57	
							pitch pine----------	---	---	
							scarlet oak---------	68	57	
							shortleaf pine------	---	---	
							white oak-----------	70	57	
							yellow-poplar-------	97	100	
ChG:										
Chestnut-----	10R	Severe	Severe	Slight	Moderate	Moderate	black oak-----------	71	57	Fraser fir, eastern white pine, shortleaf pine, yellow-poplar
							chestnut oak--------	69	57	
							eastern white pine--	78	143	
							northern red oak----	80	57	
							pitch pine----------	---	---	
							scarlet oak---------	68	57	
							shortleaf pine------	---	---	
							white oak-----------	70	57	
							yellow-poplar-------	97	100	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Volume of wood fiber	Suggested trees to plant
									cu ft/ac	
ChG:										
Ashe	4R	Severe	Severe	Moderate	Moderate	Moderate	Virginia pine	62	100	Fraser fir, eastern white pine
							chestnut oak	70	57	
							eastern white pine	81	143	
							northern red oak	---	---	
							pitch pine	57	---	
							scarlet oak	---	---	
							shortleaf pine	57	86	
CjD:										
Chestnut	10R	Moderate	Moderate	Slight	Moderate	Moderate	black oak	71	57	Fraser fir, eastern white pine, shortleaf pine, yellow-poplar
							chestnut oak	69	57	
							eastern white pine	78	143	
							northern red oak	80	57	
							pitch pine	---	---	
							scarlet oak	68	57	
							shortleaf pine	---	---	
							white oak	70	57	
							yellow-poplar	97	100	
Edneyville	12R	Moderate	Moderate	Slight	Slight	Moderate	Virginia pine	75	114	Fraser fir, eastern white pine, northern red oak, shortleaf pine, yellow-poplar
							black oak	---	---	
							chestnut oak	---	---	
							eastern white pine	90	172	
							northern red oak	83	57	
							scarlet oak	---	---	
							shortleaf pine	64	100	
							yellow-poplar	98	100	
CjE:										
Chestnut	10R	Severe	Severe	Slight	Moderate	Moderate	black oak	71	57	Fraser fir, eastern white pine, shortleaf pine, yellow-poplar
							chestnut oak	69	57	
							eastern white pine	78	143	
							northern red oak	80	57	
							pitch pine	---	---	
							scarlet oak	68	57	
							shortleaf pine	---	---	
							white oak	70	57	
							yellow-poplar	97	100	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Volume of wood fiber	Suggested trees to plant
									cu ft/ac	
CjE:										
Edneyville---	12R	Severe	Severe	Slight	Slight	Moderate	Virginia pine-------	75	114	Fraser fir, eastern white pine, northern red oak, shortleaf pine, yellow-poplar
							black oak-----------	---	---	
							chestnut oak--------	---	---	
							eastern white pine--	90	172	
							northern red oak----	83	57	
							scarlet oak---------	---	---	
							shortleaf pine------	64	100	
							yellow-poplar-------	98	100	
Cs:										
Craigsville--	4F	Slight	Slight	Slight	Slight	Severe	Virginia pine-------	80	114	eastern white pine, yellow-poplar
							eastern white pine--	90	172	
							northern red oak----	80	57	
							yellow-poplar-------	95	100	
CuD:										
Cullasaja----	8R	Moderate	Moderate	Moderate	Slight	Severe	black cherry--------	---	---	Fraser fir, northern red oak, yellow-poplar
							northern red oak----	92	72	
							yellow birch--------	---	---	
							yellow-poplar-------	109	114	
Di:										
Dillard------	12A	Slight	Slight	Slight	Slight	Moderate	Virginia pine-------	80	114	black walnut, eastern white pine, yellow-poplar
							eastern white pine--	90	172	
							shortleaf pine------	75	114	
							yellow-poplar-------	95	100	
DjF:										
Ditney-------	3R	Moderate	Severe	Slight	Slight	Moderate	Virginia pine-------	60	86	Virginia pine, eastern white pine, shortleaf pine
							eastern white pine--	70	114	
							northern red oak----	60	43	
							shortleaf pine------	60	86	
Unicoi-------	5R	Moderate	Severe	Moderate	Severe	Slight	Virginia pine-------	50	72	Virginia pine
							chestnut oak--------	50	29	
							pitch pine----------	40	57	
							scarlet oak---------	50	29	
DtE:										
Ditney-------	3R	Slight	Moderate	Slight	Slight	Moderate	Virginia pine-------	60	86	Virginia pine, eastern white pine, shortleaf pine
							eastern white pine--	70	114	
							northern red oak----	60	43	
							shortleaf pine------	60	86	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Volume of wood fiber	Suggested trees to plant
									cu ft/ac	
DtF, DtG:										
Ditney-------	3R	Moderate	Severe	Slight	Slight	Moderate	Virginia pine-------	60	86	Virginia pine,
							eastern white pine--	70	114	eastern white
							northern red oak----	60	43	pine, shortleaf
							shortleaf pine------	60	86	pine
Du:										
Dunning------	6W	Slight	Severe	Severe	Severe	Severe	American sycamore---	---	---	American sycamore,
							black willow--------	---	---	pin oak, swamp
							boxelder------------	---	---	white oak,
							pin oak-------------	95	86	sweetgum
							red maple-----------	---	---	
							swamp white oak-----	---	---	
							sweetgum------------	95	114	
EdE:										
Edneyville---	12R	Moderate	Moderate	Slight	Slight	Moderate	Virginia pine-------	75	114	Fraser fir, eastern
							black oak-----------	---	---	white pine,
							chestnut oak--------	---	---	northern red oak,
							eastern white pine--	90	172	shortleaf pine,
							northern red oak----	83	57	yellow-poplar
							scarlet oak---------	---	---	
							shortleaf pine------	64	100	
							yellow-poplar-------	98	100	
EdF:										
Edneyville---	12R	Severe	Severe	Slight	Slight	Moderate	Virginia pine-------	75	114	Fraser fir, eastern
							black oak-----------	---	---	white pine,
							chestnut oak--------	---	---	northern red oak,
							eastern white pine--	90	172	shortleaf pine,
							northern red oak----	83	57	yellow-poplar
							scarlet oak---------	---	---	
							shortleaf pine------	64	100	
							yellow-poplar-------	98	100	
EvE:										
Edneyville---	12R	Severe	Severe	Slight	Slight	Moderate	Virginia pine-------	75	114	Fraser fir, eastern
							black oak-----------	---	---	white pine,
							chestnut oak--------	---	---	northern red oak,
							eastern white pine--	90	172	shortleaf pine,
							northern red oak----	83	57	yellow-poplar
							scarlet oak---------	---	---	
							shortleaf pine------	64	100	
							yellow-poplar-------	98	100	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Volume of wood fiber	Suggested trees to plant
									cu ft/ac	
EvE:										
Chestnut-----	10R	Severe	Severe	Slight	Moderate	Moderate	black oak-----------	71	57	Fraser fir, eastern
							chestnut oak--------	69	57	white pine,
							eastern white pine--	78	143	shortleaf pine,
							northern red oak----	80	57	yellow-poplar
							pitch pine----------	---	---	
							scarlet oak---------	68	57	
							shortleaf pine------	---	---	
							white oak-----------	70	57	
							yellow-poplar-------	97	100	
GrE, GrF, GrG:										
Greenlee-----	8R	Severe	Severe	Moderate	Slight	Moderate	Virginia pine-------	---	---	eastern white pine,
							black locust--------	---	---	yellow-poplar
							eastern hemlock-----	---	---	
							eastern white pine--	98	186	
							northern red oak----	---	---	
							pitch pine----------	---	---	
							red maple-----------	---	---	
							scarlet oak---------	---	---	
							white oak-----------	---	---	
							yellow-poplar-------	101	114	
Ht, Hu:										
Hatboro------	3W	Slight	Severe	Slight	Moderate	Slight	American sycamore---	60	43	eastern white pine
							pin oak-------------	60	43	
							red maple-----------	60	43	
JeD:										
Jeffrey------	5R	Slight	Moderate	Slight	Slight	Moderate	eastern white pine--	70	114	eastern white pine,
							northern red oak----	60	43	yellow-poplar
							yellow-poplar-------	80	72	
JeE:										
Jeffrey------	5R	Moderate	Severe	Slight	Slight	Moderate	eastern white pine--	70	114	eastern white pine,
							northern red oak----	60	43	yellow-poplar
							yellow-poplar-------	80	72	
KeC:										
Keener-------	4A	Slight	Slight	Slight	Slight	Moderate	Virginia pine-------	80	114	Virginia pine,
							northern red oak----	80	57	northern red oak,
							yellow-poplar-------	115	129	yellow-poplar

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Volume of wood fiber	Suggested trees to plant
									cu ft/ac	
KeD, KeE:										
Keener-------	4R	Moderate	Moderate	Slight	Slight	Moderate	Virginia pine-------	80	114	Virginia pine,
							northern red oak----	80	57	northern red oak,
							yellow-poplar-------	115	129	yellow-poplar
KeF:										
Keener-------	4R	Severe	Moderate	Slight	Slight	Moderate	Virginia pine-------	80	114	Virginia pine,
							northern red oak----	80	57	northern red oak,
							yellow-poplar-------	115	129	yellow-poplar
LoD, LoE:										
Lonon--------	11R	Moderate	Moderate	Slight	Slight	Moderate	black oak-----------	---	---	eastern white pine
							chestnut oak--------	---	---	
							eastern white pine--	86	157	
							hickory-------------	---	---	
							northern red oak----	---	---	
							pitch pine----------	---	---	
							red maple-----------	---	---	
							scarlet oak---------	---	---	
							white oak-----------	---	---	
							yellow-poplar-------	74	57	
MaE:										
Maymead------	6R	Moderate	Moderate	Slight	Slight	Severe	northern red oak----	75	57	black walnut,
							yellow-poplar-------	90	86	eastern white pine, yellow-poplar
MaF:										
Maymead------	6R	Severe	Severe	Slight	Slight	Moderate	northern red oak----	75	57	black walnut,
							yellow-poplar-------	90	86	eastern white pine, yellow-poplar
NcF, NcG:										
Northcove----	10R	Severe	Severe	Moderate	Slight	Moderate	Virginia pine-------	---	---	eastern white pine
							black oak-----------	---	---	
							chestnut oak--------	---	---	
							eastern white pine--	80	143	
							pitch pine----------	---	---	
							scarlet oak---------	---	---	
							shortleaf pine------	---	---	
							white oak-----------	---	---	
							yellow-poplar-------	---	---	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber	Suggested trees to plant
									cu ft/ac	
PgE:										
Pigeonroost--	12R	Moderate	Moderate	Moderate	Moderate	Moderate	Virginia pine-------	60	86	Virginia pine, eastern white pine, shortleaf pine
							eastern white pine--	70	114	
							northern red oak----	60	43	
							shortleaf pine------	60	86	
PgF:										
Pigeonroost--	12R	Severe	Severe	Moderate	Moderate	Moderate	Virginia pine-------	60	86	Virginia pine, eastern white pine, shortleaf pine
							eastern white pine--	70	114	
							northern red oak----	60	43	
							shortleaf pine------	60	86	
PnF:										
Pineola------	4R	Severe	Severe	Slight	Slight	Moderate	Virginia pine-------	75	114	Fraser fir, Norway spruce, eastern white pine, yellow-poplar
							eastern white pine--	90	172	
							northern red oak----	75	57	
							shortleaf pine------	75	114	
							yellow-poplar-------	98	100	
PoE:										
Porters------	7R	Moderate	Moderate	Slight	Slight	Moderate	Virginia pine-------	80	114	Fraser fir, Norway spruce, Scotch pine, eastern white pine, yellow-poplar
							black locust--------	---	---	
							eastern white pine--	89	157	
							hickory-------------	---	---	
							northern red oak----	75	57	
							red maple-----------	---	---	
							shortleaf pine------	70	114	
							yellow-poplar-------	96	100	
PsF:										
Porters------	7R	Severe	Severe	Slight	Slight	Moderate	Virginia pine-------	80	114	Fraser fir, Scotch pine, eastern white pine, yellow-poplar
							black locust--------	---	---	
							eastern white pine--	89	157	
							hickory-------------	---	---	
							northern red oak----	75	57	
							red maple-----------	---	---	
							shortleaf pine------	70	114	
							yellow-poplar-------	96	100	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Volume of wood fiber	Suggested trees to plant
									cu ft/ac	
SaC:										
Saunook	8A	Slight	Slight	Slight	Slight	Moderate	eastern hemlock	---	---	Fraser fir, eastern
							eastern white pine	104	186	white pine,
							northern red oak	---	---	northern red oak,
							red maple	---	---	yellow-poplar
							scarlet oak	---	---	
							white oak	---	---	
							yellow-poplar	107	114	
ScC:										
Shelocta	4A	Slight	Slight	Slight	Slight	Severe	American beech	---	---	black walnut,
							cucumbertree	---	---	eastern white
							red maple	81	---	pine, northern red
							scarlet oak	80	57	oak, shortleaf
							shortleaf pine	77	129	pine, white ash,
							white oak	77	57	white oak, yellow-
							yellow-poplar	99	100	poplar
ScD, ScE:										
Shelocta	4R	Moderate	Moderate	Slight	Slight	Severe	American beech	---	---	black walnut,
							cucumbertree	---	---	eastern white
							red maple	81	---	pine, northern red
							scarlet oak	80	57	oak, shortleaf
							shortleaf pine	77	129	pine, white ash,
							white oak	77	57	white oak, yellow-
							yellow-poplar	99	100	poplar
ScF:										
Shelocta	4R	Severe	Severe	Slight	Slight	Severe	American beech	---	---	black walnut,
							cucumbertree	---	---	eastern white
							red maple	81	---	pine, northern red
							scarlet oak	80	57	oak, shortleaf
							shortleaf pine	77	129	pine, white ash,
							white oak	77	57	white oak, yellow-
							yellow-poplar	99	100	poplar
SoE:										
Soco	11R	Moderate	Moderate	Slight	Moderate	Moderate	Virginia pine	---	---	Fraser fir, eastern
							black oak	---	---	white pine,
							chestnut oak	68	57	shortleaf pine
							eastern white pine	85	157	
							pitch pine	---	---	
							scarlet oak	76	57	
							shortleaf pine	61	86	
							white oak	---	---	
							yellow-poplar	---	---	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Volume of wood fiber	Suggested trees to plant
									cu ft/ac	
SoF, SoG:										
Soco----------	11R	Severe	Severe	Slight	Moderate	Moderate	Virginia pine-------	---	---	Fraser fir, eastern white pine, shortleaf pine
							black oak-----------	---	---	
							chestnut oak--------	68	57	
							eastern white pine--	85	157	
							northern red oak----	---	---	
							pitch pine----------	---	---	
							scarlet oak---------	76	57	
							shortleaf pine------	61	86	
							white oak-----------	---	---	
							yellow-poplar-------	---	---	
SrB:										
Statler------	8A	Slight	Slight	Slight	Slight	Severe	eastern white pine--	90	129	black walnut, eastern white pine, yellow-poplar
							hickory-------------	---	---	
							northern red oak----	---	---	
							red maple-----------	---	---	
							white oak-----------	80	57	
							yellow-poplar-------	100	114	
SyF:										
Sylco---------	5R	Moderate	Severe	Slight	Slight	Moderate	Virginia pine-------	60	86	---
							eastern white pine--	70	114	
							shortleaf pine------	60	86	
Sylvatus-----	5R	Moderate	Severe	Moderate	Severe	Moderate	Virginia pine-------	45	57	Virginia pine
							northern red oak----	55	43	
							yellow-poplar-------	70	57	
TsD:										
Tusquitee----	8A	Slight	Slight	Slight	Slight	Severe	black cherry--------	---	---	Fraser fir, black walnut, eastern white pine, yellow-poplar
							black locust--------	---	---	
							black walnut--------	---	---	
							eastern hemlock-----	---	---	
							eastern white pine--	100	186	
							hickory-------------	---	---	
							northern red oak----	---	---	
							white oak-----------	---	---	
							yellow birch--------	---	---	
							yellow-poplar-------	103	114	

Table 7.—Woodland Management and Productivity—Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber	Suggested trees to plant
									cu ft/ac	
UcG:										
Unicoi-------	5R	Moderate	Severe	Moderate	Severe	Slight	Virginia pine-------	50	72	Virginia pine
							chestnut oak--------	50	29	
							pitch pine----------	40	57	
							scarlet oak---------	50	29	
Rock outcrop.										
W.										
Water										

Table 8.—Recreational Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable)

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AcF:					
Ashe-----------	Severe: slope too acid	Severe: slope too acid	Severe: slope too acid	Severe: slope	Severe: slope
Cleveland------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope small stones depth to rock	Severe: slope	Severe: slope depth to rock
Rock outcrop---	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock
AsE:					
Ashe-----------	Severe: slope too acid	Severe: slope too acid	Severe: slope too acid	Moderate: slope	Severe: slope
AsF:					
Ashe-----------	Severe: slope too acid	Severe: slope too acid	Severe: slope too acid	Severe: slope	Severe: slope
BeC:					
Bledsoe--------	Moderate: slope	Moderate: slope	Severe: slope	Severe: erodes easily	Moderate: slope
BeD:					
Bledsoe--------	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily	Severe: slope
BeE:					
Bledsoe--------	Severe: slope	Severe: slope	Severe: slope	Severe: erodes easily slope	Severe: slope
BsE, BsF:					
Brookshire-----	Severe: slope	Severe: slope	Severe: slope small stones	Severe: slope	Severe: slope
BtD:					
Burton---------	Moderate: large stones slope	Moderate: large stones slope	Severe: large stones slope	Moderate: large stones	Severe: large stones too acid
BtE, BtF:					
Burton---------	Severe: slope too acid	Severe: slope too acid	Severe: large stones slope	Severe: slope	Severe: large stones slope too acid

Table 8.—Recreational Development—Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
BuF:					
Burton	Severe: slope too acid	Severe: slope too acid	Severe: slope too acid	Severe: slope	Severe: slope
Craggey	Severe: slope too acid depth to rock	Severe: slope too acid depth to rock	Severe: slope depth to rock	Severe: slope fragile	Severe: slope depth to rock
Rock outcrop	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock
BwD:					
Burton	Severe: slope too acid	Severe: slope too acid	Severe: slope too acid	Moderate: slope	Severe: slope
Wayah	Severe: slope too acid	Severe: slope too acid	Severe: slope too acid	Moderate: slope	Severe: slope too acid
CaD:					
Calvin	Severe: slope	Severe: slope	Severe: slope small stones	Moderate: slope	Severe: slope
CaE, CaF:					
Calvin	Severe: slope	Severe: slope	Severe: slope small stones	Severe: slope	Severe: slope
CbrG:					
Caneyville	Severe: slope	Severe: slope	Severe: slope depth to rock	Severe: erodes easily slope	Severe: slope depth to rock
Rock outcrop	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock
CcE, CcF, CcG:					
Cataska	Severe: percs slowly slope	Severe: percs slowly slope	Severe: slope small stones	Severe: slope	Severe: slope depth to rock
Cg:					
Chagrin	Severe: flooding	Slight	Moderate: small stones	Slight	Slight
ChE, ChF:					
Chestnut	Severe: slope too acid	Severe: slope too acid	Severe: slope too acid	Severe: slope	Severe: slope

Table 8.—Recreational Development—Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
ChG:					
Chestnut	Severe: slope too acid	Severe: slope too acid	Severe: slope too acid	Severe: slope	Severe: slope
Ashe	Severe: slope too acid	Severe: slope too acid	Severe: slope too acid	Severe: slope	Severe: slope
CjD:					
Chestnut	Severe: slope too acid	Severe: slope too acid	Severe: slope too acid	Moderate: slope	Severe: slope
Edneyville	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope
CjE:					
Chestnut	Severe: slope too acid	Severe: slope too acid	Severe: slope too acid	Severe: slope	Severe: slope
Edneyville	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Cs:					
Craigsville	Severe: flooding	Moderate: flooding large stones	Severe: flooding small stones	Moderate: flooding large stones	Severe: flooding large stones
CuD:					
Cullasaja	Severe: slope	Severe: slope	Severe: large stones slope small stones	Severe: large stones	Severe: large stones slope
Di:					
Dillard	Severe: flooding	Slight	Moderate: percs slowly wetness	Slight	Slight
DjF:					
Ditney	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Unicoi	Severe: slope small stones	Severe: slope small stones	Severe: large stones slope small stones	Severe: slope	Severe: large stones small stones depth to rock
DtE, DtF, DtG:					
Ditney	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Du:					
Dunning	Severe: flooding wetness	Severe: wetness	Severe: wetness	Severe: erodes easily wetness	Severe: wetness
EdE:					
Edneyville	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope

Table 8.—Recreational Development—Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
EdF:					
Edneyville-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
EvE:					
Edneyville-----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Chestnut-------	Severe: slope too acid	Severe: slope too acid	Severe: slope too acid	Severe: slope	Severe: slope
GrE, GrF, GrG:					
Greenlee-------	Severe: slope	Severe: slope	Severe: large stones slope small stones	Severe: large stones slope	Severe: large stones too acid droughty
Ht, Hu:					
Hatboro--------	Severe: flooding wetness	Severe: wetness	Severe: wetness	Severe: wetness	Severe: wetness
JeD:					
Jeffrey--------	Severe: slope	Severe: slope	Severe: slope small stones	Moderate: slope	Severe: slope
JeE:					
Jeffrey--------	Severe: slope	Severe: slope	Severe: slope small stones	Severe: slope	Severe: slope
KeC:					
Keener---------	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope
KeD:					
Keener---------	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope
KeE, KeF:					
Keener---------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
LoD:					
Lonon----------	Severe: slope too acid	Severe: slope too acid	Severe: slope too acid	Moderate: slope	Severe: slope too acid
LoE:					
Lonon----------	Severe: slope too acid	Severe: slope too acid	Severe: slope too acid	Severe: slope	Severe: slope too acid
MaE, MaF:					
Maymead--------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope

Table 8.—Recreational Development—Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
NcF, NcG:					
Northcove------	Severe: slope too acid	Severe: slope too acid	Severe: large stones slope small stones	Moderate: large stones	Severe: slope too acid
PgE, PgF:					
Pigeonroost----	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
PnF:					
Pineola--------	Severe: slope	Severe: slope	Severe: large stones slope small stones	Severe: slope	Severe: large stones slope
PoE:					
Porters--------	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope
PsF:					
Porters--------	Severe: slope	Severe: slope	Severe: slope small stones	Severe: slope	Severe: slope
SaC:					
Saunook--------	Moderate: slope	Moderate: slope	Severe: slope too acid	Slight	Severe: too acid
ScC:					
Shelocta-------	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: slope
ScD:					
Shelocta-------	Severe: slope	Severe: slope	Severe: slope	Moderate: slope	Severe: slope
ScE, ScF:					
Shelocta-------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
SoE, SoF, SoG:					
Soco-----------	Severe: slope	Severe: slope	Severe: slope too acid	Severe: slope	Severe: slope
SrB:					
Statler--------	Slight	Slight	Moderate: slope small stones	Slight	Slight
SyF:					
Sylco----------	Severe: slope	Severe: slope	Severe: large stones slope small stones	Severe: slope	Severe: slope
Sylvatus-------	Severe: slope small stones	Severe: slope small stones	Severe: large stones slope small stones	Severe: slope small stones	Severe: large stones slope small stones

Table 8.—Recreational Development—Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
TsD:					
Tusquitee------	Moderate: slope	Moderate: slope	Severe: slope	Slight	Moderate: large stones slope
UcG:					
Unicoi---------	Severe: slope small stones	Severe: slope small stones	Severe: large stones slope small stones	Severe: slope	Severe: large stones small stones depth to rock
Rock outcrop---	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock
W.					
Water					

Table 9.—Wildlife Habitat

(See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable)

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
AcF:										
Ashe	Very poor	Fair	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
Cleveland	Very poor	Very poor	Poor	Fair	Fair	Very poor	Very poor	Very poor	Poor	Very poor
Rock outcrop	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
AsE:										
Ashe	Poor	Fair	Fair	Poor	Poor	Very poor	Very poor	Fair	Poor	Very poor
AsF:										
Ashe	Very poor	Fair	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
BeC:										
Bledsoe	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
BeD:										
Bledsoe	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
BeE:										
Bledsoe	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
BsE, BsF:										
Brookshire	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
BtD:										
Burton	Poor	Fair	Fair	Poor	Poor	Very poor	Very poor	Fair	Poor	Very poor
BtE:										
Burton	Very poor	Fair	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
BtF:										
Burton	Very poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
BuF:										
Burton	Very poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
Craggey	Very poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Fair	Very poor
Rock outcrop	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor

Table 9.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
BwD:										
Burton	Poor	Fair	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
Wayah	Poor	Fair	Good	Very poor	Poor	Very poor	Very poor	Fair	Poor	Very poor
CaD:										
Calvin	Poor	Fair	Good	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
CaE:										
Calvin	Very poor	Fair	Good	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
CaF:										
Calvin	Very poor	Poor	Good	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
CbrG:										
Caneyville	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Rock outcrop	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
CcE, CcF, CcG:										
Cataska	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor	Very poor	Very poor
Cg:										
Chagrin	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
ChE, ChF:										
Chestnut	Very poor	Poor	Fair	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
ChG:										
Chestnut	Very poor	Poor	Fair	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
Ashe	Very poor	Fair	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
CjD:										
Chestnut	Poor	Fair	Fair	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
Edneyville	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
CjE:										
Chestnut	Very poor	Poor	Fair	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
Edneyville	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor

Table 9.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
Cs:										
Craigsville	Poor	Fair	Fair	Fair	Fair	Poor	Very poor	Fair	Fair	Very poor
CuD:										
Cullasaja	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Di:										
Dillard	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
DjF:										
Ditney	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Unicoi	Very poor	Very poor	Poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
DtE, DtF, DtG:										
Ditney	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Du:										
Dunning	Very poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
EdE:										
Edneyville	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
EdF:										
Edneyville	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
EvE:										
Edneyville	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Chestnut	Very poor	Poor	Fair	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
GrE, GrF, GrG:										
Greenlee	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
Ht, Hu:										
Hatboro	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair
JeD:										
Jeffrey	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
JeE:										
Jeffrey	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
KeC:										
Keener	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor

Table 9.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
KeD: Keener	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
KeE: Keener	Very poor	Fair	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
KeF: Keener	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
LoD: Lonon	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Fair	Very poor
LoE: Lonon	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Fair	Very poor
MaE, MaF: Maymead	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
NcF, NcG: Northcove	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
PgE, PgF: Pigeonroost	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
PnF: Pineola	Very poor	Very poor	Fair	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
PoE: Porters	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
PsF: Porters	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
SaC: Saunook	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
ScC: Shelocta	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
ScD: Shelocta	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
ScE: Shelocta	Very poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor

Table 9.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
ScF:										
Shelocta	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
SoE, SoF, SoG:										
Soco	Very poor	Poor	Good	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
SrB:										
Statler	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
SyF:										
Sylco	Very poor	Poor	Good	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
Sylvatus	Very poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
TsD:										
Tusquitee	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
UcG:										
Unicoi	Very poor	Very poor	Poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
Rock outcrop	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
W.										
Water										

Table 10.—Building Site Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable)

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AcF:						
Ashe	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: slope	Severe: slope
Cleveland	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock
Rock outcrop	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock
AsE, AsF:						
Ashe	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: slope	Severe: slope
BeC:						
Bledsoe	Moderate: slope too clayey	Moderate: shrink-swell slope	Moderate: shrink-swell slope	Severe: slope	Severe: low strength	Moderate: slope
BeD, BeE:						
Bledsoe	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: low strength slope	Severe: slope
BsE, BsF:						
Brookshire	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
BtD:						
Burton	Severe: depth to rock	Moderate: large stones slope depth to rock	Severe: depth to rock	Severe: slope	Moderate: frost action slope depth to rock	Severe: large stones too acid
BtE, BtF:						
Burton	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: slope	Severe: large stones slope too acid

Table 10.—Building Site Development—Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
BuF:						
Burton----------	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: slope	Severe: slope
Craggey---------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock
Rock outcrop----	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock
BwD:						
Burton----------	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: slope	Severe: slope
Wayah-----------	Severe: slope cutbanks cave	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope too acid
CaD, CaE, CaF:						
Calvin----------	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
CbrG:						
Caneyville------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: low strength slope depth to rock	Severe: slope depth to rock
Rock outcrop----	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock
CcE, CcF, CcG:						
Cataska---------	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: slope	Severe: slope depth to rock
Cg:						
Chagrin---------	Severe: cutbanks cave	Severe: flooding	Severe: flooding	Severe: flooding	Moderate: flooding frost action	Slight

Table 10.—Building Site Development—Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
ChE, ChF:						
Chestnut	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
ChG:						
Chestnut	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Ashe	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: slope	Severe: slope
CjD, CjE:						
Chestnut	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Edneyville	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Cs:						
Craigsville	Severe: large stones cutbanks cave	Severe: flooding large stones	Severe: flooding large stones	Severe: flooding large stones	Severe: flooding large stones	Severe: flooding large stones
CuD:						
Cullasaja	Severe: large stones slope cutbanks cave	Severe: large stones slope	Severe: large stones slope	Severe: large stones slope	Severe: large stones slope	Severe: large stones slope
Di:						
Dillard	Severe: wetness	Severe: flooding	Severe: flooding wetness	Severe: flooding	Moderate: low strength wetness	Slight
DjF:						
Ditney	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: slope	Severe: slope
Unicoi	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: large stones small stones depth to rock

Table 10.—Building Site Development—Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
DtE, DtF, DtG:						
Ditney	Severe: slope, depth to rock	Severe: slope	Severe: slope, depth to rock	Severe: slope	Severe: slope	Severe: slope
Du:						
Dunning	Severe: wetness	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding, low strength, wetness	Severe: wetness
EdE, EdF:						
Edneyville	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
EvE:						
Edneyville	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
Chestnut	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
GrE, GrF, GrG:						
Greenlee	Severe: large stones, slope, cutbanks cave	Severe: large stones, slope	Severe: large stones, slope	Severe: large stones, slope	Severe: large stones, slope	Severe: large stones, too acid, droughty
Ht, Hu:						
Hatboro	Severe: wetness, cutbanks cave	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding, wetness	Severe: flooding, frost action, wetness	Severe: wetness
JeD, JeE:						
Jeffrey	Severe: slope, depth to rock	Severe: slope	Severe: slope, depth to rock	Severe: slope	Severe: slope	Severe: slope
KeC:						
Keener	Moderate: large stones, slope	Moderate: large stones, slope	Moderate: large stones, slope	Severe: slope	Moderate: large stones, slope	Moderate: slope
KeD, KeE, KeF:						
Keener	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope

Table 10.—Building Site Development—Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
LoD, LoE: Lonon	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope, too acid
MaE, MaF: Maymead	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
NcF, NcG: Northcove	Severe: large stones, slope	Severe: large stones, slope	Severe: large stones, slope	Severe: large stones, slope	Severe: large stones, slope	Severe: slope, too acid
PgE, PgF: Pigeonroost	Severe: slope, depth to rock	Severe: slope	Severe: slope, depth to rock	Severe: slope	Severe: slope	Severe: slope
PnF: Pineola	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: large stones, slope
PoE, PsF: Porters	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
SaC: Saunook	Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Moderate: frost action, low strength, slope	Severe: too acid
ScC: Shelocta	Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Moderate: slope	Moderate: slope
ScD, ScE, ScF: Shelocta	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
SoE, SoF, SoG: Soco	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope	Severe: slope
SrB: Statler	Slight	Slight	Slight	Slight	Slight	Slight

Table 10.—Building Site Development—Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
SyF:						
Sylco	Severe: slope depth to rock	Severe: slope	Severe: slope depth to rock	Severe: slope	Severe: slope	Severe: slope
Sylvatus	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: large stones slope small stones
TsD:						
Tusquitee	Moderate: slope	Moderate: slope	Moderate: slope	Severe: slope	Moderate: frost action slope	Moderate: large stones slope
UcG:						
Unicoi	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: large stones small stones depth to rock
Rock outcrop	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock
W. Water						

Table 11.—Sanitary Facilities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable)

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AcF:					
Ashe	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Poor: slope too acid depth to rock
Cleveland	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Severe: slope depth to rock	Poor: slope depth to rock
Rock outcrop	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Poor: slope depth to rock
AsE, AsF:					
Ashe	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Poor: slope too acid depth to rock
BeC:					
Bledsoe	Severe: percs slowly	Severe: slope	Severe: too clayey	Moderate: slope	Poor: hard to pack too clayey
BeD, BeE:					
Bledsoe	Severe: percs slowly slope	Severe: slope	Severe: slope too clayey	Severe: slope	Poor: hard to pack slope too clayey
BsE, BsF:					
Brookshire	Severe: slope poor filter	Severe: seepage slope	Severe: seepage slope depth to rock	Severe: seepage slope	Poor: slope small stones
BtD:					
Burton	Severe: depth to rock	Severe: seepage slope depth to rock	Severe: seepage depth to rock	Severe: seepage depth to rock	Poor: too acid depth to rock
BtE, BtF:					
Burton	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Poor: slope too acid depth to rock
BuF:					
Burton	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Poor: slope too acid depth to rock

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
BuF:					
Craggey--------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: slope depth to rock	Poor: slope small stones depth to rock
Rock outcrop---	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Poor: slope depth to rock
BwD:					
Burton---------	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Poor: slope too acid depth to rock
Wayah----------	Severe: slope	Severe: seepage slope	Severe: seepage slope too acid	Severe: seepage slope	Poor: slope small stones
CaD, CaE, CaF:					
Calvin---------	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Poor: slope small stones depth to rock
CbrG:					
Caneyville-----	Severe: percs slowly slope depth to rock	Severe: slope depth to rock	Severe: slope too clayey depth to rock	Severe: slope depth to rock	Poor: area reclaim slope too clayey
Rock outcrop---	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Poor: slope depth to rock
CcE, CcF, CcG:					
Cataska--------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Poor: seepage small stones depth to rock
Cg:					
Chagrin--------	Moderate: flooding percs slowly wetness	Moderate: seepage	Severe: wetness	Moderate: flooding wetness	Fair: thin layer
ChE, ChF:					
Chestnut-------	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Poor: slope small stones depth to rock
ChG:					
Chestnut-------	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Poor: slope small stones depth to rock

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
ChG:					
Ashe	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Poor: slope too acid depth to rock
CjD, CjE:					
Chestnut	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Poor: slope small stones depth to rock
Edneyville	Severe: slope	Severe: seepage slope	Severe: seepage slope	Severe: seepage slope	Poor: slope
Cs:					
Craigsville	Severe: flooding large stones poor filter	Severe: flooding large stones seepage	Severe: flooding large stones seepage	Severe: flooding seepage	Poor: large stones seepage
CuD:					
Cullasaja	Severe: large stones slope	Severe: large stones seepage slope	Severe: large stones seepage slope	Severe: seepage slope	Poor: large stones seepage slope
Di:					
Dillard	Severe: percs slowly wetness	Severe: wetness	Severe: too clayey wetness depth to rock	Severe: wetness	Fair: too clayey
DjF:					
Ditney	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Poor: slope depth to rock
Unicoi	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Severe: slope depth to rock	Poor: slope small stones depth to rock
DtE, DtF, DtG:					
Ditney	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Poor: slope depth to rock
Du:					
Dunning	Severe: flooding percs slowly wetness	Severe: flooding wetness	Severe: flooding too clayey wetness	Severe: flooding wetness	Poor: hard to pack too clayey wetness
EdE, EdF:					
Edneyville	Severe: slope	Severe: seepage slope	Severe: seepage slope	Severe: seepage slope	Poor: slope

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
EvE:					
Edneyville-----	Severe: slope	Severe: seepage slope	Severe: seepage slope	Severe: seepage slope	Poor: slope
Chestnut-------	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Poor: slope small stones depth to rock
GrE, GrF, GrG:					
Greenlee-------	Severe: large stones slope	Severe: large stones seepage slope	Severe: large stones seepage slope	Severe: seepage slope	Poor: large stones slope too acid
Ht, Hu:					
Hatboro--------	Severe: flooding wetness	Severe: flooding seepage wetness	Severe: flooding seepage wetness	Severe: flooding wetness	Poor: wetness
JeD, JeE:					
Jeffrey--------	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Poor: slope small stones depth to rock
KeC:					
Keener---------	Moderate: large stones percs slowly slope	Severe: seepage slope	Severe: seepage	Moderate: slope	Fair: large stones slope too clayey
KeD, KeE, KeF:					
Keener---------	Severe: slope	Severe: seepage slope	Severe: seepage slope	Severe: slope	Poor: slope
LoD, LoE:					
Lonon----------	Severe: slope	Severe: slope	Severe: slope too acid	Severe: slope	Poor: slope too acid
MaE, MaF:					
Maymead--------	Severe: slope	Severe: seepage slope	Severe: seepage slope	Severe: seepage slope	Poor: slope small stones
NcF, NcG:					
Northcove------	Severe: large stones slope	Severe: large stones seepage slope	Severe: large stones seepage slope	Severe: seepage slope	Poor: large stones slope too acid
PgE, PgF:					
Pigeonroost----	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Poor: slope depth to rock

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
PnF:					
Pineola--------	Severe: slope	Severe: seepage slope	Severe: seepage slope	Severe: seepage slope	Poor: large stones slope
PoE:					
Porters--------	Severe: slope	Severe: seepage slope	Severe: seepage slope depth to rock	Severe: seepage slope	Poor: slope
PsF:					
Porters--------	Severe: slope	Severe: seepage slope	Severe: seepage slope depth to rock	Severe: seepage slope	Poor: slope small stones
SaC:					
Saunook--------	Moderate: percs slowly slope	Severe: seepage slope	Severe: seepage too acid	Severe: seepage	Poor: small stones
ScC:					
Shelocta-------	Moderate: percs slowly slope	Severe: seepage slope	Severe: seepage	Moderate: slope	Poor: small stones
ScD, ScE, ScF:					
Shelocta-------	Severe: slope	Severe: seepage slope	Severe: seepage slope	Severe: slope	Poor: slope small stones
SoE, SoF, SoG:					
Soco-----------	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Poor: slope too acid depth to rock
SrB:					
Statler--------	Moderate: percs slowly	Severe: seepage	Severe: seepage	Slight	Good
SyF:					
Sylco----------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Poor: slope small stones depth to rock
Sylvatus-------	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Poor: slope small stones depth to rock
TsD:					
Tusquitee------	Moderate: slope	Severe: seepage slope	Severe: seepage	Severe: seepage	Fair: slope small stones

Table 11.—Sanitary Facilities—Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
UcG:					
Unicoi----------	Severe: slope depth to rock	Severe: seepage slope depth to rock	Severe: seepage slope depth to rock	Severe: slope depth to rock	Poor: slope small stones depth to rock
Rock outcrop---	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Severe: slope depth to rock	Poor: slope depth to rock
W.					
Water					

Table 12.—Construction Materials

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable)

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
AcF:				
Ashe	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones too acid
Cleveland	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones depth to rock
Rock outcrop	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope depth to rock
AsE:				
Ashe	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones too acid
AsF:				
Ashe	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones too acid
BeC, BeD:				
Bledsoe	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim small stones too clayey
BeE:				
Bledsoe	Poor: low strength slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim small stones too clayey
BsE, BsF:				
Brookshire	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim slope small stones
BtD:				
Burton	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: large stones too acid
BtE, BtF:				
Burton	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: large stones slope too acid

Table 12.—Construction Materials—Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
BuF:				
Burton----------	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones too acid
Craggey---------	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope depth to rock
Rock outcrop----	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope depth to rock
BwD:				
Burton----------	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones too acid
Wayah-----------	Fair: slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim slope small stones
CaD:				
Calvin----------	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones
CaE, CaF:				
Calvin----------	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones
CbrG:				
Caneyville------	Poor: area reclaim low strength slope	Improbable: excess fines depth to rock	Improbable: excess fines depth to rock	Poor: slope too clayey depth to rock
Rock outcrop----	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope depth to rock
CcE, CcF, CcG:				
Cataska---------	Poor: slope depth to rock	Improbable: small stones	Improbable: thin layer	Poor: slope small stones depth to rock
Cg:				
Chagrin---------	Good	Improbable: excess fines	Improbable: excess fines	Fair: small stones
ChE, ChF:				
Chestnut--------	Poor: slope depth to rock	Improbable: thin layer excess fines	Improbable: thin layer excess fines	Poor: slope small stones too acid

Table 12.—Construction Materials—Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
ChG:				
Chestnut	Poor: slope depth to rock	Improbable: thin layer excess fines	Improbable: thin layer excess fines	Poor: slope small stones too acid
Ashe	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones too acid
CjD:				
Chestnut	Poor: depth to rock	Improbable: thin layer excess fines	Improbable: thin layer excess fines	Poor: slope small stones too acid
Edneyville	Fair: slope	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones
CjE:				
Chestnut	Poor: slope depth to rock	Improbable: thin layer excess fines	Improbable: thin layer excess fines	Poor: slope small stones too acid
Edneyville	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones
Cs:				
Craigsville	Poor: large stones	Improbable: large stones	Improbable: large stones	Poor: area reclaim small stones
CuD:				
Cullasaja	Poor: large stones	Improbable: large stones	Improbable: large stones	Poor: area reclaim large stones slope
Di:				
Dillard	Poor: low strength	Improbable: excess fines	Improbable: excess fines	Fair: too clayey
DjF:				
Ditney	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones
Unicoi	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones depth to rock
DtE, DtF, DtG:				
Ditney	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones

Table 12.—Construction Materials—Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
Du:				
Dunning	Poor: low strength wetness	Improbable: excess fines	Improbable: excess fines	Poor: thin layer wetness
EdE:				
Edneyville	Fair: slope	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones
EdF:				
Edneyville	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones
EvE:				
Edneyville	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones
Chestnut	Poor: slope depth to rock	Improbable: thin layer excess fines	Improbable: thin layer excess fines	Poor: slope small stones too acid
GrE, GrF, GrG:				
Greenlee	Poor: large stones slope	Improbable: large stones excess fines	Improbable: large stones excess fines	Poor: area reclaim large stones too acid
Ht, Hu:				
Hatboro	Poor: wetness	Improbable: excess fines	Improbable: excess fines	Poor: wetness
JeD:				
Jeffrey	Poor: depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones
JeE:				
Jeffrey	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones
KeC:				
Keener	Fair: large stones	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim large stones
KeD:				
Keener	Fair: large stones slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim large stones slope
KeE, KeF:				
Keener	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim large stones slope

Table 12.—Construction Materials—Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
LoD:				
Lonon-----------	Fair: slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim too acid
LoE:				
Lonon-----------	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim too acid
MaE, MaF:				
Maymead---------	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim slope small stones
NcF, NcG:				
Northcove-------	Poor: large stones slope	Improbable: large stones excess fines	Improbable: large stones excess fines	Poor: area reclaim large stones too acid
PgE, PgF:				
Pigeonroost-----	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones
PnF:				
Pineola---------	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim large stones slope
PoE:				
Porters---------	Fair: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim slope small stones
PsF:				
Porters---------	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim slope small stones
SaC:				
Saunook---------	Good	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim small stones
ScC:				
Shelocta--------	Good	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim small stones
ScD:				
Shelocta--------	Fair: slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim slope small stones

Table 12.—Construction Materials—Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
ScE, ScF:				
Shelocta--------	Poor: slope	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim slope small stones
SoE, SoF, SoG:				
Soco------------	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones too acid
SrB:				
Statler---------	Good	Improbable: excess fines	Improbable: excess fines	Fair: small stones
SyF:				
Sylco-----------	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones
Sylvatus--------	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones depth to rock
TsD:				
Tusquitee-------	Good	Improbable: excess fines	Improbable: excess fines	Poor: area reclaim small stones
UcG:				
Unicoi----------	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope small stones depth to rock
Rock outcrop----	Poor: slope depth to rock	Improbable: excess fines	Improbable: excess fines	Poor: slope depth to rock
W.				
Water				

Table 13.—Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable)

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
AcF:							
Ashe	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock droughty	Limitation: large stones slope depth to rock	Limitation: large stones slope depth to rock
Cleveland	Severe: slope depth to rock	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: large stones slope droughty	Limitation: large stones slope depth to rock	Limitation: large stones slope droughty
Rock outcrop	Severe: slope depth to rock	Slight	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock	Limitation: slope depth to rock	Limitation: slope depth to rock
AsE, AsF:							
Ashe	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock droughty	Limitation: large stones slope depth to rock	Limitation: large stones slope depth to rock
BeC, BeD, BeE:							
Bledsoe	Severe: slope	Moderate: hard to pack	Severe: no water	Limitation: deep to water	Limitation: erodes easily percs slowly slope	Limitation: slope	Limitation: slope
BsE, BsF:							
Brookshire	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope droughty	Limitation: slope	Limitation: slope
BtD, BtE, BtF:							
Burton	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: large stones slope droughty	Limitation: large stones slope depth to rock	Limitation: large stones slope depth to rock

Table 13.—Water Management—Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
BuF:							
Burton---------	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope too acid depth to rock	Limitation: large stones slope depth to rock	Limitation: large stones slope depth to rock
Craggey--------	Severe: slope depth to rock	Severe: thin layer	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock	Limitation: slope depth to rock	Limitation: slope depth to rock
Rock outcrop---	Severe: slope depth to rock	Slight	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock	Limitation: slope depth to rock	Limitation: slope depth to rock
BwD:							
Burton---------	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope too acid depth to rock	Limitation: large stones slope depth to rock	Limitation: large stones slope depth to rock
Wayah----------	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope too acid	Limitation: slope	Limitation: slope
CaD, CaE, CaF:							
Calvin---------	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock droughty	Limitation: large stones slope depth to rock	Limitation: large stones slope droughty
CbrG:							
Caneyville-----	Severe: slope depth to rock	Severe: thin layer	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock	Limitation: erodes easily slope depth to rock	Limitation: erodes easily slope depth to rock
Rock outcrop---	Severe: slope depth to rock	Slight	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock	Limitation: slope depth to rock	Limitation: slope depth to rock
CcE, CcF, CcG:							
Cataska--------	Severe: slope depth to rock	Severe: seepage	Severe: no water	Limitation: deep to water	Limitation: percs slowly slope droughty	Limitation: large stones slope depth to rock	Limitation: large stones slope droughty

Table 13.—Water Management—Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Cg:							
Chagrin--------	Moderate: seepage	Severe: piping	Severe: cutbanks cave	Limitation: deep to water	Favorable	Favorable	Favorable
ChE, ChF:							
Chestnut-------	Severe: seepage slope	Severe: piping thin layer	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock droughty	Limitation: large stones slope depth to rock	Limitation: large stones slope depth to rock
ChG:							
Chestnut-------	Severe: seepage slope	Severe: piping thin layer	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock droughty	Limitation: large stones slope depth to rock	Limitation: large stones slope depth to rock
Ashe-----------	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock droughty	Limitation: large stones slope depth to rock	Limitation: large stones slope depth to rock
CjD, CjE:							
Chestnut-------	Severe: seepage slope	Severe: piping thin layer	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock droughty	Limitation: large stones slope depth to rock	Limitation: large stones slope depth to rock
Edneyville-----	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope droughty	Limitation: slope	Limitation: slope droughty
Cs:							
Craigsville----	Severe: seepage	Severe: large stones seepage	Severe: no water	Limitation: deep to water	Limitation: large stones droughty	Limitation: large stones too sandy soil blowing	Limitation: large stones droughty
CuD:							
Cullasaja------	Severe: seepage slope	Severe: large stones seepage	Severe: no water	Limitation: deep to water	Limitation: large stones slope droughty	Limitation: large stones slope too sandy	Limitation: large stones slope droughty
Di:							
Dillard--------	Slight	Moderate: thin layer	Severe: slow refill	Favorable	Limitation: wetness	Limitation: wetness	Favorable

Table 13.—Water Management—Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
DjF:							
Ditney---------	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock droughty	Limitation: slope depth to rock	Limitation: slope depth to rock droughty
Unicoi---------	Severe: slope depth to rock	Severe: large stones	Severe: no water	Limitation: deep to water	Limitation: large stones slope droughty	Limitation: large stones slope depth to rock	Limitation: large stones slope droughty
DtE, DtF, DtG:							
Ditney---------	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock droughty	Limitation: slope depth to rock	Limitation: slope depth to rock droughty
Du:							
Dunning--------	Slight	Severe: wetness	Severe: slow refill	Limitation: flooding percs slowly	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness	Limitation: erodes easily percs slowly wetness
EdE, EdF:							
Edneyville-----	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope droughty	Limitation: slope	Limitation: slope droughty
EvE:							
Edneyville-----	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope droughty	Limitation: slope	Limitation: slope droughty
Chestnut-------	Severe: seepage slope	Severe: piping thin layer	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock droughty	Limitation: large stones slope depth to rock	Limitation: large stones slope depth to rock
GrE, GrF, GrG:							
Greenlee-------	Severe: seepage slope	Severe: large stones seepage	Severe: no water	Limitation: deep to water	Limitation: large stones slope droughty	Limitation: large stones slope too sandy	Limitation: large stones slope droughty

Table 13.—Water Management—Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
Ht, Hu:							
Hatboro--------	Severe: seepage	Severe: piping wetness	Severe: cutbanks cave	Limitation: flooding frost action subsides	Limitation: erodes easily flooding wetness	Limitation: erodes easily wetness	Limitation: erodes easily wetness
JeD, JeE:							
Jeffrey--------	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock droughty	Limitation: slope depth to rock	Limitation: slope depth to rock droughty
KeC, KeD, KeE, KeF:							
Keener--------	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: large stones slope	Limitation: large stones slope	Limitation: large stones slope
LoD, LoE:							
Lonon----------	Severe: slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope too acid	Limitation: slope	Limitation: slope
MaE, MaF:							
Maymead--------	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope	Limitation: large stones slope	Limitation: large stones slope
NcF, NcG:							
Northcove------	Severe: seepage slope	Severe: large stones	Severe: no water	Limitation: deep to water	Limitation: large stones slope droughty	Limitation: large stones slope	Limitation: large stones slope droughty
PgE, PgF:							
Pigeonroost----	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock droughty	Limitation: slope depth to rock	Limitation: slope depth to rock droughty
PnF:							
Pineola--------	Severe: seepage slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope droughty	Limitation: large stones slope	Limitation: large stones slope droughty

Table 13.—Water Management—Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
PoE:							
Porters	Severe: seepage, slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope	Limitation: slope	Limitation: slope
PsF:							
Porters	Severe: seepage, slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope	Limitation: large stones, slope	Limitation: large stones, slope
SaC:							
Saunook	Severe: seepage, slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope, too acid	Limitation: slope	Limitation: slope
ScC, ScD, ScE, ScF:							
Shelocta	Severe: seepage, slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope	Limitation: slope	Limitation: slope
SoE, SoF, SoG:							
Soco	Severe: seepage, slope	Severe: piping, thin layer	Severe: no water	Limitation: deep to water	Limitation: slope, too acid, depth to rock	Limitation: slope, depth to rock	Limitation: slope, depth to rock
SrB:							
Statler	Severe: seepage	Severe: piping	Severe: no water	Limitation: deep to water	Favorable	Favorable	Favorable
SyF:							
Sylco	Severe: slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: large stones, slope, droughty	Limitation: large stones, slope, depth to rock	Limitation: large stones, slope, droughty
Sylvatus	Severe: slope, depth to rock	Severe: thin layer	Severe: no water	Limitation: deep to water	Limitation: slope, droughty	Limitation: large stones, slope, depth to rock	Limitation: large stones, slope, droughty
TsD:							
Tusquitee	Severe: seepage, slope	Severe: piping	Severe: no water	Limitation: deep to water	Limitation: slope	Limitation: slope	Limitation: slope

Table 13.—Water Management—Continued

Map symbol and soil name	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
UcG:							
Unicoi---------	Severe: slope depth to rock	Severe: large stones	Severe: no water	Limitation: deep to water	Limitation: large stones slope droughty	Limitation: large stones slope depth to rock	Limitation: large stones slope droughty
Rock outcrop---	Severe: slope depth to rock	Slight	Severe: no water	Limitation: deep to water	Limitation: slope depth to rock	Limitation: slope depth to rock	Limitation: slope depth to rock
W. Water							

Table 14.—Engineering Index 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	
AcF:												
Ashe------------	0-4	Gravelly fine sandy loam	SC-SM, SM	A-2, A-4	0-5	5-10	80-90	75-90	60-90	30-49	25-35	NP-7
	4-32	Loam, sandy loam, fine sandy loam	SC-SM, SM	A-4	0-2	5-20	85-100	80-95	60-95	35-49	25-35	NP-7
	32-40	Unweathered bedrock			---	---	---	---	---	---	---	---
Cleveland-------	0-15	Cobbly fine sandy loam	SM	A-2, A-4	2-10	5-25	70-90	60-80	50-75	20-50	0-30	NP-3
	15-24	Unweathered bedrock			---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock			---	---	---	---	---	---	---	---
AsE, AsF:												
Ashe------------	0-4	Gravelly fine sandy loam	SC-SM, SM	A-2, A-4	0-5	5-10	80-90	75-90	60-90	30-49	25-35	NP-7
	4-32	Loam, sandy loam, fine sandy loam	SC-SM, SM	A-4	0-2	5-20	85-100	80-95	60-95	35-49	25-35	NP-7
	32-40	Unweathered bedrock			---	---	---	---	---	---	---	---
BeC, BeD, BeE:												
Bledsoe---------	0-7	Silt loam	CL, CL-ML	A-4, A-6	0	0-5	85-95	80-95	70-90	50-90	20-35	5-15
	7-60	Silty clay, silty clay loam, gravelly silty clay	CH, CL	A-6, A-7	0-1	0-15	65-95	65-95	60-90	50-90	35-60	15-35
BsE, BsF:												
Brookshire------	0-65	Silt loam	CL, GC, GM, ML	A-4	0-5	0-5	55-85	50-85	45-75	35-65	18-30	3-10

Table 14.—Engineering Index 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	
BtD, BtE, BtF:												
Burton----------	0-14	Stony loam	SM	A-2, A-4, A-5	0-5	0-15	80-100	80-100	60-90	30-49	30-50	NP-7
	14-28	Sandy loam, gravelly sandy loam, loam	SC-SM, SM	A-2, A-4	0-5	5-15	73-100	70-95	57-95	25-49	25-35	NP-7
	28-35	Unweathered bedrock			---	---	---	---	---	---	---	---
BuF:												
Burton----------	0-14	Loam	SM	A-2, A-4, A-5	0-5	0-15	80-100	80-100	60-90	30-49	30-50	NP-7
	14-28	Sandy loam, gravelly sandy loam, loam	SC-SM, SM	A-2, A-4	0-5	5-15	73-100	70-95	57-95	25-49	25-35	NP-7
	28-35	Unweathered bedrock			---	---	---	---	---	---	---	---
Craggey---------	0-11	Loam	SC-SM, SM	A-2, A-4, A-5	0-2	0-5	90-100	85-100	65-95	25-49	25-50	NP-7
	11-25	Unweathered bedrock			---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock			---	---	---	---	---	---	---	---
BwD:												
Burton----------	0-14	Loam	SM	A-2, A-4, A-5	0-5	0-15	80-100	80-100	60-90	30-49	30-50	NP-7
	14-28	Sandy loam, gravelly sandy loam, loam	SC-SM, SM	A-2, A-4	0-5	5-15	73-100	70-95	57-95	25-49	25-35	NP-7
	28-35	Unweathered bedrock			---	---	---	---	---	---	---	---
Wayah-----------	0-12	Loam	ML, SM	A-2, A-4, A-5	0-2	0-5	90-100	80-98	50-88	25-65	30-50	NP-10
	12-24	Gravelly loam, sandy loam, gravelly sandy loam	GM, ML, SC-SM, SM	A-1-b, A-4, A-2-4	0-5	3-15	53-99	50-97	30-87	20-55	25-35	NP-10
	24-61	Gravelly fine sandy loam, gravelly sandy loam, gravelly loamy sand	GM, GP-GM, SM, SP-SM	A-1-b, A-2-4	0-5	3-15	53-87	50-80	20-50	10-30	20-35	NP-4

Table 14.—Engineering Index 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	
CaD, CaE, CaF:												
Calvin----------	0-8	Channery silt loam	CL-ML, ML	A-4	0	0-15	70-95	70-90	65-90	55-75	15-30	2-10
	8-33	Channery silt loam, channery loam, very channery clay loam	GM, ML, SM	A-2, A-4, A-6	0	0-15	70-95	55-90	40-90	30-75	22-38	2-11
	33-38	Extremely channery loam, very channery silt loam, very channery loam	GC, GM, SC, SM	A-1, A-2, A-4, A-6	0	0-20	35-75	15-45	15-45	15-40	23-39	3-13
	38-44	Unweathered bedrock			---	---	---	---	---	---	0-14	---
CbrG:												
Caneyville------	0-4	Silty clay loam	CL	A-6	---	0-3	90-100	85-100	75-100	65-100	30-40	11-20
	4-29	Silty clay, clay, silty clay loam	CH, CL	A-7	---	0-3	90-100	85-100	75-100	65-100	42-70	20-45
	29-33	Unweathered bedrock			---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock			---	---	---	---	---	---	---	---
CcE, CcF, CcG:												
Cataska---------	0-1	Slightly decomposed plant material			---	---	---	---	---	---	---	---
	1-5	Channery silt loam	CL-ML, GM, GC-GM, ML	A-4	0-2	3-15	55-80	50-75	45-70	40-60	0-30	NP-6
	5-18	Channery loam, very channery silt loam	GC-GM, GM, GP-GM	A-1, A-2	0-2	10-25	15-50	10-45	10-40	10-35	0-30	NP-7
	18-60	Weathered bedrock			---	---	---	---	---	---	---	---

Table 14.—Engineering Index 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	
Cg:												
Chagrin	0-7	Loam	CL, CL-ML, ML	A-4	0	0	95-100	85-100	80-100	70-90	20-35	2-10
	7-40	Silt loam, loam, sandy loam	ML, SM	A-2, A-4, A-6	0	0	90-100	75-100	55-90	30-80	20-40	NP-14
	40-60	Stratified gravelly fine sand to silt loam	ML, SM, SP-SM	A-2, A-4	0	0	75-100	65-100	40-85	10-80	20-40	NP-10
ChE, ChF:												
Chestnut	0-8	Loam	CL-ML, ML, SC-SM, SM	A-2, A-4, A-5	0-2	0-5	85-100	80-95	60-95	30-55	20-50	NP-9
	8-33	Gravelly loam, gravelly fine sandy loam, loam	SC-SM, SM	A-2, A-4, A-5	0-5	0-25	75-98	65-97	60-85	34-49	20-45	NP-10
	33-60	Weathered bedrock			---	---	---	---	---	---	---	---
ChG:												
Chestnut	0-8	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4, A-5	0-2	0-5	85-100	80-95	60-95	30-55	20-50	NP-9
	8-29	Gravelly loam, gravelly fine sandy loam, sandy loam	SC-SM, SM	A-2, A-4, A-5	0-5	0-25	75-98	65-97	60-85	34-49	20-45	NP-10
	29-60	Weathered bedrock			---	---	---	---	---	---	---	---
Ashe	0-4	Gravelly fine sandy loam	SC-SM, SM	A-2, A-4	0-5	5-10	80-90	75-90	60-90	30-49	25-35	NP-7
	4-32	Loam, sandy loam, fine sandy loam	SC-SM, SM	A-4	0-2	5-20	85-100	80-95	60-95	35-49	25-35	NP-7
	32-40	Unweathered bedrock			---	---	---	---	---	---	---	---

Table 14.—Engineering Index 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	
CjD, CjE:												
Chestnut--------	0-8	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4, A-5	0-2	0-5	85-100	80-95	60-95	30-55	20-50	NP-9
	8-29	Gravelly loam, gravelly fine sandy loam, sandy loam	SC-SM, SM	A-2, A-4, A-5	0-5	0-25	75-98	65-97	60-85	34-49	20-45	NP-10
	29-60	Weathered bedrock			---	---	---	---	---	---	---	---
Edneyville------	0-8	Loam	MH, ML, SC-SM, SM	A-2, A-4, A-5	0-2	0-5	85-100	80-100	65-95	30-69	25-61	NP-7
	8-28	Fine sandy loam, sandy loam, loam	CL-ML, ML, SC-SM, SM	A-2, A-4, A-5	0-3	0-5	85-100	80-100	65-95	30-68	25-45	NP-10
	28-62	Sandy loam, gravelly sandy loam, fine sandy loam	SC-SM, SM	A-2, A-4, A-5	0-5	0-10	75-100	65-100	60-88	28-49	25-45	NP-10
Cs:												
Craigsville-----	0-1	Moderately decomposed plant material			---	---	---	---	---	---	---	---
	1-9	Cobbly sandy loam	CL-ML, ML, SC, SM	A-2, A-4	---	25-50	80-95	75-95	50-80	25-60	0-25	NP-10
	9-63	Very gravelly loamy sand, very gravelly sandy loam, extremely cobbly sandy loam	GC, GC-GM, GM, GP-GM	A-1, A-2	---	35-75	35-55	30-50	20-45	10-25	0-25	NP-8
CuD:												
Cullasaja-------	0-2	Moderately decomposed plant material			---	---	---	---	---	---	---	---
	2-15	Very cobbly loam	GM, SM	A-1-b, A-2-5	10-20	30-60	55-85	50-75	35-60	15-30	41-70	NP-7
	15-60	Very stony sandy loam, very cobbly fine sandy loam, very stony loamy sand	GM, SM	A-1-b, A-2-4	10-20	30-60	55-85	50-75	35-60	15-30	25-40	NP-7

Table 14.—Engineering Index 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	
Di:												
Dillard----------	0-6	Loam	CL, ML	A-4	0	0-2	95-100	90-100	75-95	60-85	0-35	NP-10
	6-42	Clay loam, sandy clay loam, loam	CL, ML, SC	A-4, A-6, A-7	0	0-2	95-100	85-100	60-95	45-70	30-45	7-22
	42-60	Variable			---	---	---	---	---	---	---	---
DjF:												
Ditney-----------	0-1	Moderately decomposed plant material			---	---	---	---	---	---	---	---
	1-8	Loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0-6	90-100	80-95	65-80	30-60	0-30	NP-10
	8-24	Loam, sandy loam, cobbly loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	5-30	65-100	60-100	45-75	25-60	0-30	NP-10
	24-40	Unweathered bedrock			---	---	---	---	---	---	---	---
Unicoi-----------	0-2	Moderately decomposed plant material			---	---	---	---	---	---	---	---
	2-7	Very cobbly sandy loam	GC-GM, GM, SC-SM, SM	A-1-b, A-2	0-5	15-50	60-75	40-65	30-50	20-35	0-25	NP-6
	7-15	Very cobbly loam, cobbly sandy loam, very stony loam	GC-GM, GM, SC-SM, SM	A-1-b, A-2	0	20-50	60-75	40-65	30-50	20-35	0-25	NP-6
	15-25	Unweathered bedrock			---	---	---	---	---	---	---	---
DtE, DtF, DtG:												
Ditney-----------	0-1	Moderately decomposed plant material			---	---	---	---	---	---	---	---
	1-8	Sandy loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0-6	90-100	80-95	65-80	30-60	0-30	NP-10
	8-24	Loam, sandy loam, cobbly loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	5-30	65-100	60-100	45-75	25-60	0-30	NP-10
	24-40	Unweathered bedrock			---	---	---	---	---	---	---	---

Table 14.—Engineering Index 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	
Du:												
Dunning	0-12	Silt loam	ML, CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	85-100	25-35	4-11
	12-60	Silty clay, clay, silty clay loam	CH, CL	A-7	---	0-5	90-100	70-100	60-100	60-100	45-70	20-40
EdE, EdF:												
Edneyville	0-8	Loam	MH, ML, SC-SM, SM	A-2, A-4, A-5	0-2	0-5	85-100	80-100	65-95	30-69	25-61	NP-7
	8-28	Fine sandy loam, sandy loam, loam	CL-ML, ML, SC-SM, SM	A-2, A-4, A-5	0-3	0-5	85-100	80-100	65-95	30-68	25-45	NP-10
	28-62	Sandy loam, gravelly sandy loam, fine sandy loam	SC-SM, SM	A-2, A-4, A-5	0-5	0-10	75-100	65-100	60-88	28-49	25-45	NP-10
EvE:												
Edneyville	0-8	Loam	MH, ML, SC-SM, SM	A-2, A-4, A-5	0-2	0-5	85-100	80-100	65-95	30-69	25-61	NP-7
	8-28	Fine sandy loam, sandy loam, loam	CL-ML, ML, SC-SM, SM	A-2, A-4, A-5	0-3	0-5	85-100	80-100	65-95	30-68	25-45	NP-10
	28-62	Sandy loam, gravelly sandy loam, fine sandy loam	SC-SM, SM	A-2, A-4, A-5	0-5	0-10	75-100	65-100	60-88	28-49	25-45	NP-10
Chestnut	0-8	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4, A-5	0-2	0-5	85-100	80-95	60-95	30-55	20-50	NP-9
	8-29	Gravelly loam, gravelly fine sandy loam, sandy loam	SC-SM, SM	A-2, A-4, A-5	0-5	0-25	75-98	65-97	60-85	34-49	20-45	NP-10
	29-60	Weathered bedrock			---	---	---	---	---	---	---	---

Table 14.—Engineering Index 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	
GrE, GrF, GrG:												
Greenlee	0-6	Very cobbly loam	GM, SM	A-1-b, A-4, A-2-4	5-10	20-55	50-100	50-100	30-85	20-45	15-30	NP-7
	6-47	Very cobbly loam, very stony fine sandy loam, very bouldery loam	GM, SM	A-1-b, A-4, A-2-4	5-35	10-55	50-90	50-80	30-60	20-40	15-30	NP-7
	47-65	Extremely cobbly sandy loam, extremely stony sandy loam, extremely bouldery loamy sand	GM, SM	A-1-b, A-2-4	30-70	10-30	50-80	45-70	20-50	15-30	10-30	NP-7
Ht:												
Hatboro	0-10	Loam	CL, ML	A-4, A-6	0	0	95-100	90-100	70-100	60-90	22-35	2-12
	10-32	Silt loam, silty clay loam, clay loam	CL, CL-ML, ML	A-4, A-6	0	0	85-100	80-100	70-95	55-85	22-35	2-12
	32-60	Stratified gravelly sand to clay	GC, GM, SC, SM	A-1, A-2	0	0	50-85	45-80	45-80	15-35	0-32	NP-14
Hu:												
Hatboro	0-10	Sandy loam	CL, ML	A-4, A-6	0	0	95-100	90-100	70-100	60-90	22-35	2-12
	10-32	Silt loam, silty clay loam, clay loam	CL, ML, CL-ML	A-4, A-6	0	0	85-100	80-100	70-95	55-85	22-35	2-12
	32-60	Stratified gravelly sand to clay	SM, SC, GM, GC	A-1, A-2	0	0	50-85	45-80	45-80	15-35	0-32	NP-14

Table 14.—Engineering Index 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	
JeD, JeE:												
Jeffrey---------	0-4	Moderately decomposed plant material	---	---	---	---	---	---	---	---	---	---
	4-13	Cobbly loam	ML, SM	A-4	15-30	2-15	80-90	70-90	65-80	40-60	0-30	NP-7
	13-29	Cobbly sandy loam, cobbly loam, very cobbly loam	GM, ML, SM	A-2, A-4	0	5-10	65-90	55-85	45-75	30-60	0-30	NP-7
	29-40	Unweathered bedrock			---	---	---	---	---	---	---	---
KeC, KeD, KeE, KeF:												
Keener---------	0-7	Loam	CL-ML, ML, SC-SM, SM	A-4	0	0-5	96-100	86-98	68-98	40-80	0-25	NP-7
	7-45	Clay loam, cobbly sandy clay loam	CL, CL-ML, ML	A-4	0	15-35	95-100	95-100	70-100	55-85	18-30	3-10
	45-63	Very cobbly clay loam, very cobbly loam	CL-ML, SC, SC-SM, SM	A-4	0	15-50	95-100	95-100	70-100	40-70	18-30	3-10
LoD, LoE:												
Lonon-----------	0-6	Loam	ML, SM	A-2-4, A-4	0-1	0-5	90-100	85-100	60-85	25-65	20-30	NP-7
	6-65	Loam, sandy clay loam, clay loam	CL, ML, SC, SM	A-4, A-6	0-1	0-5	90-100	85-100	75-85	35-65	25-40	7-14
MaE, MaF:												
Maymead---------	0-2	Moderately decomposed plant material	---	---	---	---	---	---	---	---	---	---
	2-8	Loam	CL-ML, ML	A-4	0	0-3	80-95	75-90	65-80	50-60	0-25	NP-7
	8-63	Gravelly loam, loam, cobbly sandy loam	CL-ML, GM, ML, SM	A-4	0	10-25	70-90	65-85	55-75	40-60	0-25	NP-7

Table 14.—Engineering Index 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	
NcF, NcG:												
Northcove-------	0-1	Moderately decomposed plant material	---	---	---	---	---	---	---	---	---	---
	1-5	Very stony sandy loam	GC-GM, GM, SC-SM, SM	A-1-b, A-4, A-2-4	15-35	25-50	50-90	50-85	30-70	20-45	15-30	NP-7
	5-24	Very cobbly sandy loam, very stony loam, very flaggy loam	GC-GM, GM, SC-SM, SM	A-1-b, A-4, A-2-4	15-40	25-65	50-90	50-85	30-70	20-45	15-30	NP-7
	24-63	Very cobbly sandy loam, very stony loamy sand, extremely stony sand	GC-GM, GM, SM	A-1-b, A-2-4	20-50	25-80	50-85	35-60	20-50	15-30	10-30	NP-7
PgE, PgF:												
Pigeonroost-----	0-5	Gravelly loam	SM, SC-SM, ML	A-2, A-2-4, A-4, A-5	0-3	15-25	70-90	65-85	60-80	23-55	26-41	NP-12
	5-24	Clay loam, loam, sandy clay loam, gravelly sandy clay loam	SM, SC, ML, CL	A-4, A-6	0-1	0-15	85-100	70-100	65-90	40-80	25-40	7-14
	24-37	Sandy loam, loam, gravelly sandy loam	SC, ML, CL, SM	A-2, A-4	0-1	0-15	85-100	65-100	65-95	30-75	0-30	NP-10
	37-45	Weathered bedrock			---	---	---	---	---	---	---	---
PnF:												
Pineola---------	0-15	Loam	CL-ML, ML, SC-SM, SM	A-2, A-4, A-5	0-3	0-5	92-100	85-95	70-85	45-75	25-50	NP-7
	15-26	Gravelly clay loam, sandy clay loam, loam, gravelly loam	SC, GC, CL	A-4, A-6, A-7-6	0-1	0-15	70-100	60-95	55-95	40-80	30-45	9-20
	26-29	Gravelly sandy loam, gravelly loam, sandy loam	GC-GM, SC, SC-SM, SM	A-4, A-1-b, A-2	0-1	0-25	60-100	50-90	45-80	20-49	15-30	NP-10
	29-45	Weathered bedrock			---	---	---	---	---	---	---	---

Table 14.—Engineering Index 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	
PoE:												
Porters----------	0-11	Loam	CL, CL-ML, ML	A-4	0-2	0-5	85-100	80-100	70-80	51-65	20-35	NP-10
	11-42	Stony loam, sandy loam, fine sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0-5	5-25	75-99	60-99	50-90	30-70	15-25	NP-7
	42-46	Unweathered bedrock			---	---	---	---	---	---	---	---
PsF:												
Porters----------	0-11	Stony loam	ML, SC-SM, SM	A-2, A-4	5-10	5-15	75-95	70-85	50-70	30-55	20-30	NP-7
	11-42	Stony loam, sandy loam, fine sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0-5	5-25	75-99	60-99	50-90	30-70	15-25	NP-7
	42-46	Unweathered bedrock			---	---	---	---	---	---	---	---
SaC:												
Saunook----------	0-8	Loam	ML, SM, MH	A-2, A-4, A-5, A-7-5	0	0-5	90-100	85-100	60-90	25-65	30-59	NP-14
	8-60	Loam, clay loam, fine sandy loam	CL, ML, SC, SM	A-4, A-6, A-7	0-2	0-5	90-100	85-100	75-95	35-75	25-55	7-20
ScC, ScD, ScE, ScF:												
Shelocta--------	0-2	Moderately decomposed plant material	---	---	---	---	---	---	---	---	---	---
	2-12	Silt loam	CL-ML, ML	A-4	0-2	0-5	80-95	75-95	60-95	55-90	0-35	NP-10
	12-47	Silty clay loam, silt loam, channery silty clay loam	CL, CL-ML, GC, SC	A-4, A-6	0-5	0-10	55-95	50-95	45-95	40-90	25-40	4-15
	47-65	Channery silt loam, channery silty clay loam, very channery clay loam	CL, GC, GM, ML	A-1-b, A-2, A-4, A-6	0-10	0-15	40-85	35-70	25-70	20-65	20-40	3-20

Table 14.—Engineering Index 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	
SoE, SoF, SoG:												
Soco------------	0-1	Moderately decomposed plant material	---	---	---	---	---	---	---	---	---	---
	1-4	Fine sandy loam	MH, ML, SM	A-4, A-5	0-2	0-5	85-100	80-100	65-90	36-75	30-55	NP-7
	4-30	Loam, fine sandy loam, silt loam	CL, ML, SC, SM	A-4, A-6	0-2	0-5	85-100	80-100	65-92	36-77	25-40	NP-11
	30-45	Weathered bedrock			---	---	---	---	---	---	---	---
SrB:												
Statler---------	0-10	Loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	75-100	70-100	53-75	25-37	3-14
	10-27	Loam, clay loam, sandy clay loam	CL, CL-ML, ML	A-4, A-6, A-7	0	0-5	95-100	75-100	65-98	50-75	25-52	5-27
	27-60	Loam, fine sandy loam, clay loam	CL, CL-ML, SC, SC-SM	A-4	0	0-10	90-100	65-100	55-95	40-75	25-40	4-27
SyF:												
Sylco-----------	0-4	Channery silt loam	SC-SM, SC, GC-GM, GC	A-4	2-3	2-20	70-90	65-85	55-75	45-70	10-27	4-10
	4-22	Very channery silt loam, flaggy loam, very channery silty clay loam	GC-GM, GC, CL-ML, CL	A-4	0-5	3-25	55-85	30-80	25-75	20-70	20-30	5-10
	22-27	Extremely channery silt loam, very flaggy silty clay loam, very channery loam	SC-SM, SC, GC-GM, GC	A-1-b, A-2, A-4	0-8	12-50	35-70	30-65	25-55	20-45	20-30	5-10
	27-31	Unweathered bedrock			---	---	---	---	---	---	---	---

Table 14.—Engineering Index 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	
SyF:												
Sylvatus--------	0-2	Channery silt loam	GC, GC-GM, SC, SC-SM	A-4	2-3	2-25	65-90	60-85	50-75	40-65	10-27	4-10
	2-11	Very channery silt loam, flaggy loam, very channery silty clay loam	GC-GM, GC, CL-ML, CL	A-4	0-5	5-30	50-75	30-80	25-67	20-60	20-30	5-10
	11-16	Extremely channery silt loam, very flaggy silty clay loam, very channery loam	GC, GC-GM, SC, SC-SM	A-1-b, A-2, A-4	0-8	10-55	30-55	25-60	22-50	20-42	20-30	5-10
	16-20	Unweathered bedrock			---	---	---	---	---	---	---	---
TsD:												
Tusquitee-------	0-10	Loam	MH, ML	A-4, A-5	0-1	0-10	85-100	80-100	70-95	50-65	25-58	NP-10
	10-56	Loam, sandy loam, fine sandy loam	ML, SC-SM, SM	A-4	0-1	0-15	90-100	75-100	65-95	36-65	20-40	NP-10
	56-60	Gravelly sandy loam, gravelly fine sandy loam, cobbly fine sandy loam	GC-GM, GM, SC-SM, SM	A-1, A-2, A-4	2-15	5-35	45-98	40-85	30-75	12-50	20-35	NP-7

Table 14.—Engineering Index 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	
UcG:												
Unicoi----------	0-2	Moderately decomposed plant material	---	---	---	---	---	---	---	---	---	---
	2-7	Very cobbly sandy loam	GC-GM, GM, SC-SM, SM	A-2, A-1-b	0-5	15-50	60-75	40-65	30-50	20-35	0-25	NP-6
	7-15	Very cobbly loam, very cobbly sandy loam, very stony loam	GM, SC-SM, SM, GC-GM	A-1-b, A-2	0	20-50	60-75	40-65	30-50	20-35	0-25	NP-6
	15-25	Unweathered bedrock			---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock			---	---	---	---	---	---	---	---
W.												
Water												

Table 15.—Physical Properties of the Soils

(Entries under "Erosion factors--T" apply to the entire profile. Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors		
								Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	Pct			
AcF:										
Ashe------------	0-4	7-20	1.35-1.60	2.00-6.00	0.10-0.13	0.0-2.9	1.0-5.0	.17	.24	2
	4-32	7-20	1.35-1.60	2.00-6.00	0.10-0.14	0.0-2.9	0.0-1.0	.17	.24	
	32-40	---	---	---	---	---	---	---	---	
Cleveland-------	0-15	6-20	1.20-1.50	2.00-6.00	0.05-0.10	0.0-2.9	0.5-8.0	.17	.28	1
	15-24	---	---	---	---	---	---	---	---	
Rock outcrop----	0-60	---	---	0.06-6.00	---	---	---	---	---	-
AsE, AsF:										
Ashe------------	0-4	7-20	1.35-1.60	2.00-6.00	0.10-0.13	0.0-2.9	1.0-5.0	.17	.24	2
	4-32	7-20	1.35-1.60	2.00-6.00	0.10-0.14	0.0-2.9	0.0-1.0	.17	.24	
	32-40	---	---	---	---	---	---	---	---	
BeC, BeD, BeE:										
Bledsoe---------	0-7	15-30	1.20-1.50	0.60-2.00	0.16-0.21	0.0-2.9	0.5-2.0	.37	.37	5
	7-60	35-50	1.30-1.60	0.20-0.60	0.12-0.19	3.0-5.9	0.5-1.0	.32	.32	
BsE, BsF:										
Brookshire------	0-65	10-18	1.30-1.45	2.00-20.00	0.13-0.18	0.0-2.9	2.0-4.0	.32	.37	3
BtD, BtE, BtF:										
Burton----------	0-14	5-18	1.10-1.30	2.00-6.00	0.16-0.23	0.0-2.9	8.0-15	.24	.24	2
	14-28	5-18	1.35-1.60	2.00-6.00	0.10-0.15	0.0-2.9	1.0-5.0	.15	.24	
	28-35	---	---	---	---	---	---	---	---	
BuF:										
Burton----------	0-14	5-18	1.10-1.30	2.00-6.00	0.16-0.23	0.0-2.9	8.0-15	.24	.24	2
	14-28	5-18	1.35-1.60	2.00-6.00	0.10-0.15	0.0-2.9	1.0-5.0	.15	.24	
	28-35	---	---	---	---	---	---	---	---	
Craggey---------	0-11	8-27	1.10-1.30	2.00-6.00	0.12-0.17	0.0-2.9	8.0-15	.24	.24	1
	11-25	---	---	---	---	---	---	---	---	
Rock outcrop----	0-60	---	---	0.06-6.00	---	---	---	---	---	-
BwD:										
Burton----------	0-14	5-18	1.10-1.30	2.00-6.00	0.16-0.23	0.0-2.9	8.0-15	.24	.24	2
	14-28	5-18	1.35-1.60	2.00-6.00	0.10-0.15	0.0-2.9	1.0-5.0	.15	.24	
	28-35	---	---	---	---	---	---	---	---	
Wayah-----------	0-12	5-18	1.00-1.20	2.00-6.00	0.16-0.22	0.0-2.9	8.0-15	.24	.24	3
	12-24	5-18	1.20-1.60	2.00-6.00	0.09-0.13	0.0-2.9	0.5-2.0	.15	.24	
	24-61	3-15	1.40-1.65	2.00-6.00	0.05-0.09	0.0-2.9	0.0-0.5	.10	.24	
CaD, CaE, CaF:										
Calvin----------	0-8	10-25	1.20-1.40	2.00-6.00	0.10-0.16	0.0-2.9	1.0-3.0	.20	.24	3
	8-33	10-25	1.40-1.60	2.00-6.00	0.08-0.16	0.0-2.9	0.0-0.5	.20	.24	
	33-38	10-25	1.40-1.60	2.00-6.00	0.06-0.10	0.0-2.9	0.0-0.5	.20	.28	
	38-44	---	---	0.20-6.00	0.00-0.00	---	---	---	---	

Table 15.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	Pct			
CbrG:										
Caneyville------	0-4	27-40	1.20-1.40	0.60-2.00	0.17-0.22	0.0-2.9	2.0-4.0	.43	.43	3
	4-29	36-60	1.35-1.60	0.20-0.60	0.12-0.18	3.0-5.9	---	.28	.28	
	29-33	---	---	0.06-2.00	---	---	---	---	---	
Rock outcrop----	0-60	---	---	0.06-6.00	---	---	---	---	---	-
CcE, CcF, CcG:										
Cataska---------	0-1	---	---	---	---	---	---	---	---	2
	1-5	12-22	1.30-1.40	2.00-20.00	0.10-0.14	0.0-2.9	1.0-3.0	.20	.32	
	5-18	12-22	1.30-1.45	1.98-19.98	0.04-0.09	0.0-2.9	0.5-2.0	.15	.32	
	18-60	---	---	0.01-0.20	---	---	0.5-2.0	---	---	
Cg:										
Chagrin---------	0-7	10-27	1.20-1.40	0.60-2.00	0.20-0.24	0.0-2.9	2.0-4.0	.32	.32	5
	7-40	18-30	1.20-1.50	0.60-2.00	0.14-0.20	0.0-2.9	0.5-1.0	.32	.37	
	40-60	5-25	1.20-1.40	0.60-2.00	0.08-0.20	0.0-2.9	0.3-1.0	.32	.43	
ChE, ChF:										
Chestnut--------	0-8	5-20	1.35-1.60	2.00-6.00	0.10-0.15	0.0-2.9	1.0-8.0	.24	.24	3
	8-33	5-25	1.35-1.60	2.00-6.00	0.08-0.12	0.0-2.9	0.0-2.0	.15	.24	
	33-60	---	---	---	---	---	---	---	---	
ChG:										
Chestnut--------	0-8	5-20	1.35-1.60	2.00-6.00	0.10-0.15	0.0-2.9	1.0-8.0	.24	.24	3
	8-29	5-25	1.35-1.60	2.00-6.00	0.08-0.12	0.0-2.9	0.0-2.0	.15	.24	
	29-60	---	---	---	---	---	---	---	---	
Ashe------------	0-4	7-20	1.35-1.60	2.00-6.00	0.10-0.13	0.0-2.9	1.0-5.0	.17	.24	2
	4-32	7-20	1.35-1.60	2.00-6.00	0.10-0.14	0.0-2.9	0.0-1.0	.17	.24	
	32-40	---	---	---	---	---	---	---	---	
CjD, CjE:										
Chestnut--------	0-8	5-20	1.35-1.60	2.00-6.00	0.10-0.15	0.0-2.9	1.0-8.0	.24	.24	3
	8-29	5-25	1.35-1.60	2.00-6.00	0.08-0.12	0.0-2.9	0.0-2.0	.15	.24	
	29-60	---	---	---	---	---	---	---	---	
Edneyville------	0-8	5-18	1.40-1.60	2.00-6.00	0.11-0.17	0.0-2.9	1.0-8.0	.24	.24	5
	8-28	7-20	1.40-1.60	2.00-6.00	0.10-0.16	0.0-2.9	0.5-2.0	.24	.24	
	28-62	5-20	1.40-1.60	2.00-6.00	0.08-0.14	0.0-2.9	0.0-0.5	.20	.24	
Cs:										
Craigsville-----	0-1	---	---	---	---	---	---	---	---	3
	1-9	5-15	1.20-1.40	2.00-20.00	0.07-0.15	0.0-2.9	1.0-3.0	.20	.24	
	9-63	5-10	1.35-1.55	6.00-20.00	0.04-0.09	0.0-2.9	0.0-0.5	.17	.28	
CuD:										
Cullasaja-------	0-2	---	---	---	---	---	---	---	---	5
	2-15	5-20	0.50-1.20	2.00-6.00	0.09-0.12	0.0-2.9	5.0-15	.05	.17	
	15-60	5-20	1.00-1.60	2.00-6.00	0.07-0.10	0.0-2.9	0.5-2.0	.05	.17	
Di:										
Dillard---------	0-6	10-25	1.20-1.50	0.60-2.00	0.15-0.20	0.0-2.9	0.5-5.0	.32	.32	4
	6-42	18-35	1.40-1.60	0.60-2.00	0.12-0.16	0.0-2.9	0.5-1.0	.28	.28	
	42-60	---	---	0.00-0.01	---	---	0.0-0.5	---	---	

Table 15.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	Pct			
DjF:										
Ditney----------	0-1	---	---	---	---	---	---	---	---	2
	1-8	5-18	1.50-1.65	2.00-6.00	0.10-0.15	0.0-2.9	1.0-3.0	.24	.24	
	8-24	5-18	1.50-1.65	2.00-6.00	0.05-0.13	0.0-2.9	1.0-3.0	.17	.24	
	24-40	---	---	0.00-0.01	---	---	---	---	---	
Unicoi----------	0-2	---	---	---	---	---	---	---	---	1
	2-7	5-20	1.45-1.55	2.00-6.00	0.06-0.09	0.0-2.9	0.5-2.0	.15	.24	
	7-15	5-20	1.45-1.60	2.00-6.00	0.04-0.09	0.0-2.9	0.5-2.0	.15	.24	
	15-25	---	---	0.00-0.01	---	---	---	---	---	
DtE, DtF, DtG:										
Ditney----------	0-1	---	---	---	---	---	---	---	---	2
	1-8	5-18	1.50-1.65	2.00-6.00	0.10-0.15	0.0-2.9	1.0-3.0	.24	.24	
	8-24	5-18	1.50-1.65	2.00-6.00	0.05-0.13	0.0-2.9	1.0-3.0	.17	.24	
	24-40	---	---	0.00-0.01	---	---	---	---	---	
Du:										
Dunning---------	0-12	12-27	1.20-1.40	0.60-2.00	0.19-0.23	0.0-2.9	2.0-10	.37	.37	5
	12-60	35-60	1.40-1.65	0.06-0.20	0.14-0.18	3.0-5.9	---	.28	.28	
EdE, EdF:										
Edneyville------	0-8	5-18	1.40-1.60	2.00-6.00	0.11-0.17	0.0-2.9	1.0-8.0	.24	.24	5
	8-28	7-20	1.40-1.60	2.00-6.00	0.10-0.16	0.0-2.9	0.5-2.0	.24	.24	
	28-62	5-20	1.40-1.60	2.00-6.00	0.08-0.14	0.0-2.9	0.0-0.5	.20	.24	
EvE:										
Edneyville------	0-8	5-18	1.40-1.60	2.00-6.00	0.11-0.17	0.0-2.9	1.0-8.0	.24	.24	5
	8-28	7-20	1.40-1.60	2.00-6.00	0.10-0.16	0.0-2.9	0.5-2.0	.24	.24	
	28-62	5-20	1.40-1.60	2.00-6.00	0.08-0.14	0.0-2.9	0.0-0.5	.20	.24	
Chestnut--------	0-8	5-20	1.35-1.60	2.00-6.00	0.10-0.15	0.0-2.9	1.0-8.0	.24	.24	3
	8-29	5-25	1.35-1.60	2.00-6.00	0.08-0.12	0.0-2.9	0.0-2.0	.15	.24	
	29-60	---	---	---	---	---	---	---	---	
GrE, GrF, GrG:										
Greenlee--------	0-6	5-25	1.30-1.50	2.00-6.00	0.06-0.11	0.0-2.9	2.0-5.0	.10	.20	5
	6-47	5-25	1.40-1.60	2.00-6.00	0.05-0.10	0.0-2.9	0.5-1.0	.10	.20	
	47-65	1-18	1.40-1.60	2.00-6.00	0.03-0.05	0.0-2.9	0.0-0.5	.10	.17	
Ht, Hu:										
Hatboro---------	0-10	10-20	1.20-1.40	0.60-2.00	0.16-0.22	0.0-2.9	2.0-4.0	.37	.37	5
	10-32	15-35	1.20-1.40	0.60-2.00	0.16-0.20	0.0-2.9	0.0-0.5	.20	.20	
	32-60	5-45	1.10-1.60	2.00-6.00	0.04-0.08	0.0-2.9	0.0-0.5	.10	.15	
JeD, JeE:										
Jeffrey---------	0-4	---	---	---	---	---	---	---	---	2
	4-13	10-18	1.45-1.55	0.60-6.00	0.10-0.15	0.0-2.9	3.0-8.0	.17	.24	
	13-29	8-15	1.45-1.55	0.60-6.00	0.07-0.13	0.0-2.9	1.0-2.0	.17	.24	
	29-40	---	---	---	---	---	---	---	---	
KeC, KeD, KeE, KeF:										
Keener---------	0-7	5-25	1.35-1.60	2.00-6.00	0.14-0.18	0.0-2.9	1.0-2.0	.24	.24	5
	7-45	10-35	1.30-1.45	0.60-2.00	0.10-0.15	0.0-2.9	0.5-1.0	.20	.24	
	45-63	10-35	1.30-1.45	2.00-6.00	0.08-0.12	0.0-2.9	0.5-1.0	.20	.24	

Table 15.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	Pct			
LoD, LoE:										
Lonon-----------	0-6	7-20	1.35-1.60	2.00-6.00	0.14-0.20	0.0-2.9	0.5-2.0	.24	.24	5
	6-65	18-35	1.30-1.50	0.60-2.00	0.12-0.20	0.0-2.9	0.0-0.5	.24	.24	
MaE, MaF:										
Maymead---------	0-2	---	---	---	---	---	---	---	---	5
	2-8	8-18	1.40-1.55	2.00-6.00	0.15-0.18	0.0-2.9	1.0-3.0	.24	.24	
	8-63	8-18	1.40-1.55	2.00-6.00	0.13-0.18	0.0-2.9	0.5-1.0	.17	.24	
NcF, NcG:										
Northcove-------	0-1	---	---	---	---	---	---	---	---	5
	1-5	5-18	1.30-1.50	2.00-6.00	0.06-0.11	0.0-2.9	0.5-2.0	.10	.28	
	5-24	5-18	1.40-1.60	2.00-6.00	0.06-0.11	0.0-2.9	0.0-1.0	.10	.28	
	24-63	1-18	1.40-1.60	2.00-6.00	0.03-0.05	0.0-2.9	0.0-0.5	.10	.17	
PgE, PgF:										
Pigeonroost-----	0-5	8-20	1.25-1.60	1.98-5.95	0.10-0.15	0.0-2.9	1.0-5.0	.17	.28	-
	5-24	18-35	1.30-1.50	0.57-1.98	0.12-0.18	0.0-2.9	0.0-0.5	.28	.28	
	24-37	8-20	1.35-1.60	0.57-1.98	0.14-0.20	0.0-2.9	0.0-0.5	.24	.24	
	37-45	---	---	0.00-0.00	---	---	---	---	---	
PnF:										
Pineola---------	0-15	8-20	1.40-1.60	1.98-5.95	0.12-0.20	0.0-2.9	1.0-6.0	.20	.24	5
	15-26	18-35	1.20-1.60	0.57-1.98	0.12-0.18	0.0-2.9	0.0-1.0	.28	.28	
	26-29	5-18	1.30-1.60	0.57-1.98	0.10-0.15	0.0-2.9	0.0-0.5	.17	.24	
	29-45	---	---	0.00-0.00	---	---	---	---	---	
PoE:										
Porters---------	0-11	10-25	1.40-1.60	2.00-6.00	0.16-0.20	0.0-2.9	3.0-8.0	.28	.28	3
	11-42	7-20	1.40-1.60	2.00-6.00	0.10-0.20	0.0-2.9	0.5-1.0	.24	.24	
	42-46	---	---	---	---	---	---	---	---	
PsF:										
Porters---------	0-11	10-20	1.15-1.45	2.00-6.00	0.12-0.16	0.0-2.9	3.0-8.0	.17	.24	3
	11-42	5-20	1.20-1.50	2.00-6.00	0.10-0.17	0.0-2.9	0.5-1.0	.24	.24	
	42-46	---	---	---	---	---	---	---	---	
SaC:										
Saunook---------	0-8	7-20	1.35-1.60	2.00-6.00	0.14-0.20	0.0-2.9	3.0-10	.24	.24	5
	8-60	18-35	1.30-1.50	0.60-2.00	0.12-0.20	0.0-2.9	0.5-2.0	.24	.24	
ScC, ScD, ScE, ScF:										
Shelocta-------	0-2	---	---	---	---	---	---	---	---	3
	2-12	10-25	1.15-1.30	0.60-2.00	0.16-0.22	0.0-2.9	0.5-5.0	.32	.32	
	12-47	18-34	1.30-1.55	0.60-2.00	0.10-0.20	0.0-2.9	0.5-2.0	.28	.32	
	47-65	15-34	1.30-1.55	0.60-6.00	0.08-0.16	0.0-2.9	0.0-0.5	.17	.28	
SoE, SoF, SoG:										
Soco------------	0-1	---	---	---	---	---	---	---	---	3
	1-4	5-18	1.35-1.60	2.00-6.00	0.14-0.22	0.0-2.9	1.0-8.0	.28	.28	
	4-30	5-18	1.35-1.60	2.00-6.00	0.12-0.20	0.0-2.9	0.5-1.0	.32	.32	
	30-45	---	---	---	---	---	---	---	---	
SrB:										
Statler---------	0-10	10-20	1.35-1.45	0.60-2.00	0.18-0.22	0.0-2.9	2.0-6.0	.32	.32	5
	10-27	15-35	1.35-1.50	0.60-2.00	0.17-0.20	0.0-2.9	---	.24	.24	
	27-60	12-30	1.35-1.50	0.60-6.00	0.14-0.18	0.0-2.9	---	.24	.28	

Table 15.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	g/cc	In/hr	In/in	Pct	Pct			
SyF:										
Sylco-----------	0-4	10-25	1.00-1.20	0.57-1.98	0.11-0.16	0.0-2.9	0.5-2.0	.20	.37	2
	4-22	10-30	1.20-1.50	0.57-1.98	0.10-0.15	0.0-2.9	0.2-1.5	.20	.32	
	22-27	10-30	1.20-1.50	0.57-1.98	0.05-0.10	0.0-2.9	0.1-1.0	.15	.32	
	27-31	---	---	0.00-0.00	---	---	---	---	---	
Sylvatus--------	0-2	10-25	1.00-1.20	0.57-1.98	0.11-0.16	0.0-2.9	0.5-2.0	.20	.32	1
	2-11	10-30	1.20-1.50	0.57-1.98	0.10-0.15	0.0-2.9	0.1-1.0	.20	.28	
	11-16	10-23	1.20-1.40	0.57-1.98	0.05-0.10	0.0-2.9	0.0-0.5	.15	.28	
	16-20	---	---	0.00-0.00	---	---	---	---	---	
TsD:										
Tusquitee-------	0-10	7-20	1.20-1.40	2.00-6.00	0.16-0.24	0.0-2.9	3.0-8.0	.28	.28	5
	10-56	7-20	1.30-1.60	2.00-6.00	0.15-0.21	0.0-2.9	0.5-1.0	.24	.24	
	56-60	5-20	1.30-1.60	2.00-6.00	0.08-0.14	0.0-2.9	0.0-0.5	.17	.24	
UcG:										
Unicoi----------	0-2	---	---	---	---	---	---	---	---	1
	2-7	5-20	1.45-1.55	2.00-6.00	0.06-0.09	0.0-2.9	0.5-2.0	.15	.24	
	7-15	5-20	1.45-1.60	2.00-6.00	0.04-0.09	0.0-2.9	0.5-2.0	.15	.24	
	15-25	---	---	0.00-0.01	---	---	---	---	---	
Rock outcrop----	0-60	---	---	0.06-6.00	---	---	---	---	---	-
W.										
Water										

Table 16.—Chemical Properties of the Soils

(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
	In	meq/100 g	meq/100 g	pH
AcF:				
Ashe	0-4	---	2.0-8.0	3.5-6.0
	4-32	---	1.0-5.0	3.5-6.0
	32-40	---	---	---
Cleveland	0-15	---	2.0-8.0	4.5-6.0
	15-24	---	---	---
Rock outcrop	0-60	---	---	---
AsE, AsF:				
Ashe	0-4	---	2.0-8.0	3.5-6.0
	4-32	---	1.0-5.0	3.5-6.0
	32-40	---	---	---
BeC, BeD, BeE:				
Bledsoe	0-7	5.0-16	---	5.6-7.8
	7-60	15-30	---	5.6-7.8
BsE, BsF:				
Brookshire	0-65	---	---	5.1-5.5
BtD, BtE, BtF:				
Burton	0-14	---	3.0-17	3.5-6.0
	14-28	---	1.0-3.0	3.5-6.0
	28-35	---	---	---
BuF:				
Burton	0-14	---	3.0-17	3.5-6.0
	14-28	---	1.0-3.0	3.5-6.0
	28-35	---	---	---
Craggey	0-11	---	2.0-10	3.5-6.0
	11-25	---	---	---
Rock outcrop	0-60	---	---	---
BwD:				
Burton	0-14	---	3.0-17	3.5-6.0
	14-28	---	1.0-3.0	3.5-6.0
	28-35	---	---	---
Wayah	0-12	---	3.0-20	3.5-5.5
	12-24	---	1.0-5.0	4.5-6.0
	24-61	---	1.0-5.0	4.5-6.0
CaD, CaE, CaF:				
Calvin	0-8	12-22	---	5.1-6.5
	8-33	7.0-15	---	5.1-6.5
	33-38	7.0-15	---	5.1-6.5
	38-44	---	---	---

Table 16.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	In	meq/100 g	meq/100 g	pH
CbrG:				
Caneyville	0-4	---	---	4.5-7.3
	4-29	---	---	4.5-7.3
	29-33	---	---	---
Rock outcrop	0-60	---	---	---
CcE, CcF, CcG:				
Cataska	0-1	---	---	---
	1-5	---	---	3.6-5.5
	5-18	---	---	3.6-5.5
	18-60	---	---	---
Cg:				
Chagrin	0-7	10-24	---	5.6-7.3
	7-40	10-20	---	5.6-7.3
	40-60	2.0-12	---	5.6-7.3
ChE, ChF:				
Chestnut	0-8	---	2.0-8.0	3.5-6.0
	8-33	---	1.0-5.0	3.5-6.0
	33-60	---	---	---
ChG:				
Chestnut	0-8	---	2.0-8.0	3.5-6.0
	8-29	---	1.0-5.0	3.5-6.0
	29-60	---	---	---
Ashe	0-4	---	2.0-8.0	3.5-6.0
	4-32	---	1.0-5.0	3.5-6.0
	32-40	---	---	---
CjD, CjE:				
Chestnut	0-8	---	2.0-8.0	3.5-6.0
	8-29	---	1.0-5.0	3.5-6.0
	29-60	---	---	---
Edneyville	0-8	---	2.0-12	4.5-6.0
	8-28	---	2.0-6.0	4.5-6.0
	28-62	---	1.0-4.0	4.5-6.0
Cs:				
Craigsville	0-1	---	---	---
	1-9	---	---	4.5-5.5
	9-63	---	---	4.5-5.5
CuD:				
Cullasaja	0-2	---	---	---
	2-15	3.0-15	---	4.5-6.5
	15-60	---	1.0-5.0	4.5-6.0
Di:				
Dillard	0-6	5.0-15	---	5.1-6.0
	6-42	---	8.0-12	4.5-5.5
	42-60	---	---	---

Table 16.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	In	meq/100 g	meq/100 g	pH
DjF:				
Ditney	0-1	---	---	---
	1-8	---	---	3.6-5.5
	8-24	---	---	3.6-5.5
	24-40	---	---	---
Unicoi	0-2	---	---	---
	2-7	---	---	3.6-5.5
	7-15	---	---	3.6-5.5
	15-25	---	---	---
DtE, DtF, DtG:				
Ditney	0-1	---	---	---
	1-8	---	---	3.6-5.5
	8-24	---	---	3.6-5.5
	24-40	---	---	---
Du:				
Dunning	0-12	---	---	5.6-7.8
	12-60	---	---	5.6-7.8
EdE, EdF:				
Edneyville	0-8	---	2.0-12	4.5-6.0
	8-28	---	2.0-6.0	4.5-6.0
	28-62	---	1.0-4.0	4.5-6.0
EvE:				
Edneyville	0-8	---	2.0-12	4.5-6.0
	8-28	---	2.0-6.0	4.5-6.0
	28-62	---	1.0-4.0	4.5-6.0
Chestnut	0-8	---	2.0-8.0	3.5-6.0
	8-29	---	1.0-5.0	3.5-6.0
	29-60	---	---	---
GrE, GrF, GrG:				
Greenlee	0-6	---	3.0-10	3.5-6.0
	6-47	---	1.0-6.0	3.5-6.0
	47-65	---	0.0-4.0	3.5-6.0
Ht, Hu:				
Hatboro	0-10	15-25	---	4.5-7.3
	10-32	15-25	---	4.5-7.3
	32-60	15-25	---	5.6-6.5
JeD, JeE:				
Jeffrey	0-4	---	---	---
	4-13	---	---	4.5-5.5
	13-29	---	---	4.5-5.5
	29-40	---	---	---
KeC, KeD, KeE, KeF:				
Keener	0-7	---	---	3.6-6.0
	7-45	---	---	3.6-6.0
	45-63	---	---	3.6-6.0

Table 16.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	In	meq/100 g	meq/100 g	pH
LoD, LoE:				
Lonon	0-6	---	2.0-6.0	3.5-6.0
	6-65	---	3.0-8.0	3.5-6.0
MaE, MaF:				
Maymead	0-2	---	---	---
	2-8	---	---	4.5-5.5
	8-63	---	---	4.5-5.5
NcF, NcG:				
Northcove	0-1	---	---	---
	1-5	---	1.0-6.0	3.5-6.0
	5-24	---	1.0-5.0	3.5-6.0
	24-63	---	0.0-4.0	3.5-6.0
PgE, PgF:				
Pigeonroost	0-5	---	---	3.6-6.0
	5-24	---	2.0-8.0	3.6-6.0
	24-37	---	1.0-5.0	3.6-6.0
	37-45	---	---	---
PnF:				
Pineola	0-15	---	4.0-12	4.5-6.0
	15-26	---	2.0-8.0	3.5-6.0
	26-29	---	1.0-5.0	3.5-6.0
	29-45	---	---	---
PoE:				
Porters	0-11	5.0-13	---	4.5-6.5
	11-42	2.0-4.0	---	4.5-6.5
	42-46	---	---	---
PsF:				
Porters	0-11	5.0-12	---	4.5-6.5
	11-42	2.0-4.0	---	4.5-6.5
	42-46	---	---	---
SaC:				
Saunook	0-8	---	4.0-14	3.5-6.0
	8-60	4.0-9.0	---	4.5-6.5
ScC, ScD, ScE, ScF:				
Shelocta	0-2	---	---	---
	2-12	---	5.0-16	4.5-5.5
	12-47	---	3.0-15	4.5-5.5
	47-65	---	5.0-20	4.5-5.5
SoE, SoF, SoG:				
Soco	0-1	---	---	---
	1-4	---	2.0-8.0	3.5-5.5
	4-30	---	1.0-5.0	3.5-5.5
	30-45	---	---	---
SrB:				
Statler	0-10	---	---	5.1-7.3
	10-27	---	---	5.1-6.0
	27-60	---	---	5.1-6.0

Table 16.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	In	meq/100 g	meq/100 g	pH
SyF:				
Sylco------------------	0-4	---	---	3.6-5.5
	4-22	---	---	3.6-5.5
	22-27	---	---	3.6-5.5
	27-31	---	---	---
Sylvatus---------------	0-2	---	5.0-15	3.6-5.0
	2-11	---	4.0-12	3.6-5.0
	11-16	---	4.0-10	3.6-5.0
	16-20	---	---	---
TsD:				
Tusquitee--------------	0-10	4.0-12	---	4.5-6.5
	10-56	---	2.0-5.0	4.5-6.0
	56-60	---	1.0-5.0	4.5-6.0
UcG:				
Unicoi-----------------	0-2	---	---	---
	2-7	---	---	3.6-5.5
	7-15	---	---	3.6-5.5
	15-25	---	---	---
Rock outcrop-----------	0-60	---	---	---
W.				
Water				

Table 17.—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: Kind	Restrictive layer: Depth to top	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In			
AcF:					
Ashe	Bedrock (lithic)	20-40	Moderate	Low	High
Cleveland	Bedrock (lithic)	10-20	Moderate	Low	High
Rock outcrop	Bedrock (lithic)	0-0	None	---	---
AsE, AsF:					
Ashe	Bedrock (lithic)	20-40	Moderate	Low	High
BeC, BeD, BeE:					
Bledsoe	---	---	None	Moderate	Moderate
BsE, BsF:					
Brookshire	---	---	None	Low	Moderate
BtD, BtE, BtF:					
Burton	Bedrock (lithic)	20-40	Moderate	High	High
BuF:					
Burton	Bedrock (lithic)	20-40	Moderate	High	High
Craggey	Bedrock (lithic)	10-20	Moderate	High	High
Rock outcrop	Bedrock (lithic)	0-0	None	---	---
BwD:					
Burton	Bedrock (lithic)	20-40	Moderate	High	High
Wayah	---	---	Moderate	Low	High
CaD, CaE, CaF:					
Calvin	Bedrock (paralithic)	20-40	Moderate	Low	Moderate
CbrG:					
Caneyville	Bedrock (lithic)	20-40	Moderate	High	Moderate
Rock outcrop	Bedrock (lithic)	0-0	None	---	---
CcE, CcF, CcG:					
Cataska	Bedrock (paralithic)	10-20	Moderate	Low	Moderate
Cg:					
Chagrin	---	---	Moderate	Low	Moderate
ChE, ChF:					
Chestnut	Bedrock (paralithic)	20-40	Moderate	Low	High

Table 17.—Soil Features—Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In			
ChG:					
Chestnut	Bedrock (paralithic)	20-40	Moderate	Low	High
Ashe	Bedrock (lithic)	20-40	Moderate	Low	High
CjD, CjE:					
Chestnut	Bedrock (paralithic)	20-40	Moderate	Low	High
Edneyville	---	---	Moderate	Low	High
Cs:					
Craigsville	---	---	Moderate	Moderate	Moderate
CuD:					
Cullasaja	---	---	Moderate	High	High
Di:					
Dillard	---	---	Moderate	Moderate	High
DjF:					
Ditney	Bedrock (lithic)	20-40	Moderate	Low	Moderate
Unicoi	Bedrock (lithic)	7-20	Moderate	Low	Moderate
DtE, DtF, DtG:					
Ditney	Bedrock (lithic)	20-40	Moderate	Low	Moderate
Du:					
Dunning	---	---	None	High	Moderate
EdE, EdF:					
Edneyville	---	---	Moderate	Low	High
EvE:					
Edneyville	---	---	Moderate	Low	High
Chestnut	Bedrock (paralithic)	20-40	Moderate	Low	High
GrE, GrF, GrG:					
Greenlee	---	---	Low	Low	High
Ht, Hu:					
Hatboro	---	---	High	High	Moderate
JeD, JeE:					
Jeffrey	Bedrock (lithic)	20-40	None	Low	Moderate
KeC, KeD, KeE, KeF:					
Keener	---	---	None	Moderate	Moderate
LoD, LoE:					
Lonon	---	---	Moderate	Low	High
MaE, MaF:					
Maymead	---	---	Moderate	Low	Moderate

Table 17.—Soil Features—Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In			
NcF, NcG:					
Northcove	---	---	Low	Low	High
PgE:					
Pigeonroost	Bedrock (paralithic)	---	Low	Low	Moderate
PgF:					
Pigeonroost	Bedrock (paralithic)	---	---	Low	Moderate
PnF:					
Pineola	Bedrock (paralithic)	---	Moderate	Low	High
PoE, PsF:					
Porters	Bedrock (lithic)	40-60	Moderate	Low	High
SaC:					
Saunook	---	---	Moderate	Low	High
ScC, ScD, ScE, ScF:					
Shelocta	---	---	None	Low	High
SoE, SoF, SoG:					
Soco	Bedrock (paralithic)	20-40	Moderate	Moderate	High
SrB:					
Statler	---	---	Moderate	Low	Moderate
SyF:					
Sylco	Bedrock (lithic)	20-40	Moderate	Low	Moderate
Sylvatus	Bedrock (lithic)	10-20	Moderate	Moderate	Moderate
TsD:					
Tusquitee	---	---	Moderate	Moderate	Moderate
UcG:					
Unicoi	Bedrock (lithic)	7-20	Moderate	Low	Moderate
Rock outcrop	Bedrock (lithic)	0-0	None	---	---
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 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	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
AcF:						
Ashe	B					
		Jan-Dec	---	---	---	None
Cleveland	C					
		Jan-Dec	---	---	---	None
Rock outcrop	D					
		Jan-Dec	---	---	---	None
AsE, AsF:						
Ashe	B					
		Jan-Dec	---	---	---	None
BeC, BeD, BeE:						
Bledsoe	C					
		Jan-Dec	---	---	---	None
BsE, BsF:						
Brookshire	C					
		Jan-Dec	---	---	---	None
BtD, BtE, BtF:						
Burton	B					
		Jan-Dec	---	---	---	None
BuF:						
Burton	B					
		Jan-Dec	---	---	---	None
Craggey	D					
		Jan-Dec	---	---	---	None
Rock outcrop	D					
		Jan-Dec	---	---	---	None
BwD:						
Burton	B					
		Jan-Dec	---	---	---	None
Wayah	B					
		Jan-Dec	---	---	---	None
CaD, CaE, CaF:						
Calvin	C					
		Jan-Dec	---	---	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
CbrG:						
Caneyville	C					
		Jan-Dec	---	---	---	None
Rock outcrop	D					
		Jan-Dec	---	---	---	None
CcE, CcF, CcG:						
Cataska	D					
		Jan-Dec	---	---	---	None
Cg:						
Chagrin	B					
		January	---	---	Brief	Rare
		February	4.0-6.0	>6.0	Brief	Rare
		March	4.0-6.0	>6.0	Brief	Rare
		April	---	---	Brief	Rare
		December	---	---	---	Rare
ChE, ChF:						
Chestnut	B					
		Jan-Dec	---	---	---	None
ChG:						
Chestnut	B					
		Jan-Dec	---	---	---	None
Ashe	B					
		Jan-Dec	---	---	---	None
CjD, CjE:						
Chestnut	B					
		Jan-Dec	---	---	---	None
Edneyville	B					
		Jan-Dec	---	---	---	None
Cs:						
Craigsville	B					
		January	---	---	Very brief	Frequent
		February	---	---	Very brief	Frequent
		March	---	---	Very brief	Frequent
		April	---	---	Very brief	Frequent
		May	---	---	Very brief	Frequent
		November	---	---	Very brief	Frequent
		December	---	---	Very brief	Frequent
CuD:						
Cullasaja	B					
		Jan-Dec	---	---	---	None
Di:						
Dillard	C					
		January	2.0-3.0	>6.0	Very brief	Rare
		February	2.0-3.0	>6.0	Very brief	Rare
		March	2.0-3.0	>6.0	Very brief	Rare
		April	2.0-3.0	>6.0	Very brief	Rare
		December	2.0-3.0	>6.0	Very brief	Rare

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
DjF:						
Ditney	C					
		Jan-Dec	---	---	---	None
Unicoi	C					
		Jan-Dec	---	---	---	None
DtE, DtF, DtG:						
Ditney	C					
		Jan-Dec	---	---	---	None
Du:						
Dunning	D					
		January	0.0-0.5	>6.0	Brief	Occasional
		February	0.0-0.5	>6.0	Brief	Occasional
		March	0.0-0.5	>6.0	Brief	Occasional
		April	0.0-0.5	>6.0	Brief	Occasional
		May	---	---	Brief	Occasional
		December	---	---	Brief	Occasional
EdE, EdF:						
Edneyville	B					
		Jan-Dec	---	---	---	None
EvE:						
Edneyville	B					
		Jan-Dec	---	---	---	None
Chestnut	B					
		Jan-Dec	---	---	---	None
GrE, GrF, GrG:						
Greenlee	B					
		Jan-Dec	---	---	---	None
Ht:						
Hatboro	D					
		January	0.0-0.5	>6.0	Very brief	Occasional
		February	0.0-0.5	>6.0	Very brief	Occasional
		March	0.0-0.5	>6.0	Very brief	Occasional
		April	0.0-0.5	>6.0	Very brief	Occasional
		May	0.0-0.5	>6.0	Very brief	Occasional
		October	0.0-0.5	>6.0	---	None
		November	0.0-0.5	>6.0	Very brief	Occasional
		December	0.0-0.5	>6.0	Very brief	Occasional
Hu:						
Hatboro	D					
		January	0.0-0.5	>6.0	Very brief	Frequent
		February	0.0-0.5	>6.0	Very brief	Frequent
		March	0.0-0.5	>6.0	Very brief	Frequent
		April	0.0-0.5	>6.0	Very brief	Frequent
		May	0.0-0.5	>6.0	Very brief	Frequent
		October	0.0-0.5	>6.0	---	None
		November	0.0-0.5	>6.0	Very brief	Frequent
		December	0.0-0.5	>6.0	Very brief	Frequent

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
JeD, JeE:						
Jeffrey	B					
		Jan-Dec	---	---	---	None
KeC, KeD, KeE, KeF:						
Keener	B					
		Jan-Dec	---	---	---	None
LoD, LoE:						
Lonon	B					
		Jan-Dec	---	---	---	None
MaE, MaF:						
Maymead	B					
		Jan-Dec	---	---	---	None
NcF, NcG:						
Northcove	B					
		Jan-Dec	---	---	---	None
PgE, PgF:						
Pigeonroost	C					
		Jan-Dec	---	---	---	None
PnF:						
Pineola	B					
		Jan-Dec	---	---	---	None
PoE, PsF:						
Porters	B					
		Jan-Dec	---	---	---	None
SaC:						
Saunook	B					
		Jan-Dec	---	---	---	None
ScC, ScD, ScE, ScF:						
Shelocta	B					
		Jan-Dec	---	---	---	None
SoE, SoF, SoG:						
Soco	B					
		Jan-Dec	---	---	---	None
SrB:						
Statler	B					
		Jan-Dec	---	---	---	None
SyF:						
Sylco	C					
		Jan-Dec	---	---	---	None
Sylvatus	D					
		Jan-Dec	---	---	---	None

Table 18.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
TsD:						
Tusquitee	B					
		Jan-Dec	---	---	---	None
UcG:						
Unicoi	C					
		Jan-Dec	---	---	---	None
Rock outcrop	D					
		Jan-Dec	---	---	---	None
W.						
Water						

Table 19.—Classification of the Soils

Soil name	Family or higher taxonomic class
Ashe	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Bledsoe	Fine, mixed, mesic Typic Hapludalfs
Brookshire	Coarse-loamy, mixed, mesic Umbric Dystrochrepts
Burton	Coarse-loamy, mixed, frigid Typic Haplumbrepts
Calvin	Loamy-skeletal, mixed, mesic Typic Dystrochrepts
Caneyville	Fine, mixed, mesic Typic Hapludalfs
Cataska	Loamy-skeletal, mixed, mesic, shallow Typic Dystrochrepts
Chagrin	Fine-loamy, mixed, mesic Dystric Fluventic Eutrochrepts
Chestnut	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Cleveland	Loamy, mixed, mesic Lithic Dystrochrepts
Craggey	Loamy, mixed, frigid Lithic Haplumbrepts
Craigsville	Loamy-skeletal, mixed, mesic Fluventic Dystrochrepts
Cullasaja	Loamy-skeletal, mixed, mesic Typic Haplumbrepts
Dillard	Fine-loamy, mixed, mesic Aquic Hapludults
Ditney	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Dunning	Fine, mixed, mesic Fluvaquentic Endoaquolls
Edneyville	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Greenlee	Loamy-skeletal, mixed, mesic Typic Dystrochrepts
Hatboro	Fine-loamy, mixed, nonacid, mesic Typic Fluvaquents
Jeffrey	Coarse-loamy, mixed, mesic Umbric Dystrochrepts
Keener	Fine-loamy, siliceous, mesic Typic Hapludults
Lonon	Fine-loamy, mixed, mesic Typic Hapludults
Maymead	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Northcove	Loamy-skeletal, mixed, mesic Typic Dystrochrepts
Pigeonroost	Fine-loamy, active, mesic Typic Hapludults
Pineola	Fine-loamy, mixed, active, mesic Humic Hapludults
Porters	Coarse-loamy, mixed, mesic Umbric Dystrochrepts
Saunook	Fine-loamy, mixed, mesic Humic Hapludults
Shelocta	Fine-loamy, mixed, mesic Typic Hapludults
Soco	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Statler	Fine-loamy, mixed, mesic Humic Hapludults
Sylco	Loamy-skeletal, mixed, mesic Typic Dystrochrepts
Sylvatus	Loamy-skeletal, mixed, mesic Lithic Dystrochrepts
Tusquitee	Coarse-loamy, mixed, mesic Umbric Dystrochrepts
Unicoi	Loamy-skeletal, mixed, mesic Lithic Dystrochrepts
Wayah	Coarse-loamy, mixed, frigid Typic Haplumbrepts