United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with Virginia Polytechnic Institute and State University and Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation

# Soil Survey of Buchanan County, Virginia

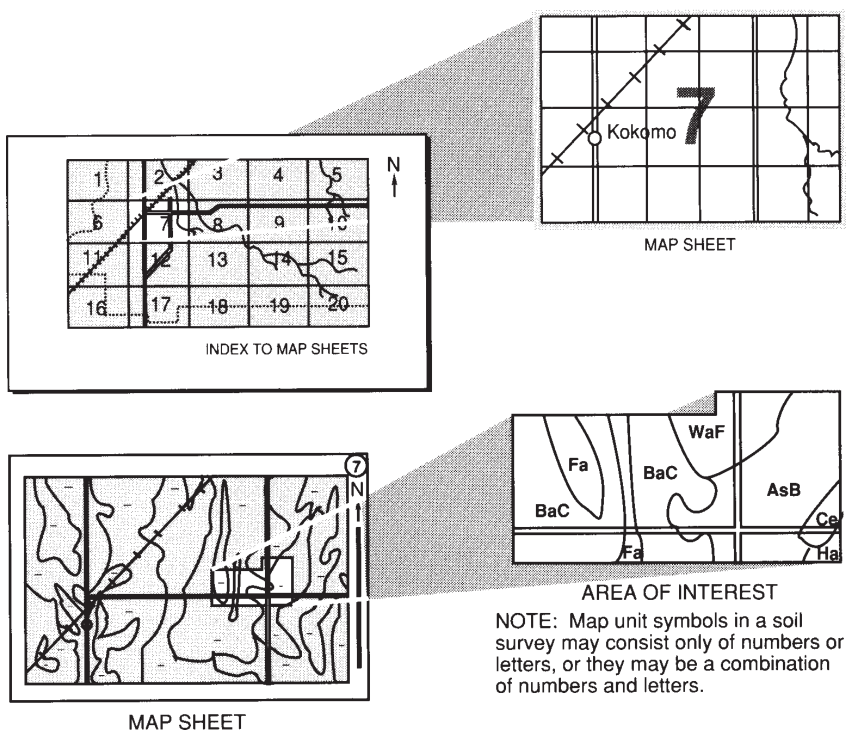
# How To Use This Soil Survey

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

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

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Go 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.



## National Cooperative Soil Survey

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

Major fieldwork for this soil survey was completed in 2005. Soil names and descriptions were approved in 2006. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2005. The most current official data are available at http://websoilsurvey.nrcs.usda.gov/app/.

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

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## Cover Caption

An area of Dumps, mine-Urban land complex, is in the foreground. An area of Sewell-Kaymine-Rock outcrop complex, 0 to 80 percent slopes, extremely stony, is in the background.

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

# Contents

Issued 2009

# Foreword

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

Soil surveys are designed for many different users. Farmers, foresters, and agronomists can use the surveys to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the surveys to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the 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 too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

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

John A. Bricker
State Conservationist
Natural Resources Conservation Service

# Soil Survey of
# Buchanan County, Virginia

By David F. Wagner, Natural Resources Conservation Service

Fieldwork by David F. Wagner, Lori Hillman, and Erik Severson, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
Virginia Polytechnic Institute and State University and Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation

Buchanan County is in the southwestern part of Virginia (fig. 1). The county has a total area of 322,300 acres, or 504 square miles. Grundy is the county seat and is located in the center of the county. In 2000, the total population of the county was 26,978 *(19)*.

The topography of Buchanan County consists of steep, rugged mountains that have long, sharp ridges and are separated by deep coves and narrow valleys. The soils in the county formed in material weathered primarily from interbedded shale, siltstone, and sandstone. Most of the soils, with the exception of those on the steeper ridges and in rocky areas, are suited to woodland. Woodland makes up the vast majority of the land area in the county and is mainly on the tops of ridges and on mountainsides.

The major industry in the county is coal mining and the production of mining equipment and supplies. More than 40 percent of the work force employed within county is employed in mining or an activity related to the mine industry. The majority of non-mine-related employees work in wholesale and retail trade, governmment, construction, transportation and communications, manufacturing, finance, and service-related businesses *(9)*.

## General Nature of the Survey Area

This section provides general information about Buchanan County. It describes history and development; farming; transportation; recreational facilities; physiography, relief, and drainage; and climate.

### History and Development

Buchanan County was formed from parts of Tazewell and Russell Counties on February 13, 1858, by an act of the General Assembly of the Commonwealth of Virginia. It was named in honor of President James Buchanan *(9)*.

Although Native Americans were the earliest inhabitants of the survey area, they generally did not establish permanent settlements. French explorers were probably the first Europeans to settle in the survey area.

The earliest permanent settlement was Stiltner, at the present location of Grundy.

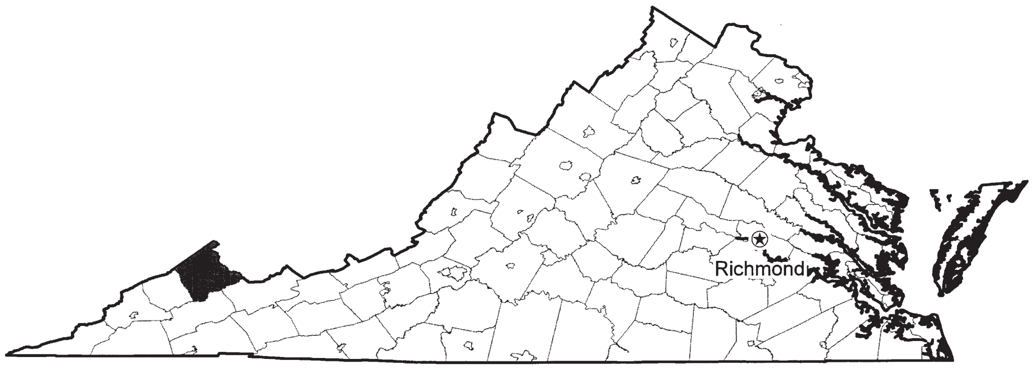


**Figure 1.—Location of Buchanan County in Virginia.**

During the American Civil War, no major confrontations took place in the survey area, although both Union and Confederate troops passed through the area. Following the war and a period of military governing, the community of Stiltner was renamed Grundy, in honor of O.S. Senator Felix Grundy of Tennessee, and was established as the county seat. The town of Grundy was incorporated in 1876. Shortly thereafter, in 1880, the southern part of Buchanan County became part of Dickenson County, leaving Buchanan County with its present-day boundaries.

Commercial logging, the first major industry in the county, began in the 1880's. It provided jobs and steady income to the local economy. Virgin timber was cut and floated down Levisa Fork to markets at Catlettsburg, Kentucky. The lumber industry flourished, and small operations gradually were replaced by larger companies. The Yellow Poplar Lumber Company began operations in 1899. In 1900, the W.M. Ritter Lumber Company was responsible for the county's first railroad—the Big Sandy and Cumberland Railroad. A passenger line was added in 1907, and tracks were completed to Grundy in 1916. The Norfolk and Southern Railway purchased the Big Sandy and Cumberland Railroad in 1924 and continues to operate rail lines in Buchanan County today.

As marketable timber and logging operations dwindled in the 1920's, commercial coal mining increased in importance. The W.M. Ritter Lumber Company ceased operations in 1931. Coal had been used for many years to heat homes and to power the steam engines of logging and lumber companies. Large-scale commercial coal production, however, did not occur until 1931, when the Norfolk and Southern Railway installed standard gauge tracks in Buchanan County. Following this development, the first commercial coal operation in the county was the Home Creek Smokeless Coal Company. As more coal companies were established, the population of Buchanan County nearly doubled in a decade, increasing from 16,740 in 1930 to 32,617 in 1940.

Buchanan County's first coal mines were drift mines. These mines required the least amount of capital and technology to operate. Mine openings, or portals, were located at the coal seam outcrop on a hillside, and mining operations progressed horizontally through the coal seam. These mines were labor-intensive; most of the mining work was done by hand and by coal transport in the mine by mule. Truck mines supplanted drift mines in the 1940's and 1950's. These mines were an early form of contour strip mining in which coal outcrops were mined. Because of the limited size of equipment and the lack of capital of the small operation truck-mine companies, this type of operation generally did not remove large amounts of rock overburden above the coal seams. In 1954, truck-mine operations accounted for 65 percent of the coal produced in Buchanan County. In the 1960's, the Island Creek Coal Company operated the county's first shaft mine. Numerous shaft mines have operated since that time. In this type of mining operation, vertical shafts are sunk and can access one or more coal seams. Shaft mines can extend well below stream level and do not rely on coal outcrops on hillsides.

Buchanan County is the leading coal-producing county in Virginia. Of the 42 million tons produced in Virginia in 1981, 45 percent was produced in Buchanan County. The bulk of the production was in undergound mines *(9)*.

## Farming

The most economically important agricultural enterprise in Buchanan County is timber production. Tobacco farming is scattered throughout the county in small plots, especially in the southern part of the county. Beef cattle farming is carried out to a lesser degree. The steep mountainsides and hillsides throughout the county are too steep and stony for the use of conventional farm machinery. The most level areas of the county are restricted to narrow flood plains and terraces along the drainageways. These areas are commonly too small for major farming enterprises. Many of these areas have been utilized for housing, road construction, and industrial development.

## Transportation

The main highway in Buchanan County is U.S. Highway 460, which extends southeast to northwest and into Kentucky. Other important highways are Highway VA-83, which extends southwest to northeast and into West Virginia, and Highway VA-80, which crosses through the southern and extreme western parts of the county.

## Recreational Facilities

Recreational facilities are available at three Buchanan County parks that are located at Council, Poplar Gap (about 3 miles southwest of Grundy), and Enoch Branch (about 3 miles northeast of Grundy). In neighboring Dickenson County, the John W. Flannagan Reservoir and the Breaks Interstate Park offer a variety of recreational opportunities.

## Physiography, Relief, and Drainage

Buchanan County lies mostly in the Cumberland Plateau and Mountains Major Land Resource Area, in the Appalachian Plateau physiographic province. A very small portion of the county along the Russell County border is in the Southern Appalachian Ridges and Valleys Major Land Resource Area.

The Cumberland Plateau and Mountains area is composed of steep-sided ridges and narrow valleys and hollows. The steep hillsides and ridgetops are generally rugged and rocky. These landscapes formed from the weathering and erosion of an ancient plateau of Lower and Middle Pennsylvanian age consisting of primarily sandstone, siltstone, and shale. Large areas of Buchanan County have been strip-mined for coal. The Appalachian Ridges and Valleys area is underlain by Silurian and Ordivician geologies and has rugged and steep topography.

The highest elevation in the county is 3,706 feet, on Big A Mountain in the extreme southern part of the county. The lowest elevation is 845 feet, on the Levisa Fork at the Kentucky State line in the western part of the county.

Buchanan County drains into the Big Sandy River through its three main branches. Most of the county is drained by Levisa Fork and its tributaries. Levisa Fork starts in southeastern Buchanan County at the foothills of Sandy Ridge near the Russell and Tazewell County lines. This river flows in a northwesterly direction into Kentucky. The southern part of the county is drained by Russell Fork, which enters Levisa Fork in

Kentucky to the west. A small area in the northern part of the county is drained by Tug Fork. Tug and Levisa Forks form the Big Sandy River at Fort Gay, West Virginia, to the northwest.

### Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Grundy, Virginia, in the period 1961 to 1990. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on the length of the growing season.

In winter, the average temperature is 36.3 degrees F and the average daily minimum temperature is 24.6 degrees. The lowest temperature on record, which occurred at Grundy on January 21, 1985, was -14 degrees. In summer, the average temperature is 73.5 degrees and the average daily maximum temperature is 85.7 degrees. The highest temperature, which occurred at Grundy on July 17, 1988, was 101 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 43.78 inches. Of this, 27.31 inches, or about 62 percent, usually falls in April through October. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 4.14 inches, recorded at Grundy on April 4, 1987. Thunderstorms occur on about 43 days each year, and most occur between May and August.

The average seasonal snowfall is 19.9 inches. The greatest snow depth at any one time during the period of record was 20 inches, recorded on April 5, 1987. On an average, 12 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 15.0 inches, recorded on November 25, 1970.

The average relative humidity in mid-afternoon is about 57 percent. Humidity is higher at night, and the average at dawn is about 86 percent. The sun shines 64 percent of the time possible in summer and 42 percent in winter. The prevailing wind is from the west-southwest. Average windspeed is highest, between 6 and 8 miles per hour, between January and April.

## How This Survey Was Made

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

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed.

Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

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

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

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

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

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

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those soils in 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.

# Detailed Soil Map Units

The map units delineated on the detailed soil 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.

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

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

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

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

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

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Kaymine very channery silt loam, 15 to 35 percent slopes, extremely stony, is a phase of the Kaymine series.

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

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. Kaymine-Cedarcreek complex, 35 to 55 percent slopes, extremely stony, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Cedarcreek, Fiveblock, and Kaymine soils, 55 to 80 percent slopes, extremely stony, is an undifferentiated group in this survey area.

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

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

## 1D—Calvin loam, 15 to 35 percent slopes

### Setting

*Major land resource area:* Southern Appalachian Ridges and Valleys (MLRA 128)
*Landform:* Ridges and spurs of hills and mountains
*Position on the landform:* Summits and shoulders
*Size of areas:* 5 to 25 acres

### Map Unit Composition

Calvin and similar soils: Typically 85 percent, ranging from about 75 to 90 percent

### Typical Profile

*Organic layer:*
0 to 1 inch—moderately decomposed plant material

*Surface layer:*
1 to 4 inches—reddish brown loam

*Subsurface layer:*
4 to 9 inches—reddish brown loam

*Subsoil:*
9 to 16 inches—reddish brown channery loam
16 to 25 inches—reddish brown very channery loam

*Substratum:*
25 to 30 inches—reddish brown very channery loam

*Hard bedrock:*
30 inches—siltstone bedrock

### Minor Components

*Similar components:*
- Soils that weathered from shale and are shallow to bedrock; on landforms similar to those of the Calvin soil
- Soils that have more sand than the Calvin soil; on similar landforms

*Dissimilar components:*
- Lily soils, which weathered from sandstone and have more clay and fewer rock fragments than the Calvin soil; on similar landforms
- Soils that weathered from shale and are very shallow to bedrock; on landforms similar to those of the Calvin soil
- Soils that are deep to bedrock, have more clay than the Calvin soil, and have a thicker solum; on similar landforms
- Soils that are very deep to bedrock; on landforms similar to those of the Calvin soil

### Soil Properties and Qualities

*Available water capacity:* Low (about 3.8 inches)
*Slowest saturated hydraulic conductivity:* High (about 1.98 in/hr)
*Depth class:* Moderately deep (20 to 40 inches)
*Depth to root-restrictive feature:* 20 to 40 inches to bedrock (lithic)
*Drainage class:* Well drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* High
*Surface fragments:* None
*Parent material:* Residuum weathered from shale and siltstone

### Use and Management Considerations

#### Cropland

- This soil is unsuited to cropland.

#### Pastureland

*Suitability:* Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.
- The limited available water capacity may cause plants to suffer from moisture stress during the drier summer months.
- The bedrock may restrict the rooting depth of plants.

#### Woodland

*Suitability:* Moderately suited to northern red oak and chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.

- Because of the slope, the use of mechanical planting equipment is impractical.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

**Building sites**

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

**Septic tank absorption fields**

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

**Local roads and streets**

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* 6e
*Virginia soil management group:* JJ
*Hydric soil:* No

## 2F—Calvin-Rough complex, 35 to 80 percent slopes, very rocky

### Setting

*Major land resource area:* Southern Appalachian Ridges and Valleys (MLRA 128)
*Landform:* Ridges and spurs of hills and mountains
*Position on the landform:* Backslopes
*Size of areas:* 5 to 25 acres

### Map Unit Composition

*Note: These Calvin and Rough soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

Calvin and similar soils: Typically 70 percent, ranging from about 65 to 75 percent
Rough and similar soils: Typically 20 percent, ranging from about 15 to 25 percent

### Typical Profile

**Calvin**

*Organic layer:*
0 to 1 inch—moderately decomposed plant material

*Surface layer:*
1 to 4 inches—reddish brown loam

*Subsurface layer:*
4 to 9 inches—reddish brown loam

*Subsoil:*
9 to 16 inches—reddish brown channery loam
16 to 25 inches—reddish brown very channery loam

*Substratum:*
25 to 30 inches—reddish brown very channery loam

*Hard bedrock:*
30 inches—siltstone bedrock

**Rough**

*Organic layer:*
0 to 1 inch—moderately decomposed plant material

*Surface layer:*
1 to 2 inches—dark brown channery loam

*Subsoil:*
2 to 8 inches—dark reddish brown very channery loam

*Substratum:*
8 to 10 inches—dark reddish brown extremely channery loam

*Hard bedrock:*
10 inches—shale bedrock

### Minor Components

*Similar components:*
- Soils that formed in shale and are shallow to bedrock
- Soils that have more sand than the Calvin soil
- Soils that formed in shale and are yellower than the Calvin soil

*Dissimilar components:*
- Lily soils, which formed in sandstone, have more clay and fewer rock fragments than the Calvin soil, and have harder bedrock
- Soils that are deep or very deep to bedrock, have more clay than the Calvin soil, and have a thicker solum

### Soil Properties and Qualities

*Available water capacity:* Calvin—low (about 3.8 inches); Rough—very low (about 0.8 inch)
*Slowest saturated hydraulic conductivity:* High (about 1.98 in/hr)
*Depth class:* Calvin—moderately deep (20 to 40 inches); Rough—very shallow (less than 10 inches)
*Depth to root-restrictive feature:* Calvin—20 to 40 inches to bedrock (lithic); Rough—4 to 10 inches to bedrock (lithic)
*Drainage class:* Calvin—well drained; Rough—somewhat excessively drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* Calvin—high; Rough—very high
*Surface fragments:* About 0.10 to 3.00 percent subangular stones
*Parent material:* Residuum weathered from shale and siltstone

### Use and Management Considerations

**Cropland**

- These soils are unsuited to cropland.

**Pastureland**

- These soils are unsuited to pastureland.

**Woodland**

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

**Building sites**

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- Because of rock outcrops, rock removal may be needed.

**Septic tank absorption fields**

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing of the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

**Local roads and streets**

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

### Interpretive Groups

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

## 3F—Cedarcreek, Fiveblock, and Kaymine soils, 55 to 80 percent slopes, extremely stony

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Ridges and spurs of mountains that have been surface mined for coal

*Position on the landform:* Backslopes and footslopes and some areas on shoulders
*Elevation:* 984 to 2,460 feet
*Size of areas:* 15 to 500 acres
*Note:* Areas of this map unit have been surface mined for coal. This unit consists of Cedarcreek, Fiveblock, and/or Kaymine soils. The soils are not consistently associated geographically and, therefore, do not always occur together in the same map delineation.

### Map Unit Composition

*Note: Individual areas of this map unit are made up of Cedarcreek soils, Fiveblock soils, or Kaymine soils, or any combination of these soils. These soils were mapped together because there are no major differences in their use and management.*

Cedarcreek and similar soils: Typically 35 percent, ranging from about 10 to 90 percent
Fiveblock and similar soils: Typically 30 percent, ranging from about 0 to 70 percent
Kaymine and similar soils: Typically 25 percent, ranging from about 0 to 80 percent

### Typical Profile

**Cedarcreek**

*Surface layer:*
0 to 3 inches—very dark gray very channery loam

*Substratum:*
3 to 15 inches—olive brown very channery loam; common yellow, common brown, and common gray mottles
15 to 65 inches—dark olive gray extremely channery loam; common brown, yellow, and gray mottles

**Fiveblock**

*Surface layer:*
0 to 6 inches—brown very channery sandy loam

*Substratum:*
6 to 25 inches—brown very channery sandy loam; common brown and common yellow mottles
25 to 65 inches—dark grayish brown extremely channery sandy loam; common yellow and common brown mottles

**Kaymine**

*Surface layer:*
0 to 4 inches—dark grayish brown very channery silt loam

*Substratum:*
4 to 28 inches—dark brown extremely channery silt loam; common dark grayish brown and common yellowish brown mottles
28 to 64 inches—dark brown very flaggy silt loam; common dark grayish brown and common yellowish brown mottles

### Minor Components

*Similar components:*
- Sewell soils, which formed in mine spoil derived mainly from sandstone, are more acidic than the Fiveblock soil, and have more sand than the Kaymine and Cedarcreek soils; on similar landforms

### Soil Properties and Qualities

*Available water capacity:* Cedarcreek—low (about 3.5 inches); Fiveblock—very low (about 2.9 inches); Kaymine—moderate (about 6.8 inches)
*Slowest saturated hydraulic conductivity:* Cedarcreek and Kaymine—moderately high (about 0.57 in/hr); Fiveblock—high (about 1.98 in/hr)
*Depth class:* Very deep (more than 60 inches)
*Depth to root-restrictive feature:* More than 60 inches
*Drainage class:* Cedarcreek and Kaymine—well drained; Fiveblock—somewhat excessively drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* Cedarcreek and Kaymine—high; Fiveblock—medium
*Surface fragments:* About 2.50 to 9.00 percent subangular stones and about 0.50 to 1.00 percent subangular boulders
*Parent material:* Cedarcreek and Kaymine—mine spoil or earthy fill derived from shale, siltstone, sandstone, and coal; Fiveblock—mine spoil or earthy fill derived from sandstone and small amounts of siltstone, shale, and coal
*Distinctive feature:* Areas of this map unit are subject to differential settling

### Use and Management Considerations

#### Cropland

- These soils are unsuited to cropland.

#### Pastureland

- These soils are unsuited to pastureland.

#### Woodland

*Suitability:* Well suited to northern red oak, yellow-poplar, and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The high content of stones or boulders on the surface may hinder the construction of haul roads and log landings.
- The amount of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.

#### Building sites

- Because of differential settling, these soils are not recommended for building site development.

#### Septic tank absorption fields

- Because of differential settling, these soils are not recommended for septic tank absorption fields.

#### Local roads and streets

- Differential settling of the soil may damage local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

### Interpretive Groups

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

## 4C—Cedarcreek-Sewell-Rock outcrop complex, 0 to 15 percent slopes, very stony

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Ridges and spurs of mountains that have been surface mined for coal
*Position on the landform:* Summits, shoulders, surface-mine benches, surface-mine outslopes; some areas are on footslopes and backslopes; rock outcrops are exposed highwalls
*Size of areas:* 10 to 300 acres
*Note:* Areas of this map unit have a single surface-mine bench, outslope, and highwall, which are on the contour. The bench is located between a surface-mine outslope and a surface-mine highwall (fig. 2). These areas have been surface-mined for coal.

### Map Unit Composition

*Note: These Cedarcreek and Sewell soils and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

Cedarcreek and similar soils: Typically 35 percent, ranging from about 30 to 40 percent
Sewell and similar soils: Typically 30 percent, ranging from about 25 to 35 percent
Rock outcrop: Typically 10 percent, ranging from about 5 to 15 percent

### Typical Profile

#### Cedarcreek

*Surface layer:*
0 to 3 inches—very dark gray very channery loam

*Substratum:*
3 to 15 inches—olive brown very channery loam; common yellow, common brown, and common gray mottles
15 to 65 inches—dark olive gray extremely channery loam; common brown, yellow, and gray mottles

**Figure 2.—A single surface-mine bench in an area of Cedarcreek-Sewell-Rock outcrop complex, 0 to 15 percent slopes, very stony, near Leemaster. These areas have an exposed highwall.**

### Sewell

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

*Substratum:*
4 to 9 inches—dark yellowish brown very channery sandy loam; common gray, common yellow, and common red mottles
9 to 65 inches—yellowish brown extremely channery sandy loam; common gray, common yellow, and common red mottles

### Rock outcrop

This part of the map unit consists of near-vertical highwalls, which are made up of interbedded layers of sandstone, shale, siltstone, and thin seams of unmined coal.

### Minor Components

*Similar components:*
- Soils that have less clay than the Sewell and Cedarcreek soils; on similar landforms

*Dissimilar components:*
- Fiveblock soils, which formed in mine spoil derived mainly from sandstone, are less acidic than the Sewell and Cedarcreek soils, and have more sand and less silt and less clay than the Cedarcreek soil; on similar landforms
- Kaymine soils, which formed in mine spoil derived from sandstone, siltstone, shale, and coal, are less acidic than the Sewell and Cedarcreek soils, and have more clay and silt and less sand than the Sewell soil; on similar landforms
- Soils that are formed in mine spoil and are somewhat poorly drained; in depressions on benches and near the base of highwalls

### Properties and Qualities of the Cedarcreek and Sewell Soils

*Available water capacity:* Cedarcreek—low (about 3.5 inches); Sewell—very low (about 2.7 inches)
*Slowest saturated hydraulic conductivity:* Cedarcreek—moderately high (about 0.57 in/hr); Sewell—high (about 1.98 in/hr)
*Depth class:* Very deep (more than 60 inches)
*Depth to root-restrictive feature:* More than 60 inches
*Drainage class:* Cedarcreek—well drained; Sewell—somewhat excessively drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* Cedarcreek—medium; Sewell—low
*Surface fragments:* Cedarcreek—about 0.10 to 3.00 percent subangular stones; Sewell—about 0.10 to 2.50 percent subangular stones and about 0.00 to 0.50 percent subangular boulders
*Parent material:* Cedarcreek—mine spoil or earthy fill derived from shale, siltstone, sandstone, and coal; Sewell—mine spoil or earthy fill derived from sandstone and small amounts of siltstone, shale, and coal

### Use and Management Considerations

#### Cropland

- This map unit is unsuited to cropland.

#### Pastureland

*Suitability:* Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Large stones on the surface may restrict the operation of some farm machinery.
- Rock outcrops may limit machinery operations.

#### Woodland

*Suitability:* Well suited to northern red oak, yellow-poplar, and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Because of the slope, operating conditions for log trucks are unsafe and the operating efficiency is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.

#### Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of rock outcrops, rock removal may be needed.

**Septic tank absorption fields**

- The slope limits the proper treatment of effluent from conventional septic systems.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

**Local roads and streets**

- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* Cedarcreek and Sewell—6s; Rock outcrop—8s
*Virginia soil management group:* Cedarcreek and Sewell—JJ; Rock outcrop—none assigned
*Hydric soils:* No

## 5F—Cloverlick-Shelocta complex, 55 to 80 percent slopes, very stony

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Ridges and spurs of mountains and hills and drainageways
*Position on the landform:* Backslopes and footslopes
*Elevation:* 872 to 3,592 feet
*Size of areas:* 5 to 500 acres
*Note:* These soils occur on slopes that face in a northward to eastward direction

### Map Unit Composition

*Note: These Cloverlick and Shelocta soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

Cloverlick and similar soils: Typically 45 percent, ranging from about 40 to 50 percent
Shelocta and similar soils: Typically 40 percent, ranging from about 35 to 45 percent

### Typical Profile

**Cloverlick**

*Organic layer:*
0 to 1 inch—moderately decomposed plant material

*Surface layer:*
1 to 7 inches—dark brown gravelly silt loam, brown dry

*Subsoil:*
7 to 10 inches—dark yellowish brown gravelly silt loam
10 to 15 inches—yellowish brown gravelly loam
15 to 44 inches—dark yellowish brown very gravelly loam
44 to 49 inches—dark yellowish brown very gravelly sandy loam; common yellowish brown mottles

*Substratum:*
49 to 63 inches—dark yellowish brown very gravelly sandy loam; light brownish gray iron depletions and yellowish brown masses of oxidized iron

**Shelocta**

*Organic layer:*
0 to 1 inch—slightly decomposed plant material

*Surface layer:*
1 to 4 inches—dark grayish brown gravelly loam

*Subsoil:*
4 to 13 inches—yellowish brown loam
13 to 30 inches—strong brown gravelly silt loam; common dark yellowish brown mottles
30 to 50 inches—strong brown gravelly loam; common yellowish red mottles
50 to 62 inches—strong brown very gravelly loam; common yellowish brown mottles

*Substratum:*
62 to 86 inches—yellowish brown extremely gravelly loam; pale brown iron depletions and strong brown masses of oxidized iron

### Minor Components

*Similar components:*
- Soils that formed in colluvium from sandstone, siltstone, and shale, have more rock fragments than the Shelocta soil, and have a dark surface horizon that is thicker than that of the Cloverlick soil; on similar landforms
- Soils that formed in colluvium from sandstone and have less clay than the Shelocta and Cloverlick soils; on similar lanforms
- Highsplint soils, which are colluvial soils that formed from sandstone, siltstone, and shale, contain more rock fragments than the Shelocta soil, and have a thinner, lighter-colored surface horizon than the Cloverlick soil; on west- and north-facing slopes
- Soils that formed in colluvium from sandstone, siltstone, and shale, have fewer rock fragments than the Cloverlick soil, and have a thick dark surface horizon; on similar landforms
- Soils that are colluvial material derived from sandstone, shale, and siltstone and have less clay in the argillic horizon than the Shelocta soil; on similar landforms

*Dissimilar components:*
- Berks soils, which formed in residuum from shale, siltstone, and fine-grained sandstone, are moderately deep to bedrock, and contain more rock fragments than the Shelocta soil; on similar landforms
- Gilpin soils, which are formed in residuum from shale, siltstone, and some sandstone, are moderately deep to bedrock, and contain fewer rock fragments than Highsplint soil; on similar landforms
- Marrowbone soils, which formed in residuum from sandstone and are moderately deep to bedrock; on landforms similar to those of the Cloverlick and Shelocta soils
- Soils that formed in colluvial material and are moderately deep to bedrock; on landforms similar to those of the Cloverlick and Shelocta soils

### Soil Properties and Qualities

*Available water capacity:* Cloverlick—low (about 5.9 inches); Shelocta—moderate (about 7.5 inches)
*Slowest saturated hydraulic conductivity:* Moderately high (about 0.57 in/hr)
*Depth class:* Very deep (more than 60 inches)
*Depth to root-restrictive feature:* More than 60 inches
*Drainage class:* Well drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None

*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* High
*Surface fragments:* About 0.10 to 3.00 percent subrounded stones
*Parent material:* Colluvium derived from sandstone and shale

### Use and Management Considerations

#### Cropland

- These soils are unsuited to cropland.

#### Pastureland

- These soils are unsuited to pastureland.

#### Woodland

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

#### Building sites

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

#### Septic tank absorption fields

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

#### Local roads and streets

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

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* 7e
*Virginia soil management group:* Cloverlick—JJ; Shelocta—L
*Hydric soils:* No

## 6C—Cotaco loam, 8 to 15 percent slopes

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Stream terraces and areas at the base of slopes of hills and mountains

*Position on the landform:* Treads, footslopes, and fans
*Elevation:* 551 to 1,099 feet
*Size of areas:* 5 to 30 acres

### Map Unit Composition

Cotaco and similar soils: Typically 90 percent, ranging from about 75 to 100 percent

### Typical Profile

*Surface layer:*
0 to 8 inches—brown loam

*Subsoil:*
8 to 12 inches—yellowish brown loam
12 to 17 inches—yellowish brown loam; pale brown iron-manganese masses and yellowish brown masses of oxidized iron
17 to 28 inches—brownish yellow clay loam; brown iron-manganese concretions and light gray iron depletions
28 to 39 inches—brownish yellow and light gray clay loam; manganese coatings

*Substratum:*
39 to 50 inches—brownish yellow and light gray loam
50 to 65 inches—light gray and brownish yellow channery loam; iron-manganese concretions

### Minor Components

*Similar components:*
- Soils that are well drained and formed in old alluvium on terraces; in positions similar to or higher than those of the Cotaco soil
- Soils that are moderately well drained, formed in old alluvium on terraces, and are deep to bedrock; in positions similar to those of the Cotaco soil

*Dissimilar components:*
- Gilpin soils, which formed in shale and siltstone, are moderately deep to bedrock, and are well drained; in positions that are similar to or higher than those of the Cotaco soil
- Soils that are well drained, formed in sandstone, are deep to bedrock, and have more sand and less clay than the Cotaco soil; in similar and higher positions

### Soil Properties and Qualities

*Available water capacity:* Moderate (about 8.7 inches)
*Slowest saturated hydraulic conductivity:* Moderately high (about 0.57 in/hr)
*Depth class:* Very deep (more than 60 inches)
*Depth to root-restrictive feature:* More than 60 inches
*Drainage class:* Moderately well drained
*Depth to seasonal water saturation:* About 18 to 30 inches
*Water table kind:* Apparent
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* Medium
*Surface fragments:* None
*Parent material:* Alluvium and/or colluvium derived from sandstone and shale

### Use and Management Considerations

#### Cropland

*Suitability:* Well suited to wheat and grass-legume hay; moderately suited to corn and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- Frost action may damage the root system of winter grain crops.

#### Pastureland

*Suitability:* Well suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Frost action may damage the root systems of plants.

#### Woodland

*Suitability:* Moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Because of the slope, operating conditions for log trucks are unsafe and the operating efficiency is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

#### Building sites

- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.

#### Septic tank absorption fields

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

#### Local roads and streets

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

### Interpretive Groups

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

## 7—Dumps, mine-Urban land complex

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Variable

**Figure 3.—An area of Dumps, mine-Urban land complex, showing tipples and coal storage areas, along Dismal Creek near Highway VA-638. These areas are used for storing and loading coal.**

*Position on the landform:* Footslopes, toeslopes, and summits and some areas on flood plains
*Size of areas:* 5 to 150 acres
*Note:* Areas of this map unit consist of stockpiles of coal. They have structures and equipment used for processing coal and loading coal onto trucks or railcars and also other buildings, roads, railroad tracks, and hard surface roads (fig. 3).

### Map Unit Composition

Dumps, mine: Typically 60 percent, ranging from about 40 to 80 percent
Urban land: Typically 30 percent, ranging from about 20 to 35 percent

### Typical Profile

#### Dumps, mine

This part of the map unit contains coal storage areas and tipples. Coal storage areas have stockpiles of coal that are stored temporarily prior to loading onto railroad cars or coal trucks. Tipples are coal-loading areas. They included large stockpiles of coal; processing, loading, and storage facilities; buildings; and parking areas. The stockpiles of coal are usually temporary because they are constantly being depleted and replenished by haul trucks, coal cars, and conveyor belts for processing and delivery to markets. These areas generally support no vegetation or have a sparse cover of grasses, forbs, and dwarf trees. Because of the variability of the material, a typical profile is not given.

#### Urban land

This part of the map unit consists of roads, streets, parking lots, houses, and other buildings and railroad tracks. Because of the variability of the material, a typical profile is not given.

#### Use and Management Considerations

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

#### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* 8
*Virginia soil management group:* None assigned
*Hydric soils:* No

## 8C—Fiveblock-Sewell complex, 0 to 15 percent slopes, extremely stony

#### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Ridges and spurs of mountains that have been surface mined for coal
*Position on the landform:* Summits, shoulders, and some areas on footslopes and backslopes
*Elevation:* 984 to 2,460 feet
*Size of areas:* 5 to 100 acres
*Note:* Areas of this map unit have been surface-mined for coal

#### Map Unit Composition

*Note: These Fiveblock and Sewell soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

Fiveblock and similar soils: Typically 80 percent, ranging from about 60 to 90 percent
Sewell and similar soils: Typically 20 percent, ranging from about 10 to 40 percent

#### Typical Profile

**Fiveblock**

*Surface layer:*
0 to 6 inches—brown very channery sandy loam

*Substratum:*
6 to 25 inches—brown very channery sandy loam; common brown and common yellow mottles
25 to 65 inches—dark grayish brown extremely channery sandy loam; common yellow and common brown mottles

**Sewell**

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

*Substratum:*
4 to 9 inches—dark yellowish brown very channery sandy loam; common gray, common yellow, and common red mottles
9 to 65 inches—yellowish brown extremely channery sandy loam; common gray, common yellow, and common red mottles

### Minor Components

*Similar components:*
- Cedarcreek soils, which formed in mine spoil derived from sandstone, siltstone, shale, and coal, have more clay than the Fiveblock and Sewell soils, are well drained, and are more acidic than the Fiveblock soil; on similar landforms
- Kaymine soils, which formed in mine spoil derived from sandstone, siltstone, shale, and coal, are less acidic than the Sewell soil, and are well drained; on similar landforms

### Soil Properties and Qualities

*Available water capacity:* Very low (about 2.9 inches)
*Slowest saturated hydraulic conductivity:* High (about 1.98 in/hr)
*Depth class:* Very deep (more than 60 inches)
*Depth to root-restrictive feature:* More than 60 inches
*Drainage class:* Somewhat excessively drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* Low
*Surface fragments:* About 2.50 to 8.50 percent subangular stones and about 0.50 to 1.50 percent subangular boulders
*Parent material:* Mine spoil or earthy fill derived from sandstone and small amounts of siltstone, shale, and coal
*Distinctive feature:* Areas of this map unit are subject to differential settling

### Use and Management Considerations

#### Cropland

- These soils are unsuited to cropland.

#### Pastureland

- These soils are unsuited to pastureland.

#### Woodland

*Suitability:* Well suited to northern red oak, yellow-poplar, and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Because of the slope, operating conditions for log trucks are unsafe and the operating efficiency is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- The high content of stones or boulders on the surface may hinder the construction of haul roads and log landings.
- The amount of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.

- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.

**Building sites**

- Because of differential settling, these soils are not recommended for building site development.

**Septic tank absorption fields**

- Because of differential settling, these soils are not recommended for septic tank absorption fields.

**Local roads and streets**

- Differential settling may damage local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* 7s
*Virginia soil management group:* JJ
*Hydric soils:* No

## 9E—Gilpin-Berks complex, 25 to 35 percent slopes

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Ridges and spurs of mountains and hills
*Position on the landform:* Summits and shoulders
*Elevation:* 902 to 2,952 feet
*Size of areas:* 5 to 50 acres

### Map Unit Composition

*Note: These Gilpin and Berks soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

Gilpin and similar soils: Typically 55 percent, ranging from about 50 to 60 percent
Berks and similar soils: Typically 30 percent, ranging from about 25 to 40 percent

### Typical Profile

**Gilpin**

*Organic layer:*
0 to 1 inch—slightly decomposed plant material

*Surface layer:*
1 to 3 inches—brown silt loam

*Subsoil:*
3 to 5 inches—yellowish brown silt loam
5 to 19 inches—yellowish brown gravelly silt loam
19 to 30 inches—yellowish brown gravelly loam

*Substratum:*
30 to 35 inches—strong brown very gravelly loam

*Soft bedrock:*
35 to 39 inches—strong brown, brown, and reddish brown sandstone bedrock

*Hard bedrock:*
39 inches—sandstone bedrock

**Berks**

*Organic layer:*
0 to 1 inch—very dark brown slightly decomposed plant material

*Surface layer:*
1 to 4 inches—dark yellowish brown silt loam

*Subsoil:*
4 to 8 inches—yellowish brown channery silt loam
8 to 23 inches—yellowish brown very channery silt loam
23 to 34 inches—yellowish brown extremely channery silt loam

*Soft bedrock:*
34 to 36 inches—shale bedrock

*Hard bedrock:*
36 inches—shale bedrock

### Minor Components

*Similar components:*
- Soils that are similar to the Gilpin soil but have a seasonal high water table beginning in the lower part of the subsoil; on similar landforms
- Marrowbone soils, which have more sand than the Gilpin and Berks soils and have fewer rock fragments than the Berks soil; on similar landforms
- Soils that are deep to shale bedrock; on landforms similar to those of the Gilpin and Berks soils
- Soils that are similar to the Gilpin soil except that they have more sand in the substratum; on similar landforms

*Dissimilar components:*
- Wharton soils, which are moderately well drained and are deep or very deep to bedrock; mostly at the highest points of the map unit and where slopes are less steep
- Soils that formed in residuum weathered from sandstone, have more sand than the Gilpin and Berks soils, and are shallow to bedrock; on similar landforms

### Soil Properties and Qualities

*Available water capacity:* Gilpin—low (about 4.8 inches); Berks—low (about 3.5 inches)
*Slowest saturated hydraulic conductivity:* Moderately high (about 0.57 in/hr)
*Depth class:* Moderately deep (20 to 40 inches)
*Depth to root-restrictive feature:* 20 to 40 inches to bedrock (paralithic)
*Drainage class:* Well drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* High
*Surface fragments:* None
*Parent material:* Gilpin—residuum weathered from sandstone and some shale and

siltstone; Berks—residuum weathered from acid shale interbedded with fine-grained sandstone and siltstone

## Use and Management Considerations

### Cropland

- These soils are unsuited to cropland.

### Pastureland

*Suitability:* Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.
- The bedrock may restrict the rooting depth of plants.

### Woodland

*Suitability:* Well suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope, the use of mechanical planting equipment is impractical.
- The low soil strength may create unsafe conditions for log trucks.

### Building sites

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

### Septic tank absorption fields

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

### Local roads and streets

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

## Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* 6e
*Virginia soil management group:* Gilpin—U; Berks—JJ
*Hydric soils:* No

## 9F—Gilpin-Berks complex, 35 to 70 percent slopes

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Ridges and spurs of mountains
*Position on the landform:* Summits and shoulders
*Elevation:* 902 to 2,952 feet
*Size of areas:* 5 to 40 acres

### Map Unit Composition

*Note: These Gilpin and Berks soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

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

### Typical Profile

**Gilpin**

*Organic layer:*
0 to 1 inch—slightly decomposed plant material

*Surface layer:*
1 to 3 inches—brown silt loam

*Subsoil:*
3 to 5 inches—yellowish brown silt loam
5 to 19 inches—yellowish brown gravelly silt loam
19 to 30 inches—yellowish brown gravelly loam

*Substratum:*
30 to 35 inches—strong brown very gravelly loam

*Soft bedrock:*
35 to 39 inches—strong brown, brown, and reddish brown sandstone bedrock

*Hard bedrock:*
39 inches—sandstone bedrock

**Berks**

*Organic layer:*
0 to 1 inch—very dark brown slightly decomposed plant material

*Surface layer:*
1 to 4 inches—dark yellowish brown silt loam

*Subsoil:*
4 to 8 inches—yellowish brown channery silt loam
8 to 23 inches—yellowish brown very channery silt loam
23 to 34 inches—yellowish brown extremely channery silt loam

*Soft bedrock:*
34 to 36 inches—shale bedrock

*Hard bedrock:*
36 inches—shale bedrock

### Minor Components

*Similar components:*
- Soils that formed in residuum weathered from shale, have textures similar to those of the Gilpin soil, and are deep to bedrock; on similar landforms
- Soils that formed in residuum weathered from shale, have textures that are similar to those of the Gilpin soil, and have a solum that is thinner than that of the Gilpin soil; on similar landforms
- Soils that formed in residuum weathered from shale, have textures that are similar to those of the Gilpin soil, and have thin lenses of coal or clay in the substratum; on similar landforms
- Soils that formed in residuum weathered from shale, have textures similar to those of the Gilpin soil, and have a sandy substratum; on similar landforms
- Soils that formed in residuum weathered from shale, have textures that are similar to those of the Gilpin and Berks soils, and are shallow to bedrock; on similar landforms
- Soils that have a slightly higher sand content than the Gilpin soil and are moderately deep to bedrock; on similar landforms

*Dissimilar components:*
- Soils that formed in residuum weathered from shale, have textures that are similar to those of the Berks soil, and are very deep to bedrock; on similar landforms
- Soils that formed in residuum weathered from sandstone, have loamy textures, and are shallow to bedrock; on landforms that are similar to those of the Gilpin and Berks soils

### Soil Properties and Qualities

*Available water capacity:* Gilpin—low (about 4.8 inches); Berks—low (about 3.5 inches)
*Slowest saturated hydraulic conductivity:* Moderately high (about 0.57 in/hr)
*Depth class:* Moderately deep (20 to 40 inches)
*Depth to root-restrictive feature:* 20 to 40 inches to bedrock (paralithic)
*Drainage class:* Well drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* High
*Surface fragments:* None
*Parent material:* Gilpin—residuum weathered from sandstone and some shale and siltstone; Berks—residuum weathered from acid shale interbedded with fine-grained sandstone and siltstone

### Use and Management Considerations

#### Cropland

- These soils are unsuited to cropland.

#### Pastureland

- These soils are unsuited to pastureland.

#### Woodland

*Suitability:* Well suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber

harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The low soil strength interferes with the construction of haul roads and log landings.

**Building sites**

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

**Septic tank absorption fields**

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

**Local roads and streets**

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

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* 7e
*Virginia soil management group:* Gilpin—U; Berks—JJ
*Hydric soils:* No

## 10A—Grigsby fine sandy loam, 0 to 3 percent slopes, occasionally flooded

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Flood plains (fig. 4)
*Position on the landform:* Treads
*Elevation:* 853 to 1,312 feet
*Size of areas:* 5 to 75 acres

### Map Unit Composition

Grigsby and similar soils: Typically 81 percent, ranging from about 70 to 90 percent

### Typical Profile

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

*Subsoil:*
11 to 32 inches—strong brown fine sandy loam

*Substratum:*
32 to 43 inches—strong brown loamy sand
43 to 53 inches—dark yellowish brown loamy sand

**Figure 4.—A cultivated field along Slate Creek in an area of Grigsby fine sandy loam, 0 to 3 percent slopes, occasionally flooded. Areas of this map unit are considered prime farmland.**

53 to 61 inches—dark yellowish brown gravelly sand and pockets of loam; common strong brown and common dark yellowish brown mottles

### Minor Components

*Similar components:*
- Soils that contain more rock fragments than the Grigsby soil and are frequently flooded; on the lower landforms and old stream channels
- Philo soils, which are moderately well drained; at the edges of the map unit near the base of hills and mountains
- Soils that have more sand and less clay than the Grigsby soil and are occasionally flooded; on similar landforms

### Soil Properties and Qualities

*Available water capacity:* Moderate (about 7.6 inches)
*Slowest saturated hydraulic conductivity:* High (about 2.00 in/hr)
*Depth class:* Very deep (more than 60 inches)
*Depth to root-restrictive feature:* More than 60 inches
*Drainage class:* Well drained
*Depth to seasonal water saturation:* About 42 to 79 inches
*Water table kind:* Apparent
*Flooding hazard:* Occasional
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* Very low

*Surface fragments:* None
*Parent material:* Alluvium derived from sandstone and shale

### Use and Management Considerations

#### Cropland

*Suitability:* Well suited to corn, wheat, grass-legume hay, and alfalfa hay
- Flooding may damage crops.

#### Pastureland

*Suitability:* Well suited
- Flooding may damage pastures.

#### Woodland

*Suitability:* Well suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should focus on streamside management zones and stream crossings and should include general adherence to all applicable best management practices.
- Flooding may damage haul roads.
- Flooding restricts the safe use of roads by log trucks.

#### Building sites

- Flooding is a limitation affecting building site development.
- The seasonal high water table may restrict the period when excavations can be made.

#### Septic tank absorption fields

- Flooding is a limitation affecting septic tank absorption fields.
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

#### Local roads and streets

- Flooding may damage local roads and streets.

### Interpretive Groups

*Prime farmland:* All areas are prime farmland
*Land capability class:* 1
*Virginia soil management group:* A
*Hydric soil:* No

## 11F—Highsplint-Shelocta complex, 55 to 80 percent slopes, very stony

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Ridges and spurs of mountains and hills and drainageways
*Position on the landform:* Backslopes and footslopes
*Elevation:* 872 to 3,592 feet
*Size of areas:* 5 to 500 acres
*Note:* These soils occur on slopes that face in a southward to westward direction

### Map Unit Composition

*Note: These Highsplint and Shelocta soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

Highsplint and similar soils: Typically 55 percent, ranging from about 45 to 60 percent
Shelocta and similar soils: Typically 40 percent, ranging from about 35 to 45 percent

### Typical Profile

**Highsplint**

*Organic layer:*
0 to 1 inch—slightly decomposed plant material

*Surface layer:*
1 to 3 inches—brown channery silt loam

*Subsoil:*
3 to 19 inches—dark yellowish brown channery silt loam
19 to 38 inches—dark yellowish brown very channery silt loam; many brown mottles
38 to 59 inches—yellowish brown very flaggy silt loam; many brown mottles

*Substratum:*
59 to 82 inches—yellowish brown very channery loam; common strong brown and many dark brown mottles

**Shelocta**

*Organic layer:*
0 to 1 inch—slightly decomposed plant material

*Surface layer:*
1 to 4 inches—dark grayish brown gravelly loam

*Subsoil:*
4 to 13 inches—yellowish brown loam
13 to 30 inches—strong brown gravelly silt loam; common dark yellowish brown mottles
30 to 50 inches—strong brown gravelly loam; common yellowish red mottles
50 to 62 inches—strong brown very gravelly loam; common yellowish brown mottles

*Substratum:*
62 to 86 inches—yellowish brown extremely gravelly loam; pale brown iron depletions and strong brown masses of oxidized iron

### Minor Components

*Similar components:*
- Cloverlick soils, which formed in colluvium from sandstone, siltstone, and shale and have a thick, dark surface horizon; on north- and east-facing slopes
- Soils that have fewer rock fragments than the Highsplint soil and have less clay than the Shelocta soil; on similar landforms
- Soils that have more rock fragments than the Shelocta soil and have less clay than the Highsplint soil; on similar landforms

*Dissimilar components:*
- Soils that formed from sediments of sandstone and quartzite, have fewer rock fragments than the Highsplint soil, and are shallow to bedrock; on similar landforms
- Soils that formed from sediments of sandstone or quartzite, have more rock fragments than the Shelocta soil, and are shallow to bedrock; on similar landforms

### Soil Properties and Qualities

*Available water capacity:* Moderate (about 7.3 inches)
*Slowest saturated hydraulic conductivity:* Moderately high (about 0.57 in/hr)
*Depth class:* Very deep (more than 60 inches)
*Depth to root-restrictive feature:* More than 60 inches
*Drainage class:* Well drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* High
*Surface fragments:* About 0.10 to 3.00 percent subrounded stones
*Parent material:* Colluvium derived from sandstone, siltstone, and shale

### Use and Management Considerations

#### Cropland

- These soils are unsuited to cropland.

#### Pastureland

- These soils are unsuited to pastureland.

#### Woodland

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

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

#### Building sites

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

#### Septic tank absorption fields

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

#### Local roads and streets

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

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* 7e
*Virginia soil management group:* Highsplint—CC; Shelocta—L
*Hydric soils:* No

## 12F—Itmann gravelly loam, 0 to 80 percent slopes

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Coal-mine refuse piles on mountains and hills and in areas of valley fill close to abandoned and active coal mines
*Position on the landform:* Backslopes, footslopes, drainageways, and areas around coal-cleaning plants
*Elevation:* 1,394 to 2,788 feet
*Size of areas:* 5 to 50 acres
*Note:* Areas of this map unit consist of refuse piles that are derived from the processing of deep-mined coal. Many areas are acitive waste-dumping sites, some of which have been covered with a few inches of natural soil material during reclamation. A few areas of valley fill have impounded water behind them.

### Map Unit Composition

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

### Typical Profile

*Surface layer:*
0 to 4 inches—very dark gray gravelly loam

*Substratum:*
4 to 27 inches—black very channery sandy loam; common dark yellowish brown mottles
27 to 63 inches—black extremely gravelly sandy loam; few gray and few yellowish brown mottles

### Minor Components

*Similar components:*
- Areas with other refuse material from deep-mined coal that have 30 to 50 percent dark fragments (carbolitic material); on landforms similar to those of the Itmann soil
- Areas that have a 5- to 20-inch-thick topsoil layer; on landforms similar to those of the Itmann soil

*Dissimilar components:*
- Areas with other refuse material from deep-mined coal that have more than 50 percent dark fragments (carbolitic material) and are less acidic than the Itmann soil; on similar landforms
- Areas of water
- Cedarcreek and Sewell soils, which formed in overburden from mining operations, have fewer carbolithic fragments than the Itmann soil, and have more sandstone, siltstone, and shale fragments

### Soil Properties and Qualities

*Available water capacity:* Very low (about 2.7 inches)
*Slowest saturated hydraulic conductivity:* High (about 6.01 in/hr)
*Depth class:* Very deep (more than 60 inches)
*Depth to root-restrictive feature:* More than 60 inches
*Drainage class:* Somewhat excessively drained
*Depth to seasonal water saturation:* More than 6 feet

*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* Medium
*Surface fragments:* None
*Parent material:* Acid regolith of waste materials from deep-mined coal, including a mixture of partially weathered fine earth and fragments of bedrock, which consist mainly of acid carboliths with small amounts of sandstone, siltstone, and shale
*Distinctive feature:* Areas of this map unit are subject to differential settling

## Use and Management Considerations

### Cropland

- This soil is unsuited to cropland.

### Pastureland

- This soil is unsuited to pastureland.

### Woodland

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.

### Building sites

- Because of differential settling, this soil is not recommended for building site development.

### Septic tank absorption fields

- Because of differential settling, this soil is not recommended for septic tank absorption fields.

### Local roads and streets

- Differential settling may damage local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

## Interpretive Groups

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

**Figure 5.—An area of Kaymine very channery silt loam, 15 to 35 percent slopes, extremely stony, in the grassed area on the mountaintop, near Leemaster.**

## 13D—Kaymine very channery silt loam, 15 to 35 percent slopes, extremely stony

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Ridges and spurs of mountains that have been surface mined for coal (fig. 5)
*Position on the landform:* Summits, shoulders, and some areas on footslopes and backslopes
*Elevation:* 984 to 2,460 feet
*Size of areas:* 5 to 50 acres
*Note:* Areas of this map unit have been surface mined for coal

### Map Unit Composition

Kaymine and similar soils: Typically 90 percent, ranging from about 70 to 100 percent

### Typical Profile

*Surface layer:*
0 to 4 inches—dark grayish brown very channery silt loam

*Substratum:*
4 to 28 inches—dark brown extremely channery silt loam; common dark grayish brown and common yellowish brown mottles
28 to 64 inches—dark brown very flaggy silt loam; common dark grayish brown and common yellowish brown mottles

### Minor Components

*Similar components:*
- Soils that formed in mine spoil and have slightly more clay than the Kaymine soil; on similar landforms
- Fiveblock soils, which formed in mine spoil derived mainly from sandstone, have more sand than the Kaymine soil, and have less silt and clay; on similar landforms

*Dissimilar components:*
- Soils that formed in mine spoil and are somewhat poorly drained; in depressions
- Cedarcreek soils, which formed in mine spoil and are more acidic than the Kaymine soil; on similar landforms
- Sewell soils, which formed in mine spoil derived mainly from sandstone, are more acidic than the Kaymine soil, and have more sand; on similar landforms

### Soil Properties and Qualities

*Available water capacity:* Moderate (about 6.8 inches)
*Slowest saturated hydraulic conductivity:* Moderately high (about 0.57 in/hr)
*Depth class:* Very deep (more than 60 inches)
*Depth to root-restrictive feature:* More than 60 inches
*Drainage class:* Well drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* High
*Surface fragments:* About 2.50 to 9.00 percent subangular stones and about 0.50 to 1.00 percent subangular boulders
*Parent material:* Mine spoil or earthy fill derived from shale, siltstone, sandstone, and coal
*Distinctive feature:* Areas of this map unit are subject to differential settling

### Use and Management Considerations

#### Cropland

- This soil is unsuited to cropland.

#### Pastureland

- This soil is unsuited to pastureland.

#### Woodland

*Suitability:* Well suited to northern red oak, yellow-poplar, and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope, the use of mechanical planting equipment is impractical.
- The high content of stones or boulders on the surface may hinder the construction of haul roads and log landings.

- The amount of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.

**Building sites**

- Because of differential settling, this soil is not recommended for building site development.

**Septic tank absorption fields**

- Because of differential settling, this soil is not recommended for septic tank absorption fields.

**Local roads and streets**

- Differential settling may damage local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* 7s
*Virginia soil management group:* JJ
*Hydric soil:* No

## 14E—Kaymine-Cedarcreek complex, 35 to 55 percent slopes, extremely stony

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Ridges and spurs of mountains that have been surface mined for coal (fig. 6)
*Position on the landform:* Summits, shoulders, and outslopes and some areas on footslopes and backslopes
*Elevation:* 984 to 2,460 feet
*Size of areas:* 5 to 50 acres
*Note:* Areas of this map unit have been surface mined for coal

### Map Unit Composition

*Note: These Kaymine and Cedarcreek soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

Kaymine and similar soils: Typically 85 percent, ranging from about 70 to 95 percent
Cedarcreek and similar soils: Typically 15 percent, ranging from about 10 to 30 percent

### Typical Profile

**Kaymine**

*Surface layer:*
0 to 4 inches—dark grayish brown very channery silt loam

*Substratum:*
4 to 28 inches—dark brown extremely channery silt loam; common dark grayish brown and common yellowish brown mottles
28 to 64 inches—dark brown very flaggy silt loam; common dark grayish brown and common yellowish brown mottles

**Figure 6.—A non-woooded area of Kaymine-Cedarcreek complex, 35 to 55 percent slopes, extremely stony, at an active surface-mine. Reclamation has restored part of the area to grass.**

### Cedarcreek

*Surface layer:*
0 to 3 inches—very dark gray very channery loam

*Substratum:*
3 to 15 inches—olive brown very channery loam; common yellow, common brown, and common gray mottles
15 to 65 inches—dark olive gray extremely channery loam; common brown, yellow, and gray mottles

### Minor Components

*Similar components:*
- Fiveblock soils, which formed in mine spoil derived mainly from sandstone, have more sand and less silt than the Kaymine and Cedarcreek soils, and are less acidic than the Cedarcreek soil
- Sewell soils, which formed in mine spoil derived mainly from sandstone, have more sand and less silt than the Kaymine and Cedarcreek soils, and are more acidic than the Kaymine soil; on similar landforms

### Soil Properties and Qualities

*Available water capacity:* Kaymine—moderate (about 6.8 inches); Cedarcreek—low (about 3.5 inches)
*Slowest saturated hydraulic conductivity:* Moderately high (about 0.57 in/hr)
*Depth class:* Very deep (more than 60 inches)

*Depth to root-restrictive feature:* More than 60 inches
*Drainage class:* Well drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* High
*Surface fragments:* About 2.50 to 9.00 percent subangular stones and about 0.50 to 1.00 percent subangular boulders
*Parent material:* Mine spoil or earthy fill derived from shale, siltstone, sandstone, and coal
*Distinctive feature:* Areas of this map unit are subject to differential settling

### Use and Management Considerations

#### Cropland

- These soils are unsuited to cropland.

#### Pastureland

- These soils are unsuited to pastureland.

#### Woodland

*Suitability:* Well suited to northern red oak, yellow-poplar, and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The high content of stones or boulders on the surface may hinder the construction of haul roads and log landings.
- The amount of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.

#### Building sites

- Because of differential settling, these soils are not recommended for building site development.

#### Septic tank absorption fields

- Because of differential settling, these soils are not recommended for septic tank absorption fields.

#### Local roads and streets

- Differential settling may damage local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

**Figure 7.—A grassed area of Kaymine-Fiveblock-Cedarcreek complex, 0 to 15 percent slopes, extremely stony, on a mountaintop, near Leemaster.**

### Interpretive Groups

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

## 15C—Kaymine-Fiveblock-Cedarcreek complex, 0 to 15 percent slopes, extremely stony

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Ridges and spurs of mountains that have been surface mined for coal (fig. 7)
*Position on the landform:* Summits and shoulders and some areas on footslopes and backslopes
*Elevation:* 984 to 2,460 feet
*Size of areas:* 5 to 125 acres
*Note:* Areas of this map unit have been surface mined for coal

### Map Unit Composition

*Note: These Kaymine, Fiveblock, and Cedarcreek soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

Kaymine and similar soils: Typically 55 percent, ranging from about 40 to 75 percent
Fiveblock and similar soils: Typically 25 percent, ranging from about 10 to 35 percent
Cedarcreek and similar soils: Typically 20 percent, ranging from about 10 to 40 percent

### Typical Profile

**Kaymine**

*Surface layer:*
0 to 4 inches—dark grayish brown very channery silt loam

*Substratum:*
4 to 28 inches—dark brown extremely channery silt loam; common dark grayish brown and common yellowish brown mottles
28 to 64 inches—dark brown very flaggy silt loam; common dark grayish brown and common yellowish brown mottles

**Fiveblock**

*Surface layer:*
0 to 6 inches—brown very channery sandy loam

*Substratum:*
6 to 25 inches—brown very channery sandy loam; common brown and common yellow mottles
25 to 65 inches—dark grayish brown extremely channery sandy loam; common yellow and common brown mottles

**Cedarcreek**

*Surface layer:*
0 to 3 inches—very dark gray very channery loam

*Substratum:*
3 to 15 inches—olive brown very channery loam; common yellow, common brown, and common gray mottles
15 to 65 inches—dark olive gray extremely channery loam; common brown, yellow, and gray mottles

### Minor Components

*Similar components:*
- Sewell soils, which formed in mine spoil derived mainly from sandstone, are more acidic than the Fiveblock soil, and have more sand than Kaymine and Cedarcreek soils; on similar landforms
- Soils that formed in mine spoil and have slightly more clay than the Kaymine soil; on similar landforms

*Dissimilar components:*
- Soils that formed in mine spoil and are somewhat poorly drained; in depressions

### Soil Properties and Qualities

*Available water capacity:* Kaymine—moderate (about 6.8 inches); Fiveblock—very low (about 2.9 inches); Cedarcreek—low (about 3.5 inches)
*Slowest saturated hydraulic conductivity:* Kaymine and Cedarcreek—moderately high (about 0.57 in/hr); Fiveblock—high (about 1.98 in/hr)
*Depth class:* Very deep (more than 60 inches)
*Depth to root-restrictive feature:* More than 60 inches
*Drainage class:* Kaymine and Cedarcreek—well drained; Fiveblock—somewhat excessively drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low

*Runoff class:* Kaymine and Cedarcreek—medium; Fiveblock—low
*Surface fragments:* About 2.50 to 9.00 percent subangular stones and about 0.50 to 1.00 percent subangular boulders
*Parent material:* Kaymine and Cedarcreek—mine spoil or earthy fill derived from shale, siltstone, sandstone, and coal; Fiveblock—mine spoil or earthy fill derived from sandstone and small amounts of siltstone, shale, and coal
*Distinctive feature:* Areas of this map unit are subject to differential settling

## Use and Management Considerations

### Cropland

- These soils are unsuited to cropland.

### Pastureland

- These soils are unsuited to pastureland.

### Woodland

*Suitability:* Well suited to northern red oak, yellow-poplar, and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Because of the slope, operating conditions for log trucks are unsafe and the operating efficiency is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- The high content of stones or boulders on the surface may hinder the construction of haul roads and log landings.
- The amount of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.

### Building sites

- Because of differential settling, these soils are not recommended for building site development.

### Septic tank absorption fields

- Because of differential settling, these soils are not recommended for septic tank absorption fields.

### Local roads and streets

- Differential settling may damage local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

## Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* 7s
*Virginia soil management group:* JJ
*Hydric soils:* No

## 16C—Lily loam, 8 to 15 percent slopes

### Setting

*Major land resource area:* Southern Appalachian Ridges and Valleys (MLRA 128)
*Landform:* Ridges and spurs of hills and mountains
*Position on the landform:* Summits and shoulders
*Size of areas:* 5 to 15 acres

### Map Unit Composition

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

### Typical Profile

*Surface layer:*
0 to 3 inches—very dark grayish brown loam

*Subsoil:*
3 to 7 inches—brown loam
7 to 24 inches—dark yellowish brown loam

*Substratum:*
24 to 28 inches—yellowish brown cobbly sandy loam

*Hard bedrock:*
28 inches—sandstone bedrock

### Minor Components

*Similar components:*
- Gilpin soils, which weathered from shale and have more silt and less sand than the Lily soil; on similar landforms
- Soils that weathered from sandstone and are deep to bedrock; on landforms similar to those of the Lily soil

*Dissimilar components:*
- Wallen soils, which weathered from sandstone, are moderately deep to bedrock, and have more rock fragments than the Lily soil; on similar landforms
- Soils that weathered from sandstone and are shallow or very shallow to bedrock; on landforms similar to those of the Lily soil
- Soils that weathered from siltstone and shale and are very deep to bedrock; on landforms similar to those of the Lily soil

### Soil Properties and Qualities

*Available water capacity:* Low (about 4.5 inches)
*Slowest saturated hydraulic conductivity:* Moderately high (about 0.57 in/hr)
*Depth class:* Moderately deep (20 to 40 inches)
*Depth to root-restrictive feature:* 20 to 40 inches to bedrock (lithic)
*Drainage class:* Well drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* High
*Surface fragments:* None
*Parent material:* Residuum weathered from sandstone

## Use and Management Considerations

### Cropland

*Suitability:* Moderately suited to corn, wheat, grass-legume hay, and alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- The bedrock restricts the rooting depth of crops.
- The limited available water capacity may cause plants to suffer from moisture stress.

### Pastureland

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

### Woodland

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

### Building sites

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

### Septic tank absorption fields

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

### Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- The low soil strength may cause structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

## Interpretive Groups

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

## 16D—Lily loam, 15 to 35 percent slopes

### Setting

*Major land resource area:* Southern Appalachian Ridges and Valleys (MLRA 128)
*Landform:* Ridges and spurs of hills and mountains
*Position on the landform:* Summits and shoulders
*Size of areas:* 5 to 25 acres

### Map Unit Composition

Lily and similar soils: Typically 95 percent, ranging from about 85 to 100 percent

### Typical Profile

*Surface layer:*
0 to 3 inches—very dark grayish brown loam

*Subsoil:*
3 to 7 inches—brown loam
7 to 24 inches—dark yellowish brown loam

*Substratum:*
24 to 28 inches—yellowish brown cobbly sandy loam

*Hard bedrock:*
28 inches—sandstone bedrock

### Minor Components

*Similar components:*
- Marrowbone soils, which weathered from sandstone, are moderately deep to bedrock, and have more sand than the Lily soil; on similar landforms
- Gilpin soils, which weathered from shale and have more silt and less sand than the Lily soil; on similar landforms
- Soils that weathered from sandstone and are deep bedrock; on landforms similar to those of the Lily soil
- Soils that weathered from shale and are deep to bedrock; on landforms similar to those of the Lily soil

*Dissimilar components:*
- Wallen soils, which weathered from sandstone, are moderately deep to bedrock, and have more rock fragments than the Lily soil; on similar landforms
- Soils that weathered from sandstone and are very shallow or shallow to bedrock; on landforms similar to those of the Lily soil

### Soil Properties and Qualities

*Available water capacity:* Low (about 4.5 inches)
*Slowest saturated hydraulic conductivity:* Moderately high (about 0.57 in/hr)
*Depth class:* Moderately deep (20 to 40 inches)
*Depth to root-restrictive feature:* 20 to 40 inches to bedrock (lithic)
*Drainage class:* Well drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* Very high
*Surface fragments:* None
*Parent material:* Residuum weathered from sandstone

## Use and Management Considerations

### Cropland

- This soil is unsuited to cropland.

### Pastureland

*Suitability:* Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.
- The limited available water capacity may cause plants to suffer from moisture stress during the drier summer months.
- The bedrock may restrict the rooting depth of plants.

### Woodland

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

### Building sites

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

### Septic tank absorption fields

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

### Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- The low soil strength may cause structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

## Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* 6e
*Virginia soil management group:* U
*Hydric soil:* No

## 16E—Lily loam, 35 to 55 percent slopes

### Setting

*Major land resource area:* Southern Appalachian Ridges and Valleys (MLRA 128)
*Landform:* Ridges and spurs of hills and mountains
*Position on the landform:* Summits and shoulders
*Size of areas:* 5 to 25 acres

### Map Unit Composition

Lily and similar soils: Typically 80 percent, ranging from about 70 to 85 percent

### Typical Profile

*Surface layer:*
0 to 3 inches—very dark grayish brown loam

*Subsoil:*
3 to 7 inches—brown loam
7 to 24 inches—dark yellowish brown loam

*Substratum:*
24 to 28 inches—yellowish brown cobbly sandy loam

*Hard bedrock:*
28 inches—sandstone bedrock

### Minor Components

*Similar components:*
- Gilpin soils, which weathered from shale and have more silt and less sand than the Lily soil; on similar landforms
- Soils that weathered from sandstone, are moderately deep to bedrock, and have more sand and less clay than the Lily soil; on similar landforms

*Dissimilar components:*
- Wallen soils, which weathered from sandstone, are moderately deep to bedrock, and have more rock fragments than the Lily soil
- Oriskany soils, which are very deep to bedrock and formed in colluvium; on footslopes
- Soils that formed in colluvium and are very deep to bedrock; on footslopes
- Soils that weathered from sandstone and are very shallow or shallow to bedrock; on landforms similar to those of the Lily soil

### Soil Properties and Qualities

*Available water capacity:* Low (about 4.5 inches)
*Slowest saturated hydraulic conductivity:* Moderately high (about 0.57 in/hr)
*Depth class:* Moderately deep (20 to 40 inches)
*Depth to root-restrictive feature:* 20 to 40 inches to bedrock (lithic)
*Drainage class:* Well drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* Very high
*Surface fragments:* None
*Parent material:* Residuum weathered from sandstone

### Use and Management Considerations

**Cropland**

- This soil is unsuited to cropland.

**Pastureland**

- This soil is unsuited to pastureland.

**Woodland**

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

**Building sites**

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

**Septic tank absorption fields**

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

**Local roads and streets**

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- The low soil strength may cause structural damage to local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

### Interpretive Groups

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

## 17D—Marrowbone-Gilpin complex, 15 to 25 percent slopes

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Ridges and spurs of mountains and hills
*Position on the landform:* Summits and shoulders

*Elevation:* 902 to 3,608 feet
*Size of areas:* 5 to 75 acres

### Map Unit Composition

*Note: These Marrowbone and Gilpin soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

Marrowbone and similar soils: Typically 50 percent, ranging from about 45 to 55 percent
Gilpin and similar soils: Typically 45 percent, ranging from about 40 to 55 percent

### Typical Profile

**Marrowbone**

*Organic layer:*
0 to 1 inch—slightly decomposed plant material

*Surface layer:*
1 to 5 inches—brown fine sandy loam

*Subsoil:*
5 to 10 inches—strong brown sandy loam
10 to 22 inches—strong brown gravelly sandy loam

*Substratum:*
22 to 33 inches—strong brown very gravelly loamy fine sand; common strong brown mottles

*Soft bedrock:*
33 to 45 inches—strong brown sandstone bedrock

*Hard bedrock:*
45 inches—sandstone bedrock

**Gilpin**

*Organic layer:*
0 to 1 inch—slightly decomposed plant material

*Surface layer:*
1 to 3 inches—brown silt loam

*Subsoil:*
3 to 5 inches—yellowish brown silt loam
5 to 19 inches—yellowish brown gravelly silt loam
19 to 30 inches—yellowish brown gravelly loam

*Substratum:*
30 to 35 inches—strong brown very gravelly loam

*Soft bedrock:*
35 to 39 inches—strong brown, brown, and reddish brown sandstone bedrock

*Hard bedrock:*
39 inches—sandstone bedrock

### Minor Components

*Similar components:*
- Matewan soils, which formed in residuum weathered from sandstone, are moderately deep to bedrock, and have more rock fragments than the Marrowbone and Gilpin soils; on similar landforms

- Berks soils, which formed in residuum weathered from shale, siltstone, and fine-grained sandstone, contain more rock fragments than the Marrowbone and Gilpin soils, and are moderately deep to bedrock; on similar landforms
- Soils that formed in residuum weathered from sandstone and have more sand than the Marrowbone soil; on similar landforms
- Soils that formed in residuum weathered from shale, are moderately deep to bedrock, have textures similar to those of the Gilpin soil, and are moderately well drained; on similar landforms
- Soils that formed in residuum weathered from sandstone and are shallow to bedrock; on landforms similar to those of the Marrowbone and Gilpin soils
- Soils that are similar to the Gilpin soil except that they have a sandy substratum; on similar landforms

*Dissimilar components:*
- Wharton soils, which formed in residuum weathered from shale, are very deep to bedrock, and are moderately well drained; on landforms similar to those of the Marrowbone and Gilpin soils

### Soil Properties and Qualities

*Available water capacity:* Marrowbone—very low (about 2.7 inches); Gilpin—low (about 4.8 inches)
*Slowest saturated hydraulic conductivity:* Marrowbone—high (about 1.98 in/hr); Gilpin—moderately high (about 0.57 in/hr)
*Depth class:* Moderately deep (20 to 40 inches)
*Depth to root-restrictive feature:* 20 to 40 inches to bedrock (paralithic)
*Drainage class:* Well drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* High
*Surface fragments:* None
*Parent material:* Marrowbone—residuum weathered from sandstone; Gilpin—residuum weathered from sandstone and some shale and siltstone

### Use and Management Considerations

#### Cropland

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

#### Pastureland

*Suitability:* Moderately suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The bedrock may restrict the rooting depth of plants.

#### Woodland

*Suitability:* Moderately suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative

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

**Building sites**

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.
- Because of the high content of sand or gravel in the soil, sloughing is increased and cutbanks are more susceptible to caving.

**Septic tank absorption fields**

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

**Local roads and streets**

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

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* 4e
*Virginia soil management group:* Marrowbone—FF; Gilpin—U
*Hydric soils:* No

## 17E—Marrowbone-Gilpin complex, 25 to 35 percent slopes

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Ridges and spurs of mountains
*Position on the landform:* Summits and shoulders
*Elevation:* 902 to 3,608 feet
*Size of areas:* 5 to 125 acres

### Map Unit Composition

*Note: These Marrowbone and Gilpin soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

Marrowbone and similar soils: Typically 60 percent, ranging from about 55 to 65 percent
Gilpin and similar soils: Typically 35 percent, ranging from about 30 to 40 percent

### Typical Profile

**Marrowbone**

*Organic layer:*
0 to 1 inch—slightly decomposed plant material

*Surface layer:*
1 to 5 inches—brown fine sandy loam

*Subsoil:*
5 to 10 inches—strong brown sandy loam
10 to 22 inches—strong brown gravelly sandy loam

*Substratum:*
22 to 33 inches—strong brown very gravelly loamy fine sand; common strong brown mottles

*Soft bedrock:*
33 to 45 inches—strong brown sandstone bedrock

*Hard bedrock:*
45 inches—sandstone bedrock

**Gilpin**

*Organic layer:*
0 to 1 inch—slightly decomposed plant material

*Surface layer:*
1 to 3 inches—brown silt loam

*Subsoil:*
3 to 5 inches—yellowish brown silt loam
5 to 19 inches—yellowish brown gravelly silt loam
19 to 30 inches—yellowish brown gravelly loam

*Substratum:*
30 to 35 inches—strong brown very gravelly loam

*Soft bedrock:*
35 to 39 inches—strong brown, brown, and reddish brown sandstone bedrock

*Hard bedrock:*
39 inches—sandstone bedrock

### Minor Components

*Similar components:*
- Berks soils, which formed in residuum weathered from shale and have more rock fragments than the Gilpin soil
- Soils that formed in residuum weathered from sandstone, have more sand than the Gilpin soil, have more clay than the Marrowbone soil, and are either moderately deep or deep to bedrock; on similar landforms
- Soils that formed in residuum weathered from sandstone, have more sand than the

Marrowbone soil, and are either moderately deep or deep to bedrock; on similar landforms
- Soils that formed in residuum weathered from sandstone, have textures similar to those of the Marrowbone soil, and are deep to bedrock; on similar landforms
- Soils that formed in residuum weathered from sandstone, have textures similar to those of the Marrowbone soil, and have a solum that is thinner than that of the Marrowbone soil; on similar landforms
- Soils that formed in residuum weathered from sandstone and are shallow to bedrock; on landforms similar to those of the Marrowbone and Gilpin soils
- Soils that are similar to the Gilpin soil except that they have a sandy substratum; on similar landforms
- Soils that formed in residuum weathered from shale, have textures similar to those of the Gilpin soil, and are shallow to bedrock; on similar landforms
- Soils that formed in residuum weathered from shale, have textures similar to those of the Gilpin soil, and are deep to bedrock; on similar landforms
- Soils that formed in residuum weathered from shale, are moderately deep to bedrock, have textures that are similar to those of the Gilpin soil, and are moderately well drained; on similar landforms

*Dissimilar components:*
- Wharton soils, which formed in residuum weathered from shale, are very deep to bedrock, and are moderately well drained; on summits and saddles where slopes are less steep

### Soil Properties and Qualities

*Available water capacity:* Marrowbone—very low (about 2.7 inches); Gilpin—low (about 4.8 inches)
*Slowest saturated hydraulic conductivity:* Marrowbone—high (about 1.98 in/hr); Gilpin—moderately high (about 0.57 in/hr)
*Depth class:* Moderately deep (20 to 40 inches)
*Depth to root-restrictive feature:* 20 to 40 inches to bedrock (paralithic)
*Drainage class:* Well drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* High
*Surface fragments:* None
*Parent material:* Marrowbone—residuum weathered from sandstone; Gilpin—residuum weathered from sandstone and some shale and siltstone

### Use and Management Considerations

#### Cropland

- These soils are unsuited to cropland.

#### Pastureland

*Suitability:* Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- The slope may restrict the use of some farm equipment.
- The bedrock may restrict the rooting depth of plants.

#### Woodland

*Suitability:* Moderately suited to chestnut oak

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

**Building sites**

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.
- Because of the high content of sand or gravel in the soil, sloughing is increased and cutbanks are more susceptible to caving.

**Septic tank absorption fields**

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

**Local roads and streets**

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

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* 6e
*Virginia soil management group:* Marrowbone—FF; Gilpin—U
*Hydric soils:* No

## 17F—Marrowbone-Gilpin complex, 35 to 70 percent slopes

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Ridges and spurs of mountains
*Position on the landform:* Summits and shoulders
*Elevation:* 902 to 3,608 feet
*Size of areas:* 5 to 100 acres

### Map Unit Composition

*Note: These Marrowbone and Gilpin soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

Marrowbone and similar soils: Typically 75 percent, ranging from about 70 to 80 percent
Gilpin and similar soils: Typically 15 percent, ranging from about 15 to 20 percent

### Typical Profile

**Marrowbone**

*Organic layer:*
0 to 1 inch—slightly decomposed plant material

*Surface layer:*
1 to 5 inches—brown fine sandy loam

*Subsoil:*
5 to 10 inches—strong brown sandy loam
10 to 22 inches—strong brown gravelly sandy loam

*Substratum:*
22 to 33 inches—strong brown very gravelly loamy fine sand; common strong brown mottles

*Soft bedrock:*
33 to 45 inches—strong brown sandstone bedrock

*Hard bedrock:*
45 inches—sandstone bedrock

**Gilpin**

*Organic layer:*
0 to 1 inch—slightly decomposed plant material

*Surface layer:*
1 to 3 inches—brown silt loam

*Subsoil:*
3 to 5 inches—yellowish brown silt loam
5 to 19 inches—yellowish brown gravelly silt loam
19 to 30 inches—yellowish brown gravelly loam

*Substratum:*
30 to 35 inches—strong brown very gravelly loam

*Soft bedrock:*
35 to 39 inches—strong brown, brown, and reddish brown sandstone bedrock

*Hard bedrock:*
39 inches—sandstone bedrock

### Minor Components

*Similar components:*
- Matewan soils, which formed in residuum weathered from sandstone, are moderately deep to bedrock, and have more rock fragments than the Marrowbone and Gilpin soils; on similar landforms
- Soils that formed in residuum weathered from sandstone, have more sand than the Gilpin soil, and have more clay than the Marrowbone soil; on similar landforms

- Soils that formed in residuum weathered from sandstone and have more sand than the Marrowbone soil; on similar landforms
- Soils that formed in residuum weathered from sandstone and are deep to bedrock; on landforms similar to those of the Marrowbone and Gilpin soils
- Soils that formed in residuum weathered from sandstone and are shallow to bedrock; on landforms similar to those of the Marrowbone and Gilpin soils
- Soils that are similar to the Gilpin soil except that they have a sandy substratum; on similar landforms

*Dissimilar components:*
- Soils that formed in residuum weathered from sandstone, are very deep to bedrock, and have more sand than the Marrowbone soil; on similar landforms

### Soil Properties and Qualities

*Available water capacity:* Marrowbone—very low (about 2.7 inches); Gilpin—low (about 4.8 inches)
*Slowest saturated hydraulic conductivity:* Marrowbone—high (about 1.98 in/hr); Gilpin—moderately high (about 0.57 in/hr)
*Depth class:* Moderately deep (20 to 40 inches)
*Depth to root-restrictive feature:* 20 to 40 inches to bedrock (paralithic)
*Drainage class:* Well drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* High
*Surface fragments:* None
*Parent material:* Marrowbone—residuum weathered from sandstone; Gilpin—residuum weathered from sandstone and some shale and siltstone

### Use and Management Considerations

#### Cropland

- These soils are unsuited to cropland.

#### Pastureland

- These soils are unsuited to pastureland.

#### Woodland

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

- Coarse textured soil layers increase the maintenance of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

**Building sites**

- The slope influences the use of machinery and the amount of excavation required.
- Because of the nature and depth of the soft bedrock, the ease of excavation is reduced and the difficulty of constructing foundations and installing utilities is increased.
- Because of the high content of sand or gravel in the soil, sloughing is increased and cutbanks are more susceptible to caving.

**Septic tank absorption fields**

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

**Local roads and streets**

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

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* 7e
*Virginia soil management group:* Marrowbone—FF; Gilpin—U
*Hydric soils:* No

## 18F—Matewan-Gilpin-Rock outcrop complex, 55 to 80 percent slopes, extremely stony

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Ridges and spurs of mountains and hills (fig. 8)
*Position on the landform:* Summits, shoulders, and backslopes
*Elevation:* 902 to 3,700 feet
*Size of areas:* 5 to 300 acres

### Map Unit Composition

*Note: These Matewan and Gilpin soils and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

Matewan and similar soils: Typically 55 percent, ranging from about 50 to 65 percent
Gilpin and similar soils: Typically 30 percent, ranging from about 25 to 35 percent
Rock outcrop: Typically 10 percent, ranging from about 5 to 20 percent

### Typical Profile

**Matewan**

*Organic layer:*
0 to 1 inch—moderately decomposed plant material

*Surface layer:*
1 to 4 inches—dark brown flaggy fine sandy loam

**Figure 8.—Rock outcrop in the form of "rock chimneys" in an area of Matewan-Gilpin-Rock outcrop complex, 55 to 80 percent slopes, extremely stony, near the town of Grundy. Rock outcrop limits the use of these areas.**

*Subsoil:*
4 to 21 inches—dark yellowish brown very flaggy fine sandy loam

*Substratum:*
21 to 31 inches—yellowish brown very gravelly sandy loam
31 to 38 inches—strong brown extremely gravelly sandy loam; many yellowish brown mottles

*Hard bedrock:*
38 inches—sandstone bedrock

### Gilpin

*Organic layer:*
0 to 1 inch—slightly decomposed plant material

*Surface layer:*
1 to 3 inches—brown silt loam

*Subsoil:*
3 to 5 inches—yellowish brown silt loam
5 to 19 inches—yellowish brown gravelly silt loam
19 to 30 inches—yellowish brown gravelly loam

*Substratum:*
30 to 35 inches—strong brown very gravelly loam

*Soft bedrock:*
35 to 39 inches—strong brown, brown, and reddish brown sandstone bedrock

*Hard bedrock:*
39 inches—sandstone bedrock

### Rock outcrop

This part of the map unit consists outcrops of hard sandstone bedrock that range from a few inches to many feet in height. Some areas are near-vertical cliffs.

#### Minor Components

*Similar components:*
- Marrowbone soils, which have fewer rock fragments than the Matewan soil; in areas scattered throughout the map unit
- Colluvial soils that are moderately deep to bedrock and have many rock fragments; in areas scattered throughout the map unit and in drainageways
- Colluvial soils that are deep to bedrock and have many rock fragments; in areas scattered throughout the map unit and in drainageways
- Residual soils that formed in sandstone, are moderately deep to bedrock, and have fewer rock fragments than the Matewan soil; in areas scattered throughout the map unit
- Residual soils that formed in sandstone and are shallow to bedrock; in areas scattered throughout the map unit
- Residual soils that formed in sandstone and are very shallow to bedrock; mostly near rock outcrops

*Dissimilar components:*
- Soils that are very deep to bedrock, formed from sandstone, and have a sandy-skeletal particle size; on landforms similar to those of the Matewan and Gilpin soils

#### Properties and Qualities of the Matewan and Gilpin Soils

*Available water capacity:* Matewan—low (about 3.1 inches); Gilpin—low (about 4.8 inches)
*Slowest saturated hydraulic conductivity:* Matewan—high (about 2.00 in/hr); Gilpin—moderately high (about 0.57 in/hr)
*Depth class:* Moderately deep (20 to 40 inches)
*Depth to root-restrictive feature:* Matewan—20 to 40 inches to bedrock (lithic); Gilpin—20 to 40 inches to bedrock (paralithic)
*Drainage class:* Well drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* Matewan—very high; Gilpin—high
*Surface fragments:* About 3.00 to 15.00 percent subangular stones
*Parent material:* Matewan—residuum weathered from sandstone; Gilpin—residuum weathered from sandstone and some shale and siltstone

#### Use and Management Considerations

### Cropland

- This map unit is unsuited to cropland.

### Pastureland

- This map unit is unsuited to pastureland.

### Woodland

*Suitability:* Moderately suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber

harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The high content of stones or boulders on the surface may hinder the construction of haul roads and log landings.
- The amount of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings and may create unsafe conditions for log trucks.

**Building sites**

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- Because of rock outcrops, rock removal may be needed.

**Septic tank absorption fields**

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing of the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

**Local roads and streets**

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* Matewan and Gilpin—7s; Rock outcrop—8s
*Virginia soil management group:* Matewan—FF; Gilpin—U; Rock outcrop—none assigned
*Hydric soils:* No

## 19D—Oriskany very cobbly fine sandy loam, 15 to 35 percent slopes, extremely stony

### Setting

*Major land resource area:* Southern Appalachian Ridges and Valleys (MLRA 128)
*Landform:* Base of slopes of ridges and spurs and lower part of side slopes of ridges and spurs; all in areas of hills and mountains
*Position on the landform:* Footslopes and lower backslopes
*Size of areas:* 15 to 50 acres

### Map Unit Composition

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

### Typical Profile

*Organic layer:*
0 to 2 inches—moderately decomposed plant material

*Surface layer:*
2 to 6 inches—very dark grayish brown very cobbly fine sandy loam

*Subsurface layer:*
6 to 10 inches—yellowish brown very cobbly fine sandy loam

*Subsoil:*
10 to 17 inches—light yellowish brown very gravelly loam
17 to 26 inches—reddish yellow very gravelly loam
26 to 36 inches—reddish yellow very cobbly loam; common very pale brown mottles
36 to 52 inches—strong brown very cobbly clay loam; common very pale brown mottles
52 to 70 inches—reddish yellow very cobbly sandy clay loam; common yellowish brown mottles

### Minor Components

*Similar components:*
- Soils that have more clay, less sand, and fewer rock fragments than the Oriskany soil, are very deep to bedrock, and formed in colluvium; on similar landforms
- Soils that have less clay than the Oriskany soil, are very deep to bedrock, and formed in colluvium; on similar landforms

*Dissimilar components:*
- Calvin soils, which formed in siltstone and shale and are moderately deep to bedrock; on adjacent backslopes

### Soil Properties and Qualities

*Available water capacity:* Moderate (about 6.4 inches)
*Slowest saturated hydraulic conductivity:* High (about 1.98 in/hr)
*Depth class:* Very deep (more than 60 inches)
*Depth to root-restrictive feature:* More than 60 inches
*Drainage class:* Well drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* Medium
*Surface fragments:* About 3.00 to 14.00 percent subrounded stones and about 0.00 to 1.00 percent subrounded boulders
*Parent material:* Colluvium derived from sandstone and shale

### Use and Management Considerations

#### Cropland

- This soil is unsuited to cropland.

#### Pastureland

- This soil is unsuited to pastureland.

#### Woodland

*Suitability:* Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope, the use of mechanical planting equipment is impractical.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.

#### Building sites

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

#### Septic tank absorption fields

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

#### Local roads and streets

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

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* 7s
*Virginia soil management group:* CC
*Hydric soil:* No

## 19E—Oriskany very cobbly fine sandy loam, 35 to 55 percent slopes, extremely stony

### Setting

*Major land resource area:* Southern Appalachian Ridges and Valleys (MLRA 128)
*Landform:* Base of slopes of ridges and spurs and lower part of side slopes of ridges and spurs; all in areas of hills and mountains
*Position on the landform:* Footslopes and lower backslopes
*Size of areas:* 15 to 150 acres

### Map Unit Composition

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

### Typical Profile

*Organic layer:*
0 to 2 inches—moderately decomposed plant material

*Surface layer:*
2 to 6 inches—very dark grayish brown very cobbly fine sandy loam

*Subsurface layer:*
6 to 10 inches—yellowish brown very cobbly fine sandy loam

*Subsoil:*
10 to 17 inches—light yellowish brown very gravelly loam
17 to 26 inches—reddish yellow very gravelly loam
26 to 36 inches—reddish yellow very cobbly loam; common very pale brown mottles
36 to 52 inches—strong brown very cobbly clay loam; common very pale brown mottles
52 to 70 inches—reddish yellow very cobbly sandy clay loam; common yellowish brown mottles

### Minor Components

*Similar components:*
- Soils that have more clay, less sand, and fewer rock fragments than the Oriskany soil, are very deep to bedrock, and formed in colluvium; on similar landforms
- Soils that have more silt than the Oriskany soil, are very deep to bedrock, and formed in colluvium; on similar landforms

*Dissimilar components:*
- Calvin soils, which formed in siltstone and shale and are moderately deep to bedrock; on adjacent backslopes

### Soil Properties and Qualities

*Available water capacity:* Moderate (about 6.4 inches)
*Slowest saturated hydraulic conductivity:* High (about 1.98 in/hr)
*Depth class:* Very deep (more than 60 inches)
*Depth to root-restrictive feature:* More than 60 inches
*Drainage class:* Well drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* Medium
*Surface fragments:* About 0.00 to 1.00 percent subrounded boulders and about 3.00 to 14.00 percent subrounded stones
*Parent material:* Colluvium derived from sandstone and shale

### Use and Management Considerations

#### Cropland

- This soil is unsuited to cropland.

#### Pastureland

- This soil is unsuited to pastureland.

#### Woodland

*Suitability:* Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.

- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.

**Building sites**

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

**Septic tank absorption fields**

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

**Local roads and streets**

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

### Interpretive Groups

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

## 20A—Philo fine sandy loam, 0 to 3 percent slopes, occasionally flooded

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Flood plains
*Position on the landform:* Treads
*Size of areas:* 5 to 75 acres

### Map Unit Composition

Philo and similar soils: Typically 95 percent, ranging from about 85 to 100 percent

### Typical Profile

*Surface layer:*
0 to 8 inches—brown fine sandy loam

*Subsoil:*
8 to 16 inches—dark yellowish brown fine sandy loam
16 to 30 inches—yellowish brown fine sandy loam; grayish brown iron depletions

*Substratum:*
30 to 62 inches—light olive brown sandy loam; yellowish brown masses of oxidized iron and dark grayish brown iron depletions

### Minor Components

*Similar components:*
- Soils that are moderately well drained, formed in alluvium, have more clay and silt than the Philo soil, and have less sand; in similar positions
- Soils that are somewhat poorly drained, formed in alluvium, and have textures similar to those of the Philo soil; in similar positions

- Soils that are somewhat poorly drained, formed in alluvium, have more clay and silt than the Philo soil, and have less sand; in similar positions
- Soils that have more rock fragments in the subsoil and on the surface than the Philo soil and are moderately well drained; in similar positions
- Grigsby soils, which formed in alluvium and are well drained; in positions slightly higher than those of the Philo soil

*Dissimilar components:*
- Soils that are poorly drained and formed in alluvium; in the slightly lower positions
- Soils that are well drained and have more rock fragments in the subsoil and on the surface than the Philo soil; in similar positions

### Soil Properties and Qualities

*Available water capacity:* Moderate (about 8.5 inches)
*Slowest saturated hydraulic conductivity:* Moderately high (about 0.57 in/hr)
*Depth class:* Very deep (more than 60 inches)
*Depth to root-restrictive feature:* More than 60 inches
*Drainage class:* Moderately well drained
*Depth to seasonal water saturation:* About 18 to 36 inches
*Water table kind:* Apparent
*Flooding hazard:* Occasional
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* Very low
*Surface fragments:* None
*Parent material:* Alluvium derived from sandstone and shale

### Use and Management Considerations

#### Cropland

*Suitability:* Well suited to corn; moderately suited to wheat and grass-legume hay; not suited to alfalfa hay
- Frost action may damage the root system of winter grain crops.
- Flooding may damage crops.

#### Pastureland

*Suitability:* Moderately suited
- Flooding may damage pastures.
- Frost action may damage the root systems of plants.

#### Woodland

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

#### Building sites

- Flooding is a limitation affecting building site development.
- The seasonal high water table may restrict the period when excavations can be made.

**Septic tank absorption fields**

- Flooding is a limitation affecting septic tank absorption fields.
- The seasonal high water table greatly limits the absorption and proper treatment of the effluent from conventional septic systems.

**Local roads and streets**

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

### Interpretive Groups

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

## 21F—Sewell-Kaymine-Rock outcrop complex, 0 to 80 percent slopes, extremely stony

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Ridges and spurs of mountains that have been surface mined for coal
*Position on the landform:* Summits, shoulders, surface-mine benches, and surface-mine outslopes and some areas on footslopes and backslopes
*Elevation:* 984 to 2,460 feet
*Size of areas:* 10 to 500 acres
*Note:* Areas of this map unit have been surface mined for coal (fig. 9)

### Map Unit Composition

*Note: These Sewell and Kaymine soils and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

Sewell and similar soils: Typically 55 percent, ranging from about 50 to 60 percent
Kaymine and similar soils: Typically 30 percent, ranging from about 25 to 35 percent
Rock outcrop: Typically 10 percent, ranging from about 5 to 15 percent

### Typical Profile

**Sewell**

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

*Substratum:*
4 to 9 inches—dark yellowish brown very channery sandy loam; common gray, common yellow, and common red mottles
9 to 65 inches—yellowish brown extremely channery sandy loam; common gray, common yellow, and common red mottles

**Kaymine**

*Surface layer:*
0 to 4 inches—dark grayish brown very channery silt loam

**Figure 9.—A non-wooded area of Sewell-Kaymine-Rock outcrop complex, 0 to 80 percent slopes, extremely stony, near Elkins Branch. These areas have multiple surface-mine benches.**

*Substratum:*
4 to 28 inches—dark brown extremely channery silt loam; common dark grayish brown and common yellowish brown mottles
28 to 64 inches—dark brown very flaggy silt loam; common dark grayish brown and common yellowish brown mottles

### Rock outcrop

Rock outcrops are exposed highwalls. These areas have multiple sequences of outslopes, benches, and highwalls, each of which is parallel to each other and occurs on contour.

### Minor Components

*Similar components:*
- Cedarcreek soils, which formed in mine spoil derived from sandstone, siltstone, shale, and coal, are more acidic than the Kaymine soil, and have more clay and silt and less sand than the Sewell soil; on similar landforms
- Fiveblock soils, which formed in mine spoil derived mainly from sandstone, are less acidic than the Sewell soil, and have more sand and less silt and clay than the Kaymine soil; on similar landforms

*Dissimilar components:*
- Soils that formed in mine spoil and are somewhat poorly drained; in depressions on benches and near the base of highwalls

### Properties and Qualities of the Sewell and Kaymine Soils

*Available water capacity:* Sewell—very low (about 2.7 inches); Kaymine—moderate (about 6.8 inches)

*Slowest saturated hydraulic conductivity:* Sewell—high (about 1.98 in/hr); Kaymine—moderately high (about 0.57 in/hr)
*Depth class:* Very deep (more than 60 inches)
*Depth to root-restrictive feature:* More than 60 inches
*Drainage class:* Sewell—somewhat excessively drained; Kaymine—well drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* Sewell—medium; Kaymine—high
*Surface fragments:* About 2.50 to 8.50 percent subangular stones and about 0.50 to 1.50 percent subangular boulders
*Parent material:* Sewell—mine spoil or earthy fill derived from sandstone and small amounts of siltstone, shale, and coal; Kaymine—mine spoil or earthy fill derived from shale, siltstone, sandstone, and coal

**Rock outcrop**

This part of the map unit occurs as near-vertical highwalls. Areas consist of interbedded layers of sandstone, shale, siltstone, and thin seams of unmined coal.

## Use and Management Considerations

**Cropland**

- This map unit is unsuited to cropland.

**Pastureland**

- This map unit is unsuited to pastureland.

**Woodland**

*Suitability:* Well suited to northern red oak, yellow-poplar, and eastern white pine
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The high content of stones or boulders on the surface may hinder the construction of haul roads and log landings.
- The amount of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.

**Building sites**

- The slope influences the use of machinery and the amount of excavation required.
- Because of rock outcrops, rock removal may be needed.

**Septic tank absorption fields**

- The slope limits the proper treatment of effluent from conventional septic systems.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

**Local roads and streets**

- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* Sewell and Kaymine—7s; Rock outcrop—8s
*Virginia soil management group:* Sewell and Kaymine—JJ; Rock outcrop—none assigned
*Hydric soils:* No

## 22E—Shelocta-Cedarcreek complex, 35 to 55 percent slopes, very bouldery

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Outslopes on ridges and spurs of mountains and hills that have been surface mined for coal; areas are downslope from a surface-mine bench
*Position on the landform:* Backslopes and footslopes
*Size of areas:* 10 to 150 acres
*Note:* This map unit contains undisturbed native soil material and overburden material from surface-mining operations. These areas are downslope of a surface-mine bench. During surface-mining for coal, overburden was extracted from the area above a coal seam and deposited downslope of the operation. Some of these areas that are downslope of the surface-mine bench are covered with overburden; others remain uncovered. The Shelocta soil occurs in the areas without a deposit of overburden. The Cedarcreek soil formed in the deposited overburden material.

### Map Unit Composition

*Note: These Shelocta and Cedarcreek soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

Shelocta and similar soils: Typically 70 percent, ranging from about 60 to 80 percent
Cedarcreek and similar soils: Typically 25 percent, ranging from about 20 to 35 percent

### Typical Profile

**Shelocta**

*Organic layer:*
0 to 1 inch—slightly decomposed plant material

*Surface layer:*
1 to 4 inches—dark grayish brown gravelly loam

*Subsoil:*
4 to 13 inches—yellowish brown loam
13 to 30 inches—strong brown gravelly silt loam; common dark yellowish brown mottles

30 to 50 inches—strong brown gravelly loam; common yellowish red mottles
50 to 62 inches—strong brown very gravelly loam; common yellowish brown mottles

*Substratum:*
62 to 86 inches—yellowish brown extremely gravelly loam; pale brown iron depletions and strong brown masses of oxidized iron

**Cedarcreek**

*Surface layer:*
0 to 3 inches—very dark gray very channery loam

*Substratum:*
3 to 15 inches—olive brown very channery loam; common yellow, common brown, and common gray mottles
15 to 65 inches—dark olive gray extremely channery loam; common brown, yellow, and gray mottles

### Minor Components

*Similar components:*
- Highsplint soils, which are very deep to bedrock, have more rock fragments than the Shelocta soil, and formed in colluvium; on similar landforms
- Sewell soils, which have more sand and less clay than the Cedarcreek soil and formed in mine spoil; on similar landforms

*Dissimilar components:*
- Kaymine soils, which formed in mine spoil and are less acidic in reaction than the Cedarcreek soil; on similar landforms
- Gilpin soils, which formed in shale and are moderately deep to bedrock; on landforms similar to those of the Shelocta and Cedarcreek soils

### Soil Properties and Qualities

*Available water capacity:* Shelocta—moderate (about 7.4 inches); Cedarcreek—low (about 3.5 inches)
*Slowest saturated hydraulic conductivity:* Moderately high (about 0.57 in/hr)
*Depth class:* Very deep (more than 60 inches)
*Depth to root-restrictive feature:* More than 60 inches
*Drainage class:* Well drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* High
*Surface fragments:* About 0.10 to 3.00 percent subangular boulders
*Parent material:* Shelocta—colluvium derived from sandstone and shale; Cedarcreek—mine spoil or earthy fill derived from shale, siltstone, sandstone, and coal
*Distinctive feature:* The areas where materials of mine-soil overburden occur are subject to differential settling

### Use and Management Considerations

**Cropland**

- These soils are unsuited to cropland.

**Pastureland**

- These soils are unsuited to pastureland.

### Woodland

*Suitability:* Well suited to northern red oak; moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The high content of stones or boulders on the surface may hinder the construction of haul roads and log landings.
- The amount of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings.

### Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Areas of the Cedarcreek soil are not recommended for building sites because of differential settling.

### Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.
- Areas of the Cedarcreek soil are not recommended for septic tank absorption fields because of differential settling.

### Local roads and streets

- Because of the slope, designing local roads and streets is difficult.
- In areas of the Cedarcreek soil, damage to local roads and streets may occur because of differential flooding.

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* 7e
*Virginia soil management group:* Shelocta—L; Cedarcreek—JJ
*Hydric soils:* No

## 23E—Shelocta-Cloverlick complex, 35 to 55 percent slopes, very stony

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Ridges and spurs of mountains and hill and drainageways
*Position on the landform:* Backslopes and footslopes
*Elevation:* 872 to 3,592 feet

*Size of areas:* 5 to 500 acres
*Note:* These soils occur on slopes that face in a northward to eastward direction

**Map Unit Composition**

*Note: These Shelocta and Cloverlick soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

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

**Typical Profile**

**Shelocta**

*Organic layer:*
0 to 1 inch—slightly decomposed plant material

*Surface layer:*
1 to 4 inches—dark grayish brown gravelly loam

*Subsoil:*
4 to 13 inches—yellowish brown loam
13 to 30 inches—strong brown gravelly silt loam; common dark yellowish brown mottles
30 to 50 inches—strong brown gravelly loam; common yellowish red mottles
50 to 62 inches—strong brown very gravelly loam; common yellowish brown mottles

*Substratum:*
62 to 86 inches—yellowish brown extremely gravelly loam; pale brown iron depletions and strong brown masses of oxidized iron

**Cloverlick**

*Organic layer:*
0 to 1 inch—moderately decomposed plant material

*Surface layer:*
1 to 7 inches—dark brown gravelly silt loam, brown dry

*Subsoil:*
7 to 10 inches—dark yellowish brown gravelly silt loam
10 to 15 inches—yellowish brown gravelly loam
15 to 44 inches—dark yellowish brown very gravelly loam
44 to 49 inches—dark yellowish brown very gravelly sandy loam; common yellowish brown mottles

*Substratum:*
49 to 63 inches—dark yellowish brown very gravelly sandy loam; light brownish gray iron depletions and yellowish brown masses of oxidized iron

**Minor Components**

*Similar components:*
- Highsplint soils, which are colluvial, formed from sandstone, siltstone, and shale, contain more rock fragments than the Shelocta soil, and have a thinner, lighter-colored surface horizon than the Cloverlick soil; on south- and west-facing slopes
- Soils that formed in colluvium from sandstone, siltstone, and shale, are very deep to bedrock, and have a dark surface horizon that is thicker than that of the Cloverlick soil; on similar landforms
- Soils that are formed in colluvium from sandstone and have less clay than the Shelocta and Cloverlick soils; on similar landforms

- Soils that are colluvial material derived from sandstone, shale, and siltstone and have less clay in the argillic horizon than the Shelocta soil; on similar landforms
- Soils that formed in colluvium from sandstone, siltstone, and shale, have fewer rock fragments than the Cloverlick soil, and have a thick, dark surface horizon; on similar landforms

*Dissimilar soils:*
- Soils that formed in residuum from sandstone, are moderately deep or shallow to bedrock, and have a dark surface horizon that is thicker than that of the Cloverlick soil; on similar landforms
- Soils that formed in colluvial material and are moderately deep to bedrock
- Somewhat poorly drained soils that formed in colluvial material and are very deep to bedrock; in drainageways

**Soil Properties and Qualities**

*Available water capacity:* Shelocta—moderate (about 7.5 inches); Cloverlick—low (about 5.9 inches)
*Slowest saturated hydraulic conductivity:* Moderately high (about 0.57 in/hr)
*Depth class:* Very deep (more than 60 inches)
*Depth to root-restrictive feature:* More than 60 inches
*Drainage class:* Well drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* High
*Surface fragments:* About 0.10 to 3.00 percent subrounded stones
*Parent material:* Colluvium derived from sandstone and shale

**Use and Management Considerations**

### Cropland

- These soils are unsuited to cropland.

### Pastureland

- These soils are unsuited to pastureland.

### Woodland

*Suitability:* Well suited to northern red oak and chestnut oak; moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The use of mechanical planting equipment is impractical because of the content of rock fragments.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings.

**Building sites**

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

**Septic tank absorption fields**

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

**Local roads and streets**

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

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* 7e
*Virginia soil management group:* Shelocta—L; Cloverlick—JJ
*Hydric soils:* No

## 24E—Shelocta-Highsplint complex, 35 to 55 percent slopes, very stony

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Ridges and spurs of mountains and hills and drainageways
*Position on the landform:* Backslopes and footslopes
*Elevation:* 872 to 3,592 feet
*Size of areas:* 5 to 250 acres
*Note:* These soils occur on slopes that face in a southward to westward direction

### Map Unit Composition

*Note: These Shelocta and Highslpint soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

Shelocta and similar soils: Typically 50 percent, ranging from about 45 to 55 percent
Highsplint and similar soils: Typically 40 percent, ranging from about 35 to 55 percent

### Typical Profile

**Shelocta**

*Organic layer:*
0 to 1 inch—slightly decomposed plant material

*Surface layer:*
1 to 4 inches—dark grayish brown gravelly loam

*Subsoil:*
4 to 13 inches—yellowish brown loam
13 to 30 inches—strong brown gravelly silt loam; common dark yellowish brown mottles
30 to 50 inches—strong brown gravelly loam; common yellowish red mottles
50 to 62 inches—strong brown very gravelly loam; common yellowish brown mottles

*Substratum:*
62 to 86 inches—yellowish brown extremely gravelly loam; pale brown iron depletions and strong brown masses of oxidized iron

### Highsplint

*Organic layer:*
0 to 1 inch—slightly decomposed plant material

*Surface layer:*
1 to 3 inches—brown channery silt loam

*Subsoil:*
3 to 19 inches—dark yellowish brown channery silt loam
19 to 38 inches—dark yellowish brown very channery silt loam; many brown mottles
38 to 59 inches—yellowish brown very flaggy silt loam; many brown mottles

*Substratum:*
59 to 82 inches—yellowish brown very channery loam; common strong brown and many dark brown mottles

## Minor Components

*Similar components:*
- Cloverlick soils, which formed in colluvium from sandstone, siltstone, and shale and have a thick dark surface horizon; on north- and east-facing slopes
- Soils that have fewer rock fragments than the Highsplint soil and have less clay than the Shelocta soil; on similar landforms
- Soils that have more rock fragments than the Shelocta soil and have less clay than the Highsplint soil; on similar landforms

*Dissimilar components:*
- Soils that formed from sediments of sandstone and quartzite, have fewer rock fragments than the Highsplint soil, and are shallow to bedrock; on similar landforms
- Soils that formed from sediments of sandstone or quartzite, have more rock fragments than the Shelocta soil, and are shallow to bedrock; on similar landforms
- Berks and Gilpin soils, which formed in shale residuum and are moderately deep to bedrock; on backsopes
- Marrowbone soils, which formed in sandstone residuum and are moderately deep to bedrock; on backslopes
- Moderately deep soils that formed in colluvium; in areas scattered throughout the map unit, but mostly on nose slopes and in convex areas
- Somewhat poorly drained soils in drainageways

## Soil Properties and Qualities

*Available water capacity:* Moderate (about 7.4 inches)
*Slowest saturated hydraulic conductivity:* Moderately high (about 0.57 in/hr)
*Depth class:* Very deep (more than 60 inches)
*Depth to root-restrictive feature:* More than 60 inches
*Drainage class:* Well drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* High
*Surface fragments:* About 0.10 to 3.00 percent subrounded stones
*Parent material:* Colluvium derived from sandstone and shale

## Use and Management Considerations

### Cropland

- These soils are unsuited to cropland.

**Pastureland**

- These soils are unsuited to pastureland.

**Woodland**

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

**Building sites**

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

**Septic tank absorption fields**

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

**Local roads and streets**

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

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* 7e
*Virginia soil management group:* Shelocta—L; Highsplint—CC
*Hydric soils:* No

## 25F—Shelocta-Kaymine complex, 55 to 80 percent slopes, very bouldery

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Outslopes on ridges and spurs of mountains and hills that have been surface mined for coal; areas are downslope of a surface-mine bench
*Position on the landform:* Backslopes and footslopes
*Size of areas:* 10 to 250 acres
*Note:* This map unit contains undisturbed native soil material and overburden material from surface-mining operations. These areas are downslope of a surface-mine bench. During surface-mining for coal, overburden was extracted from the area above a coal seam and deposited downslope of the operation. Some of these areas that are downslope of the surface-mine bench are covered with overburden; others remain uncovered. The Shelocta soil occurs in the areas without a deposit of overburden. The Cedarcreek soil formed in the deposited overburden material.

### Map Unit Composition

*Note: These Shelocta and Kaymine soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

Shelocta and similar soils: Typically 55 percent, ranging from about 40 to 65 percent
Kaymine and similar soils: Typically 40 percent, ranging from about 35 to 50 percent

### Typical Profile

#### Shelocta

*Organic layer:*
0 to 1 inch—slightly decomposed plant material

*Surface layer:*
1 to 4 inches—dark grayish brown gravelly loam

*Subsoil:*
4 to 13 inches—yellowish brown loam
13 to 30 inches—strong brown gravelly silt loam; common dark yellowish brown mottles
30 to 50 inches—strong brown gravelly loam; common yellowish red mottles
50 to 62 inches—strong brown very gravelly loam; common yellowish brown mottles

*Substratum:*
62 to 86 inches—yellowish brown extremely gravelly loam; pale brown iron depletions and strong brown masses of oxidized iron

#### Kaymine

*Surface layer:*
0 to 4 inches—dark grayish brown very channery silt loam

*Substratum:*
4 to 28 inches—dark brown extremely channery silt loam; common dark grayish brown and common yellowish brown mottles
28 to 64 inches—dark brown very flaggy silt loam; common dark grayish brown and common yellowish brown mottles

### Minor Components

*Similar components:*
- Highsplint soils, which are very deep to bedrock, have more rock fragments than the Shelocta soil, and formed in colluvium; on similar landforms
- Fiveblock soils, which have more sand and less clay than the Kaymine soil and formed in mine spoil; on similar landforms

*Dissimilar components:*
- Cedarcreek soils, which formed in mine spoil and are more acidic than the Kaymine soil; on similar landforms
- Berks soils, which formed in shale and are moderately deep to bedrock; on landforms similar to those of the Shelocta and Kaymine soils

### Soil Properties and Qualities

*Available water capacity:* Shelocta—moderate (about 7.4 inches); Kaymine—moderate (about 6.8 inches)
*Slowest saturated hydraulic conductivity:* Moderately high (about 0.57 in/hr)
*Depth class:* Very deep (more than 60 inches)
*Depth to root-restrictive feature:* More than 60 inches
*Drainage class:* Well drained

*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* High
*Surface fragments:* About 0.10 to 3.00 percent subangular boulders
*Parent material:* Shelocta—colluvium derived from sandstone and shale; Kaymine—mine spoil or earthy fill derived from shale, siltstone, sandstone, and coal
*Distinctive feature:* Areas where materials of mine-soil overburden occur are subject to diffential settling

### Use and Management Considerations

#### Cropland

- These soils are unsuited to cropland.

#### Pastureland

- These soils are unsuited to pastureland.

#### Woodland

*Suitability:* Well suited to northern red oak; moderately suited to yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The high content of stones or boulders on the surface may hinder the construction of haul roads and log landings.
- The amount of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings.

#### Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Areas of the Kaymine soil are not recommended for bulding site development because of differential settling.

#### Septic tank absorption fields

- The slope limits the proper treatment of effluent from conventional septic systems.
- Areas of the Kaymine soil are not recommended for septic tank absorption fields because of differential flooding.

#### Local roads and streets

- Because of the slope, designing local roads and streets is difficult.
- In areas of the Kaymine soil, damage to local roads and streets may occur because of differential settling.

**Figure 10.—A non-wooded area of Stonecoal extremely channery sandy loam, 0 to 80 percent slopes, is in the foreground, above Lynn Camp Creek. The Stonecoal soil consists of dark refuse material resulting from deep-mining for coal. Grass can grow in areas where topsoil material is placed over the dark-colored refuse, as shown on the lower slopes.**

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* 7e
*Virginia soil management group:* Shelocta—L; Kaymine—JJ
*Hydric soils:* No

## 26F—Stonecoal extremely channery sandy loam, 0 to 80 percent slopes

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Coal-mine refuse piles on mountains and hills and in areas of valley fill close to abandoned and active coal mines (fig. 10)
*Position on the landform:* Summits, shoulders, backslopes, footslopes, drainageways, and areas around coal cleaning plants
*Size of areas:* 50 to more than 600 acres
*Note:* Areas of this map unit are refuse piles that are derived from the processing of deep-mined coal. Many areas are active waste-dumping sites, some of which have been covered with a few inches of natural soil material during reclamation. A few areas of valley fill have impounded water behind them.

### Map Unit Composition

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

### Typical Profile

*Surface layer:*
0 to 31 inches—black extremely channery sandy loam

*Substratum:*
31 to 39 inches—black extremely channery sandy loam
39 to 68 inches—black extremely channery loamy sand

### Minor Components

*Dissimilar components:*
- Water areas
- Material in refuse piles from modern coal-cleaning processes that have textures and a composition of fragments similar to those of the Stonecoal soil and are more acidic

### Soil Properties and Qualities

*Available water capacity:* Very low (about 1.2 inches)
*Slowest saturated hydraulic conductivity:* High (about 1.98 in/hr)
*Depth class:* Very deep (more than 60 inches)
*Depth to root-restrictive feature:* More than 60 inches
*Drainage class:* Somewhat excessively drained
*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* Medium
*Surface fragments:* None
*Parent material:* Nonacid regolith of waste materials from deep-mined coal, a mixture of partially weathered fine earth and fragments of bedrock, which consist of nonacid carboliths, sandstone, siltstone, and shale
*Distinctive feature:* Areas of this map unit are subject to differential settling

### Use and Management Considerations

#### Cropland

- This soil is unsuited to cropland.

#### Pastureland

- This soil is unsuited to pastureland.

#### Woodland

- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.

- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.

**Building sites**

- Because of differential settling, this soil is not recommended for building site development.

**Septic tank absorption fields**

- Because of differential settling, this soil is not recommended for septic tank absorption fields.

**Local roads and streets**

- Differential settling may damage local roads and streets.
- Because of the slope, designing local roads and streets is difficult.

### Interpretive Groups

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

## 27—Udorthents-Urban land complex, 0 to 80 percent slopes

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Cut and fill areas, towns, highways, housing developments, shopping centers, or other man-made areas, excluding surface mines or gravel quarries
*Position on the landform:* Variable
*Size of areas:* 5 to 100 acres

### Map Unit Composition

*Note: Udorthents and Urban land occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

Udorthents: Typically 45 percent, ranging from about 35 to 55 percent
Urban land: Typically 30 percent, ranging from about 15 to 45 percent

### Typical Profile

**Udorthents**

Udorthents consist of soil material that has been altered by humans. They formed when soils were disturbed by land-leveling, excavation, or filling. They are made up of material of variable texture and color that has varying amounts of rock fragments. Depth to hard bedrock varies from a few inches to more than 5 feet. Areas range from slightly compacted to severely compacted. Drainage is variable. Unvegetated areas are susceptible to severe erosion. Because of the variability of the material, a typical profile is not given.

**Urban land**

Urban land consists of areas covered by highways, streets, parking lots, and

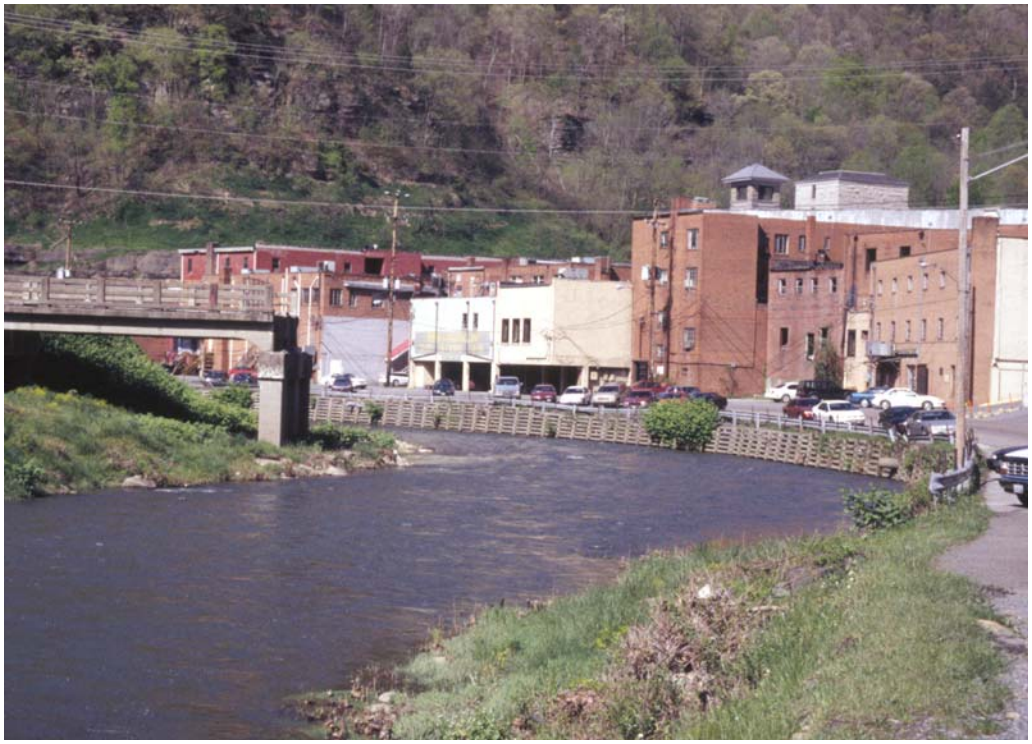

**Figure 11.—A perennial stream flowing through the town of Grundy in an area of Udorthents-Urban land complex, occasionally flooded. Flooding is a management concern in these areas.**

buildings or other impervious material or structures. Because of the variability of the material, a typical profile is not given.

### Use and Management Considerations

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

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* Udorthents—none assigned; Urban land—8
*Virginia soil management group:* None assigned
*Hydric soils:* Not rated

## 28—Udorthents-Urban land complex, occasionally flooded

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Cut and fill areas, towns, highways, housing developments, shopping centers, or other man-made areas, excluding surface mines or gravel quarries (fig. 11)
*Position on the landform:* Low-lying areas that are subject to flooding (fig. 12)
*Size of areas:* 5 to 200 acres

**Figure 12.—Flooding has recently occurred in this area of Udorthents-Urban land complex, occasionally flooded, in the town of Hurley.**

### Map Unit Composition

*Note: Udorthents and Urban land occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

Udorthents: Typically 45 percent, ranging from about 30 to 55 percent
Urban land: Typically 35 percent, ranging from about 15 to 55 percent

### Typical Profile

#### Udorthents

Udorthents consist of soil material that has been altered by humans. They formed when soils were disturbed by land-leveling, excavation, or filling. They are made up of material of variable texture and color that has varying amounts of rock fragments. Depth to hard bedrock varies from a few inches to more than 5 feet. Areas range from slightly compacted to severely compacted. Drainage is variable. Unvegetated areas are susceptible to severe erosion. Because of the variability of the material, a typical profile is not given.

#### Urban land

Urban land consists of areas covered by highways, streets, parking lots, and buildings or other impervious material or structures. Because of the variability of the material, a typical profile is not given.

### Use and Management Considerations

- Onsite investigation is needed to determine the suitability of any area for specific uses. Flooding is a limitation affecting building site development, septic tank absorption fields, and local roads and streets.

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* Udorthents—none assigned; Urban land—8
*Virginia soil management group:* None assigned
*Hydric soils:* Not rated

## 29D—Wallen channery sandy loam, 15 to 35 percent slopes, very stony

### Setting

*Major land resource area:* Southern Appalachian Ridges and Valleys (MLRA 128)
*Landform:* Ridges and spurs of hills and mountains
*Position on the landform:* Summits and shoulders
*Size of areas:* 5 to 15 acres

### Map Unit Composition

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

### Typical Profile

*Surface layer:*
0 to 4 inches—very dark grayish brown channery sandy loam

*Subsoil:*
4 to 22 inches—yellowish brown very channery sandy loam

*Substratum:*
22 to 24 inches—yellowish brown and strong brown extremely channery sandy loam

*Hard bedrock:*
24 inches—sandstone bedrock

### Minor Components

*Similar components:*
- Soils that formed in sandstone and are shallow to bedrock; on landforms similar to those of the Wallen soil
- Soils that formed in sandstone and have more sand and fewer rock fragments than the Wallen soil; on similar landforms
- Soils that formed in sandstone and are redder than the Wallen soil; on similar landforms

*Dissimilar components:*
- Gilpin soils, which formed in shale and have more silt, less sand, and fewer rock fragments than the Wallen soil; on similar landforms
- Lily soils, which have more clay and fewer rock fragments than the Wallen soil; on similar landforms
- Oriskany soils, which formed in colluvium and are very deep to bedrock; on footslopes and near drainageways

### Soil Properties and Qualities

*Available water capacity:* Very low (about 2.0 inches)
*Slowest saturated hydraulic conductivity:* High (about 1.98 in/hr)
*Depth class:* Moderately deep (20 to 40 inches)
*Depth to root-restrictive feature:* 20 to 40 inches to bedrock (lithic)
*Drainage class:* Somewhat excessively drained

*Depth to seasonal water saturation:* More than 6 feet
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* Very high
*Surface fragments:* About 0.10 to 3.00 percent angular stones
*Parent material:* Residuum weathered from acid sandstone interbedded with shale and siltstone

### Use and Management Considerations

#### Cropland

- This soil is unsuited to cropland.

#### Pastureland

- This soil is unsuited to pastureland.

#### Woodland

*Suitability:* Moderately suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for preparing sites for planting and seeding is restricted.
- Because of the slope, the use of mechanical planting equipment is impractical.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.

#### Building sites

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

#### Septic tank absorption fields

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

#### Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* 7s

*Virginia soil management group:* JJ
*Hydric soil:* No

## 29F—Wallen channery sandy loam, 35 to 70 percent slopes, very stony

### Setting

*Major land resource area:* Southern Appalachian Ridges and Valleys (MLRA 128)
*Landform:* Ridges and spurs of hills and mountains
*Position on the landform:* Backslopes
*Size of areas:* 15 to 75 acres

### Map Unit Composition

Wallen and similar soils: Typically 75 percent, ranging from about 70 to 80 percent

### Typical Profile

*Surface layer:*
0 to 4 inches—very dark grayish brown channery sandy loam

*Subsoil:*
4 to 22 inches—yellowish brown very channery sandy loam

*Substratum:*
22 to 24 inches—yellowish brown and strong brown extremely channery sandy loam

*Hard bedrock:*
24 inches—sandstone bedrock

### Minor Components

*Similar components:*
- Soils that formed in sandstone and are shallow to bedrock; on landforms similar to those of the Wallen soil
- Soils that formed in sandstone and have more sand and fewer rock fragments than the Wallen soil; on similar landforms
- Soils that formed in sandstone and are redder than the Wallen soil; on similar landforms

*Dissimilar components:*
- Lily soils, which have more clay and fewer rock fragments than the Wallen soil; on similar landforms
- Oriskany soils, which formed in colluvium and are very deep to bedrock; on footslopes and near drainageways
- Soils that formed in colluvium, are very deep to bedrock, and have fewer rock fragments than the Wallen soil; on footslopes and near drainageways
- Soils that formed in sandstone and are very deep to bedrock; on landforms similar to those of the Wallen soil

### Soil Properties and Qualities

*Available water capacity:* Very low (about 2.0 inches)
*Slowest saturated hydraulic conductivity:* High (about 1.98 in/hr)
*Depth class:* Moderately deep (20 to 40 inches)
*Depth to root-restrictive feature:* 20 to 40 inches to bedrock (lithic)
*Drainage class:* Somewhat excessively drained
*Depth to seasonal water saturation:* More than 6 feet

*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* Very high
*Surface fragments:* About 0.10 to 3.00 percent angular stones
*Parent material:* Residuum weathered from acid sandstone interbedded with shale and siltstone

## Use and Management Considerations

### Cropland

- This soil is unsuited to cropland.

### Pastureland

- This soil is unsuited to pastureland.

### Woodland

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

### Building sites

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

### Septic tank absorption fields

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

### Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

## Interpretive Groups

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

## 30F—Wallen-Rock outcrop complex, 35 to 80 percent slopes, extremely stony

### Setting

*Major land resource area:* Southern Appalachian Ridges and Valleys (MLRA 128)
*Landform:* Ridges and spurs of hills and mountains
*Position on the landform:* Summits and shoulders
*Size of areas:* 10 to 30 acres

### Map Unit Composition

*Note: This Wallen soil and Rock outcrop occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

Wallen and similar soils: Typically 85 percent, ranging from about 80 to 90 percent
Rock outcrop: Typically 10 percent, ranging from about 5 to 20 percent

### Typical Profile

**Wallen**

*Surface layer:*
0 to 4 inches—very dark grayish brown channery sandy loam

*Subsoil:*
4 to 22 inches—yellowish brown very channery sandy loam

*Substratum:*
22 to 24 inches—yellowish brown and strong brown extremely channery sandy loam

*Hard bedrock:*
24 inches—sandstone bedrock

**Rock outcrop**

This part of the map unit consists of exposures of hard sandstone.

### Minor Components

*Similar components:*
- Calvin soils, which formed in shale and siltstone, are redder than the Wallen soil, and are moderately deep to bedrock; on similar landforms
- Soils that are shallow to bedrock, formed in sandstone, and have fewer rock fragments that the Wallen soil; on similar landforms
- Soils that are shallow to bedrock and formed in sandstone; on landforms similar to those of the Wallen soil

*Dissimilar components:*
- Lily soils, which have more clay and fewer rock fragments than the Wallen soil; on similar landforms
- Oriskany soils, which formed in colluvium and are very deep to bedrock; on footslopes and near drainageways

### Properties and Qualities of the Wallen Soil

*Available water capacity:* Very low (about 2.0 inches)
*Slowest saturated hydraulic conductivity:* High (about 1.98 in/hr)
*Depth class:* Moderately deep (20 to 40 inches)
*Depth to root-restrictive feature:* 20 to 40 inches to bedrock (lithic)
*Drainage class:* Somewhat excessively drained
*Depth to seasonal water saturation:* More than 6 feet

*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* Very high
*Surface fragments:* About 3.00 to 15.00 percent angular stones
*Parent material:* Residuum weathered from acid sandstone interbedded with shale and siltstone

## Use and Management Considerations

### Cropland

- This map unit is unsuited to cropland.

### Pastureland

- This map unit is unsuited to pastureland.

### Woodland

*Suitability:* Moderately suited to chestnut oak
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality, especially in areas on the steeper slopes. A timber harvest plan should focus on the proper location of haul roads and skid trails, and careful attention should be given to all applicable best management practices.
- The slope poses safety hazards and creates a potential for erosion during the construction of haul roads and log landings.
- Because of the slope, operating conditions are unsafe and the operating efficiency of log trucks and harvesting equipment is reduced.
- Because of the slope, the use of equipment for planting and seeding is impractical.
- The high content of stones or boulders on the surface may hinder the construction of haul roads and log landings.
- The amount of rock fragments on the surface may reduce the traction of wheeled harvest equipment.
- Rock fragments on the surface interfere with the use of site preparation equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.

### Building sites

- The slope influences the use of machinery and the amount of excavation required.
- Because of the limited depth to bedrock, the ease of excavation is greatly reduced and the difficulty in constructing foundations and installing utilities is increased.
- Because of rock outcrops, rock removal may be needed.

### Septic tank absorption fields

- Because of the limited depth to bedrock, the filtering capacity of the soil is reduced and the difficulty of properly installing of the effluent distribution lines is increased.
- The slope limits the proper treatment of effluent from conventional septic systems.
- Because of rock outcrops, special design of septic tank absorption fields is needed.

### Local roads and streets

- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.

- Because of the slope, designing local roads and streets is difficult.
- Because of rock outcrops, special design of the grade of local roads and streets and special consideration of their location are needed to avoid rock removal.

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* Wallen—7s; Rock outcrop—8s
*Virginia soil management group:* Wallen—JJ; Rock outcrop—none assigned
*Hydric soils:* No

## 31D—Wharton-Gilpin-Berks complex, 15 to 25 percent slopes

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Ridges and spurs of mountains and hills
*Position on the landform:* Summits and shoulders
*Elevation:* 902 to 2,952 feet
*Size of areas:* 5 to 75 acres

### Map Unit Composition

*Note: These Wharton, Gilpin, and Berks soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

Wharton and similar soils: Typically 45 percent, ranging from about 40 to 50 percent
Gilpin and similar soils: Typically 40 percent, ranging from about 35 to 45 percent
Berks and similar soils: Typically 15 percent, ranging from about 10 to 25 percent

### Typical Profile

**Wharton**

*Surface layer:*
0 to 2 inches—yellowish brown silt loam

*Subsoil:*
2 to 9 inches—yellowish brown silt loam; many dark yellowish brown mottles
9 to 17 inches—strong brown silty clay loam; many dark yellowish brown mottles
17 to 35 inches—light yellowish brown silty clay loam; light gray iron depletions and strong brown masses of oxidized iron
35 to 55 inches—yellowish brown silt loam; light gray iron depletions and strong brown masses of oxidized iron

*Substratum:*
55 to 65 inches—yellowish brown silt loam and silty clay loam; light gray iron depletions and yellowish red masses of oxidized iron

*Hard bedrock:*
65 inches—shale bedrock

**Gilpin**

*Organic layer:*
0 to 1 inch—slightly decomposed plant material

*Surface layer:*
1 to 3 inches—brown silt loam

*Subsoil:*
3 to 5 inches—yellowish brown silt loam
5 to 19 inches—yellowish brown gravelly silt loam
19 to 30 inches—yellowish brown gravelly loam

*Substratum:*
30 to 35 inches—strong brown very gravelly loam

*Soft bedrock:*
35 to 39 inches—strong brown, brown, and reddish brown sandstone bedrock

*Hard bedrock:*
39 inches—sandstone bedrock

**Berks**

*Organic layer:*
0 to 1 inch—very dark brown slightly decomposed plant material

*Surface layer:*
1 to 4 inches—dark yellowish brown silt loam

*Subsoil:*
4 to 8 inches—yellowish brown channery silt loam
8 to 23 inches—yellowish brown very channery silt loam

*Substratum:*
23 to 34 inches—yellowish brown extremely channery silt loam

*Soft bedrock:*
34 to 36 inches—shale bedrock

*Hard bedrock:*
36 inches—shale bedrock

### Minor Components

*Similar components:*
- Soils that are similar to the Wharton soil but have a thinner solum; on similar landforms
- Soils that are similar to the Wharton soil but have thin lenses of coal in the substratum; on similar landforms
- Soils that are moderately deep to shale bedrock and are moderately well drained; on landforms similar to those of the Wharton, Gilpin, and Berks soils
- Soils that are deep to shale bedrock and are well drained; on landforms similar to those of the Wharton, Gilpin, and Berks soils
- Soils that formed in residuum weathered from shale over a sandstone substratum; on landforms similar to those of the Wharton, Gilpin, and Berks soils
- Soils that have more sand than the Gilpin soil and are moderately deep or deep to bedrock; on similar landforms
- Matewan soils, which are moderately deep to sandstone bedrock and have more rock fragments in the soil than the Wharton and Gilpin soils; in the higher areas
- Shelocta soils, which are very deep, well drained colluvium and have fewer rock fragments in the soil than the Gilpin soil; in the lower areas

### Soil Properties and Qualities

*Available water capacity:* Wharton—high (about 10.3 inches); Gilpin—low (about 4.8 inches); Berks—low (about 3.5 inches)
*Slowest saturated hydraulic conductivity:* Wharton—moderately low (about 0.06 in/hr); Gilpin and Berks—moderately high (about 0.57 in/hr)

*Depth class:* Wharton—very deep (more than 60 inches); Gilpin and Berks—moderately deep (20 to 40 inches)
*Depth to root-restrictive feature:* Wharton—40 to 70 inches to bedrock (lithic); Gilpin and Berks—20 to 40 inches to bedrock (paralithic)
*Drainage class:* Wharton—moderately well drained; Gilpin and Berks—well drained
*Depth to seasonal water saturation:* Wharton—about 18 to 36 inches; Gilpin and Berks—more than 6 feet
*Water table kind:* Wharton—perched; Gilpin and Berks—none
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* Wharton—very high; Gilpin and Berks—high
*Surface fragments:* None
*Parent material:* Wharton—residuum weathered from shale and siltstone; Gilpin—residuum weathered from sandstone and some shale and siltstone; Berks—residuum weathered from acid shale interbedded with fine-grained sandstone and siltstone

### Use and Management Considerations

#### Cropland

*Suitability:* Moderately suited to wheat; poorly suited to corn and grass-legume hay; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- Frost action may damage the root system of winter grain crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

#### Pastureland

*Suitability:* Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Frost action may damage the root systems of plants.

#### Woodland

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

#### Building sites

- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.

**Septic tank absorption fields**

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

**Local roads and streets**

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.
- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* 4e
*Virginia soil management group:* Wharton—AA; Gilpin—U; Berks—JJ
*Hydric soils:* No

## 32C—Wharton-Gilpin-Marrowbone complex, 8 to 15 percent slopes

### Setting

*Major land resource area:* Cumberland Plateau and Mountains (MLRA 125)
*Landform:* Ridges and spurs of mountains and hills
*Position on the landform:* Summits and shoulders
*Elevation:* 902 to 3,608 feet
*Size of areas:* 5 to 20 acres

### Map Unit Composition

*Note: These Wharton, Gilpin, and Marrowbone soils occur as areas so closely intermingled that they could not be separated at the scale selected for mapping.*

Wharton and similar soils: Typically 45 percent, ranging from about 40 to 50 percent
Gilpin and similar soils: Typically 35 percent, ranging from about 30 to 40 percent
Marrowbone and similar soils: Typically 20 percent, ranging from about 15 to 25 percent

### Typical Profile

**Wharton**

*Surface layer:*
0 to 2 inches—yellowish brown silt loam

*Subsoil:*
2 to 9 inches—yellowish brown silt loam; many dark yellowish brown mottles
9 to 17 inches—strong brown silty clay loam; many dark yellowish brown mottles
17 to 35 inches—light yellowish brown silty clay loam; light gray iron depletions and strong brown masses of oxidized iron
35 to 55 inches—yellowish brown silt loam; light gray iron depletions and strong brown masses of oxidized iron

*Substratum:*
55 to 65 inches—yellowish brown silt loam and silty clay loam; light gray iron depletions and yellowish red masses of oxidized iron

*Hard bedrock:*
65 inches—shale bedrock

**Gilpin**

*Organic layer:*
0 to 1 inch—slightly decomposed plant material

*Surface layer:*
1 to 3 inches—brown silt loam

*Subsoil:*
3 to 5 inches—yellowish brown silt loam
5 to 19 inches—yellowish brown gravelly silt loam
19 to 30 inches—yellowish brown gravelly loam

*Substratum:*
30 to 35 inches—strong brown very gravelly loam

*Soft bedrock:*
35 to 39 inches—strong brown, brown, and reddish brown sandstone bedrock

*Hard bedrock:*
39 inches—sandstone bedrock

**Marrowbone**

*Organic layer:*
0 to 1 inch—slightly decomposed plant material

*Surface layer:*
1 to 5 inches—brown fine sandy loam

*Subsoil:*
5 to 10 inches—strong brown sandy loam
10 to 22 inches—strong brown gravelly sandy loam

*Substratum:*
22 to 33 inches—strong brown very gravelly loamy fine sand; common strong brown mottles

*Soft bedrock:*
33 to 45 inches—strong brown sandstone bedrock

*Hard bedrock:*
45 inches—sandstone bedrock

### Minor Components

*Similar components:*
- Soils that are similar to the Wharton soil but have thin lenses of coal in the subsoil or in the substratum; on similar landforms
- Soils that are similar to the Wharton soil but have a seasonal high water table at a greater depth; on similar landforms
- Soils that are moderately deep to shale bedrock and are moderately well drained; on landforms similar to those of the Wharton, Gilpin, and Marrowbone soils
- Soils that are shallow to shale bedrock; on landforms similar to those of the Wharton, Gilpin, and Marrowbone soils

- Soils that formed in residuum weathered from shale over a sandstone substratum; on landforms similar to those of the Wharton, Gilpin, and Marrowbone soils
- Soils that formed in residuum weathered from sandstone over a shale substratum; on landforms similar to those of the Wharton, Gilpin, and Marrowbone soils
- Soils that are deep to sandstone bedrock; on landforms similar to those of the Wharton, Gilpin, and Marrowbone soils

### Soil Properties and Qualities

*Available water capacity:* Wharton—high (about 10.3 inches); Gilpin—low (about 4.8 inches); Marrowbone—very low (about 2.7 inches)
*Slowest saturated hydraulic conductivity:* Wharton—moderately low (about 0.06 in/hr); Gilpin—moderately high (about 0.57 in/hr); Marrowbone—high (about 1.98 in/hr)
*Depth class:* Wharton—very deep (more than 60 inches); Gilpin and Marrowbone—moderately deep (20 to 40 inches)
*Depth to root-restrictive feature:* Wharton—40 to 70 inches to bedrock (lithic); Gilpin and Marrowbone—20 to 40 inches to bedrock (paralithic)
*Drainage class:* Wharton—moderately well drained; Gilpin and Marrowbone—well drained
*Depth to seasonal water saturation:* Wharton—about 18 to 36 inches; Gilpin and Marrowbone—more than 6 feet
*Water table kind:* Wharton—perched; Gilpin and Marrowbone—none
*Flooding hazard:* None
*Ponding hazard:* None
*Shrink-swell potential:* Low
*Runoff class:* Wharton—very high; Gilpin and Marrowbone—medium
*Surface fragments:* None
*Parent material:* Wharton—residuum weathered from shale and siltstone; Gilpin—residuum weathered from sandstone and some shale and siltstone; Marrowbone—residuum weathered from sandstone

### Use and Management Considerations

#### Cropland

*Suitability:* Moderately suited to corn, wheat, grass-legume hay; not suited to alfalfa hay
- The rate of surface runoff, the erosion hazard, and the amount of nutrient loss are increased because of the slope.
- Frost action may damage the root system of winter grain crops.
- The risk of compaction increases when the soil is wet.
- Soil crusting results in a decrease in water infiltration and hinders the emergence of seedlings.

#### Pastureland

*Suitability:* Poorly suited
- The hazard of erosion, the rate of surface runoff, and the amount of nutrient loss are increased because of the slope.
- Frost action may damage the root systems of plants.

#### Woodland

*Suitability:* Moderately suited to northern red oak and yellow-poplar
- Proper planning for timber harvesting is essential in minimizing the potential negative impact to soil and water quality. A timber harvest plan should include general adherence to all applicable best management practices.
- Soil wetness may limit the use of log trucks.

- Because of the slope, operating conditions for log trucks are unsafe and the operating efficiency is reduced.
- The slope may restrict the use of some mechanical planting equipment.
- Rock fragments restrict the use of equipment during site preparation for planting or seeding.
- Coarse textured soil layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The coarseness of the soil material may reduce the traction of wheeled harvest equipment and log trucks.
- Coarse textured soil layers increase the maintenance of haul roads and log landings.
- The low soil strength interferes with the construction of haul roads and log landings.

**Building sites**

- The seasonal high water table may restrict the period when excavations can be made.
- The slope influences the use of machinery and the amount of excavation required.
- Because of the high content of sand or gravel in the soil, sloughing is increased and cutbanks are more susceptible to caving.

**Septic tank absorption fields**

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

**Local roads and streets**

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.
- Because of the limited depth to bedrock, the ease of excavation is reduced and the difficulty of constructing roads is increased.
- Because of the slope, designing local roads and streets is difficult.

### Interpretive Groups

*Prime farmland:* Not prime farmland
*Land capability class:* 3e
*Virginia soil management group:* Wharton—AA; Gilpin—U; Marrowbone—FF
*Hydric soils:* No

## W—Water

This map unit is in the Cumberland Plateau and Mountains Major Land Resource Area (MLRA 125). It includes ponds, lakes, creeks, rivers, and reservoirs.

This map unit is not assigned any interpretive groups.

# Use and Management of the Soils

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

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

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

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

Contractors can use this survey to locate sources of gravel, sand, reclamation material, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

## Interpretive Ratings

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

### Rating Class Terms

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

### Numerical Ratings

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

## Crops and Pasture

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

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

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

### Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification and the Virginia Soil Management Group of map units in the survey area also are shown in the table.

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

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

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

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

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in the yields table 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 landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for forestland or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit *(17)*. Only class and subclass are used in this survey.

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

Class 1 soils have slight limitations that restrict their use.

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

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

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

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

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

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

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

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

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

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

## Virginia Soil Management Groups

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

*Group A.* The soils of this group formed in alluvial parent materials. These soils are on gently sloping flood plains or stream terraces which have watersheds that originate west of the Blue Ridge. They are deep or very deep and are medium textured throughout. They have a high available water capacity and are well drained.

*Group G.* The soils of this group formed in locally transported, medium textured sediments of either colluvial or alluvial origin that overlie a wide range of residual materials. These soils are in landscape positions that include footslopes, toeslopes, the heads of drainageways, depressions, and narrow upland drainageways. They are deep and very deep and are silty to loamy in the upper part of the subsoil, which is underlain with clayey to stony materials. They have a moderately high available water capacity and are moderately well drained or somewhat poorly drained.

*Group H.* The soils of this group formed from alluvium along streams or terraces. These soils are moderately deep to very deep, have silty to clay loam subsurface layers, and have a moderately high available water capacity. They are somewhat poorly drained to poorly drained; however, if artificial drainage is provided the productive capacity significantly increases.

*Group L.* The soils of this group formed from old transported deposits of alluvium or colluvium. These soils are common on stream terraces, footslopes, and older, elevated, upland landscapes that were once stream terraces. They are deep or very deep, have medium textured surface layers, have more clayey subsurface layers, and commonly contain gravel and rounded stones. They have a moderate or high available water capacity and typically are well drained.

*Group U.* The soils of this group formed from a variety of residual parent materials ranging from Triassic sediments to sandstone, shale, and limestone to colluvium from these materials. These soils are moderately deep to shallow and commonly have fine-loamy subsurface layers. They commonly have coarse fragments making up one-third the soil volume and, as a result, have a moderate or moderately low available water capacity. They are well drained or moderately well drained.

*Group AA.* The soils of this group formed from a variety of sediments on uplands. These soils are deep to shallow, have clayey subsurface horizons (with coarse fragments in some areas), and have a moderately low available water capacity. They are somewhat poorly drained or moderately well drained.

*Group CC.* The soils of this group formed from a range of parent materials that include alluvium and colluvium. These soils occur on a variety of landscapes, including uplands, stream terraces, colluvial areas, and bottomlands. They commonly have a moderately deep solum, are very deep to bedrock, have clayey-skeletal to coarse-loamy subsurface layers (which have as much as 70 percent coarse fragments in some areas), and have a moderately low available water capacity. They are well drained.

*Group FF.* The soils of this group formed in sandstone and shale residual parent materials and mountain colluvium. These soils are on steeply dissected uplands and mountain side slopes. They are moderately shallow and mostly have loamy-skeletal subsurface layers, which may contain 80 percent, or more, coarse fragments. As a result, the available water capacity is low or very low. The soils are well drained or moderately well drained.

*Group HH.* The soils of this group formed from loamy sediments in flood-plain positions. These soils are moderately deep to very deep, have fine-loamy or clayey subsurface textures, have a moderate available water capacity, and are somewhat poorly drained or moderately well drained.

*Group JJ.* The soils of this group formed from a wide variety of residual parent materials, ranging from sandstone, shale, and limestone to phyllite or schist. These soils are shallow to moderately deep, are dominantly loamy-skeletal throughout, and contain 30 to 70 percent coarse fragments. This group includes some very deep soils if the natural soil porosity has been disturbed. The soils of this group have a very low available water capacity and are well drained.

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

## Prime Farmland

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

Prime farmland is of major importance in meeting the Nation’s short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation’s prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 514 acres in the survey area meets the soil requirements for prime farmland. These areas are along portions of flood plains of creeks. They only occur in mapped areas of Grigsby fine sandy loam, 0 to 3 percent slopes, occasionally flooded.

A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

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

## Hydric Soils

This section discusses how soils are rated as hydric. This information can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site *(6, 8)*.

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology *(3, 8, 10, 11)*. Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

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

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established *(5)*. These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in “Soil Taxonomy” *(14)* and “Keys to Soil Taxonomy” *(16)* and in the “Soil Survey Manual” *(18)*.

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

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present. In Buchanan County, there are no map units that meet the definition of hydric soils *(6, 8)*.

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

The following map unit, in general, does not meet the definition of hydric soils because it does not have one of the hydric soil indicators. A portion of this map unit, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

20A Philo fine sandy loam, 0 to 3 percent slopes, occasionally flooded

## Agricultural Waste Management

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

Table 6, parts I, II, and III, show the degree and kind of soil limitations affecting the treatment of agricultural waste, including municipal and food-processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food-processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. In the context of this table, the effluent in lagoons and storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30 milligrams per liter. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter. When wastewater is applied, checks should be made to ensure that nitrogen, heavy metals, and salts are not added in excessive amounts.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## Forestland Productivity and Management

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

### Forestland Productivity

In table 7, the *potential productivity* of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forest managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the “National Forestry Manual” *(12)*, which is available at the local office of the Natural Resources Conservation Service or on the Internet.

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

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

## Forestland Management

In table 8, parts I through V, interpretive ratings are given for various aspects of forestland management. The ratings are both verbal and numerical.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## Recreational Development

In table 9, parts I and II, the soils of the survey area are rated according to limitations that affect their suitability for recreational development. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

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

The ratings in the table are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

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

*Camp areas* require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

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

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

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

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

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

## Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the data in the tables described under the heading “Soil Properties.”

*Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.*

*The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.*

*Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.*

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

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

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

## Building Site Development

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Table 10, parts I and II, show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

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

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

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

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

*Local roads and streets* have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, ponding, and differential settling.

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

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

## Sanitary Facilities

Table 11, parts I and II, show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill.

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

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

*Septic tank absorption fields* are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence and differential settling interfer with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

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

*Sewage lagoons* are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

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

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

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

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

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

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

In an *area sanitary landfill*, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

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

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

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

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

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

## Construction Materials

Table 12, parts I and II, give information about the soils as potential sources of gravel, sand, reclamation material, roadfill, and topsoil. Normal compaction, minor processing, and other standard construction practices are assumed.

*Gravel* and *sand* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 12, part I, only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand or gravel, the soil is considered a likely source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

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

In table 12, part II, the rating class terms are *good, fair,* and *poor*. The features that limit the soils as sources of these materials are specified in the table. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of reclamation material, roadfill, and topsoil. The lower the number, the greater the limitation.

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

*Roadfill* is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

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

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

*Topsoil* is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

## Water Management

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

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

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

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

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

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

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

# Soil Properties

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

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

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

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

## Engineering Soil Properties

Table 14 gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

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

*Texture* is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. “Loam,” for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, “gravelly.” Textural terms are defined in the Glossary.

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

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

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

*Rock fragments* larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

*Percentage (of soil particles) passing designated sieves* is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

*Liquid limit* and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

## Physical Soil Properties

Table 15 shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

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

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

*Sand* as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In the table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

*Silt* as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In the table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

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

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

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

*Moist bulk density* is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^{1}/_{3}$- or $^{1}/_{10}$-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

*Saturated hydraulic conductivity* refers to the ability of a soil to transmit water or air. The term “permeability,” as used in soil surveys, indicates saturated hydraulic conductivity ($K_{sat}$). The estimates in the table indicate the rate of water movement, in micrometers per second, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

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

*Linear extensibility* refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

*Organic matter* is the plant and animal residue in the soil at various stages of decomposition. In the table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

*Erosion factors* are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

*Erosion factor Kw* indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

*Erosion factor Kf* indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

*Erosion factor T* is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

*Wind erodibility groups* are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the “National Soil Survey Handbook” *(13)*, which is available at the local office of the Natural Resources Conservation Service or on the Internet.

*Wind erodibility index* is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

## Chemical Soil Properties

Table 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 a pH of less than 5.5.

*Soil reaction* is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

## Water Features

Table 17 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

*Hydrologic soil groups* are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

*Surface runoff* refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

*Water table* refers to a saturated zone in the soil. The table indicates, by month, depth to the top *(upper limit)* and base *(lower limit)* of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

*Ponding* is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The table indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

*Flooding* is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

*Duration* and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

## Soil Features

Table 18 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness of the restrictive layer, which significantly affects the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

*Potential for frost action* is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

*Risk of corrosion* pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low, moderate,* or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

# Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(14, 16)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or 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 Ultisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udult (*Ud*, meaning humid, plus *ult*, from Ultisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludults (*Hapl*, meaning minimal horizonation, plus *udult*, the suborder of the Ultisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludults.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, active, mesic Typic Hapludults.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

## Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the “Soil Survey Manual” *(18)* and in the “Field Book for Describing and Sampling Soils” *(15)*. Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” *(14)* and in “Keys to Soil Taxonomy” *(16)*. 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.

## Berks Series

*Physiographic province:* Appalachian Plateau
*Landform:* Ridges and spurs on mountains and hills
*Parent material:* Residuum weathered from acid shale interbedded with fine-grained sandstone and siltstone
*Drainage class:* Well drained
*Slowest saturated hydraulic conductivity:* Moderately high
*Depth class:* Moderately deep
*Slope range:* 15 to 70 percent

### Associated Soils

- Cloverlick soils, which formed in sandstone, siltstone, and shale colluvium, are very deep to bedrock, and have a thick, dark surface layer; on cool aspects in lower backslope and footslope positions and in drainageways
- Shelocta soils, which formed in sandstone, siltstone, and shale colluvium, have fewer rock fragments than the Berks soils, and are very deep to bedrock; in lower backslope and footslope positions and in drainageways
- Highsplint soils, which formed in sandstone, siltstone, and shale colluvium and are very deep to bedrock; in lower backslope and footslope positions and in drainageways
- Gilpin soils, which have more clay and fewer shale fragments than the Berks soils; on similar landscapes
- Wharton soils, which formed in shale residuum, are deep and very deep to bedrock, and have fewer fragments than the Berks soils; on similar, less steep, and lower landscapes

### Taxonomic Classification

Loamy-skeletal, mixed, active, mesic Typic Dystrudepts

### Representative Pedon

Berks silt loam in an area of Gilpin-Berks complex, 35 to 70 percent slopes; in Buchanan County, Virginia; about 0.5 mile southwest of the Virginia-West Virginia State line, 5.5 miles north of Slate Creek, 13.75 miles east of the town of Grundy, on a ridge above Mill and Betsey Branches near Kaiser Cemetery; Bradshaw, West Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 16 minutes 22.00 seconds N. and long. 81 degrees 49 minutes 52.00 seconds W.

Oi—0 to 1 inch; very dark brown (7.5YR 2.5/2, rubbed) slightly decomposed plant material.

A—1 to 4 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; friable, nonsticky, nonplastic; many very fine and fine roots throughout; many very fine moderate-continuity tubular and many very fine low-continuity irregular pores; 5 percent angular shale channers; very strongly acid; clear smooth boundary.

Bw1—4 to 8 inches; yellowish brown (10YR 5/6) channery silt loam; moderate medium subangular blocky structure; friable, nonsticky, nonplastic; many very fine and fine roots throughout; many very fine moderate-continuity tubular and many very fine low-continuity irregular pores; 15 percent angular shale channers; strongly acid; clear wavy boundary.

Bw2—8 to 23 inches; yellowish brown (10YR 5/6) very channery silt loam; moderate medium subangular blocky structure; friable, slightly sticky, nonplastic; many very fine roots throughout; many very fine moderate-continuity tubular and many very fine low-continuity irregular pores; 40 percent angular shale channers; strongly acid; gradual wavy boundary.

C—23 to 34 inches; yellowish brown (10YR 5/6) extremely channery silt loam; massive; friable, slightly sticky, nonplastic; few very fine roots around fragments; many very fine moderate-continuity tubular and many very fine low-continuity irregular pores; 70 percent angular shale channers; strongly acid; gradual smooth boundary.

Cr—34 to 36 inches; soft shale bedrock with silt loam material in cracks; gradual smooth boundary.

R—36 inches; moderately hard shale bedrock.

**Range in Characteristics**

*Solum thickness:* 12 to 40 inches
*Depth to bedrock:* 20 to 40 inches
*Reaction:* Very strongly acid to slightly acid
*Rock fragments (content, type):* 0 to 20 percent, by volume, in the A or Ap horizon, 15 to 60 percent in the Bw horizon, 35 to 60 percent in the BC horizon, and 35 to 80 percent in the C horizon; shale, siltstone, or fine-grained sandstone

*A or Ap horizon:*
Hue—10YR
Value—3 or 4
Chroma—3 or 4
Fine-earth texture—silt loam

*Bw horizon:*
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 to 6
Fine-earth texture—silt loam, loam, or silty clay loam

*BC horizon (if it occurs):*
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Fine-earth texture—silt loam or loam

*C horizon:*
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 6
Fine-earth texture—silt loam or loam

*Cr horizon:*
Bedrock—soft bedrock that crushes to silt loam or loam

## Calvin Series

*Physiographic province:* Valley and Ridge
*Landform:* Ridges and spurs of hills and mountains

*Parent material:* Residuum weathered from shale and siltstone
*Drainage class:* Well drained
*Slowest saturated hydraulic conductivity:* High
*Depth class:* Moderately deep
*Slope range:* 15 to 80 percent

### Associated Soils

- Lily soils, which weathered from sandstone, have browner colors than the Calvin soils, and have more clay and fewer rock fragments; on similar landforms
- Wallen soils, which weathered from sandstone, have more sand than the Calvin soils, and are browner; on similar landforms
- Oriskany soils, which are very deep to bedrock; on footslopes and near drainageways

### Taxonomic Classification

Loamy-skeletal, mixed, active, mesic Typic Dystrudepts

### Representative Pedon

Calvin loam, 15 to 35 percent slopes; in Russell County, Virginia; on a forested backslope, 500 feet north-northeast of the point where Highway VA-80 crosses over the top of Clinch Mountain at Hayters Gap; Hayters Gap, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 51 minutes 57.00 seconds N. and long. 81 degrees 56 minutes 48.00 seconds W.

Oe—0 to 1 inch; moderately decomposed plant material; abrupt smooth boundary.
A—1 to 4 inches; reddish brown (5YR 4/3) loam; weak fine granular structure; friable, nonsticky, nonplastic; common medium roots and many very fine roots; many very fine interstitial pores; 5 percent angular siltstone channers; strongly acid; clear wavy boundary.
AB—4 to 9 inches; reddish brown (5YR 5/4) loam; weak medium granular structure; friable, nonsticky, nonplastic; common coarse roots and common very fine roots; many very fine interstitial pores; 10 percent angular siltstone channers; very strongly acid; gradual wavy boundary.
Bw—9 to 16 inches; reddish brown (2.5YR 4/3) channery loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine and medium roots; many very fine interstitial pores; 25 percent angular siltstone channers; very strongly acid; gradual wavy boundary.
BC—16 to 25 inches; reddish brown (2.5YR 4/4) very channery loam; weak medium subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine roots; many very fine interstitial pores; 40 percent angular siltstone channers; very strongly acid; gradual wavy boundary.
C—25 to 30 inches; reddish brown (2.5YR 4/4) very channery loam; massive; friable, nonsticky, nonplastic; few very fine roots; many very fine interstitial pores; 55 percent angular siltstone channers; very strongly acid; abrupt wavy boundary.
R—30 inches; siltstone bedrock.

### Range in Characteristics

*Solum thickness:* 12 to 35 inches
*Depth to bedrock:* 20 to 40 inches
*Reaction:* Moderately acid to very strongly acid
*Rock fragment content:* 5 to 15 percent in the A and AB horizons, 25 to 55 percent in B horizon, and 40 to 80 percent in the C horizon

*A horizon:*
Hue—5YR or 7.5YR

Value—3 or 4
Chroma—2 to 4
Texture—loam

*AB horizon:*
Hue—2.5YR or 7.5YR
Value—3 to 5
Chroma—2 to 6
Texture—loam

*B horizon:*
Hue—2.5YR or 5YR
Value—4 or 5
Chroma—3 to 6
Fine-earth texture—silt loam or loam

*BC horizon:*
Hue—2.5YR or 5YR
Value—3 to 5
Chroma—3 to 6
Texture—silt loam or loam

*C horizon:*
Hue—2.5YR or 5YR
Value—3 or 4
Chroma—3 or 4
Fine-earth texture—silt loam or loam

## Cedarcreek Series

*Physiographic province:* Appalachian Plateau
*Landform:* Ridges and spurs on mountains that have been surface-mined for coal
*Parent material:* Mine spoil or earthy fill derived from shale, siltstone, sandstone, and coal
*Drainage class:* Well drained
*Slowest saturated hydraulic conductivity:* Moderately high
*Depth class:* Very deep
*Slope range:* 0 to 80 percent

### Associated Soils

- Sewell soils, which formed in mine spoil dominated by sandstone fragments, are acid in reaction, have less clay and silt that the Cedarcreek soils, and have more sand; in similar positions
- Fiveblock soils, which formed in mine spoil dominated by sandstone fragments and are nonacid in reaction; in positions similar to those of the Cedarcreek soils
- Itmann soils, which formed in acid regolith of material from deep-mined coal, are acid in reaction, are very deep to bedrock, and have more carbolithic rock fragments than the Cedarcreek soils; on backslopes, in drainageways, and near coal-cleaning plants
- Kaymine soils, which formed in mine spoil and are nonacid in reaction; in landscape positions similar to those of the Cedarcreek soils
- Stonecoal soils, which formed in nonacid regolith of material from deep-mined coal, are very deep to bedrock, have more carbolithic rock fragments than the Cedarcreek soils, and are nonacid in reaction; in similar positions and on higher landscape summits and shoulders

### Taxonomic Classification

Loamy-skeletal, mixed, active, acid, mesic Typic Udorthents

### Representative Pedon

Cedarcreek very channery loam; in Wyoming County, West Virginia; about 1.5 miles southwest of Ivy Knob Fire Tower, about 200 feet northwest of Crane Fork; approximately 2,400 feet in elevation; Pilot Knob, West Virginia USGS 7.5 Minute Quadrangle:

A—0 to 3 inches; very dark gray (5Y 3/1) very channery loam; weak fine granular structure; very friable; many fine and medium roots; 5 percent subangular sandstone stones, 15 percent subangular siltstone channers, and 30 percent subangular sandstone channers; very strongly acid; gradual wavy boundary.

C1—3 to 15 inches; olive brown (2.5Y 4/4) very channery loam; common yellow (10YR 7/6), brown (10YR 5/3), and gray (10YR 6/1) lithochromic mottles; massive; firm; few fine and medium roots; 3 percent subangular coal gravel, 5 percent subangular sandstone stones, 22 percent subangular siltstone channers, and 25 percent subangular sandstone channers; very strongly acid; gradual wavy boundary.

C2—15 to 65 inches; dark olive gray (5Y 3/2) extremely channery loam; common brown (10YR 5/3), yellow (10YR 7/6), and gray (10YR 6/1) lithochromic mottles; massive; very firm; few fine and medium roots; 5 percent subangular coal gravel, 10 percent subangular sandstone stones, 27 percent subangular sandstone channers, and 28 percent subangular siltstone channers; very strongly acid.

### Range in Characteristics

*Solumn thickness:* 2 to 10 inches
*Depth to bedrock:* More than 60 inches
*Reaction:* Extremely acid to strongly acid, except where surface layers have been limed
*Rock fragments (content, type, size):* 35 to 60 percent, by volume, in the A horizon and 35 to 80 percent in the C horizon; sandstone, mudstone, and coal; mostly channers and gravel but including stones and a few boulders

*A horizon:*
Hue—7.5YR to 5Y
Value—3 to 5
Chroma—1 to 6
Fine-earth texture—loam

*C horizon:*
Hue—7.5YR to 5Y
Value—3 to 6
Chroma—1 to 8
Fine-earth texture—loam, silt loam, or fine sandy loam

## Cloverlick Series

*Physiographic province:* Appalachian Plateau
*Landform:* Ridges and spurs of mountains and hills and drainageways
*Parent material:* Colluvium derived from sandstone and shale
*Drainage class:* Well drained
*Slowest saturated hydraulic conductivity:* Moderately high

*Depth class:* Very deep
*Slope range:* 35 to 80 percent

### Associated Soils

- Berks soils, which formed in residuum weathered from shale, siltstone, and fine-grained sandstone, are moderately deep to bedrock, and have more rock fragments than the Cloverlick soils; on similar and higher landforms
- Gilpin soils, which formed in residuum weathered from shale, siltstone, and fine-grained sandstone and are moderately deep to bedrock; on landforms similar to those of the Cloverlick soils and on higher landforms
- Marrowbone soils, which formed in residuum weathered from sandstone, are moderately deep to bedrock, and have more sand and less silt and clay than the Cloverlick soils; on higher landforms
- Shelocta soils, which formed in colluvium derived from shale, siltstone, and sandstone, have more clay and silt, less sand, and fewer rock fragments than the Cloverlick soils, and have a thinner and lighter-colored surface layer; on similar landforms and on landforms with warmer aspects

### Taxonomic Classification

Loamy-skeletal, mixed, active, mesic Typic Dystrudepts

### Representative Pedon

Cloverlick gravelly silt loam in an area of Cloverlick-Shelocta complex, 55 to 80 percent slopes, very stony; in Buchanan County, Virginia; in woodland, about 1,000 yards south of Levisa River, 1$^1/_3$ miles east of the intersection of Highways US-460 and VA-83, about 1.8 miles west of the intersection of Highways US-460 and VA-638, in Long Branch; Vansant, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 13 minutes 48.00 seconds N. and long. 82 degrees 4 minutes 33.00 seconds W.

Oe—0 to 1 inch; moderately decomposed plant material.

A—1 to 7 inches; dark brown (10YR 3/3) gravelly silt loam, brown (10YR 5/3) dry; weak fine granular structure; friable, nonsticky, nonplastic; many fine, medium, and coarse roots; common very fine moderate-continuity tubular and irregular pores; 15 percent subangular sandstone gravel; strongly acid; clear wavy boundary.

BA—7 to 10 inches; dark yellowish brown (10YR 4/4) gravelly silt loam; weak medium subangular blocky structure; friable, nonsticky, nonplastic; common fine roots and many medium and coarse roots; common very fine moderate-continuity irregular and tubular pores; 15 percent subangular sandstone gravel; very strongly acid; gradual wavy boundary.

Bw1—10 to 15 inches; yellowish brown (10YR 5/6) gravelly loam; moderate medium subangular blocky structure; friable, slightly sticky, nonplastic; common fine and coarse roots and many medium roots; common very fine moderate-continuity tubular and irregular pores; 5 percent subangular sandstone flagstones, 5 percent subangular sandstone, and 10 percent subangular sandstone gravel; very strongly acid; gradual wavy boundary.

Bw2—15 to 44 inches; dark yellowish brown (10YR 4/6) very gravelly loam; moderate medium subangular blocky structure; friable, nonsticky, nonplastic; common very fine, fine, and medium roots; common very fine moderate-continuity tubular and irregular pores; 5 percent subangular sandstone flagstones, 15 percent subangular sandstone channers, and 20 percent subangular sandstone gravel; very strongly acid; gradual wavy boundary.

BC—44 to 49 inches; dark yellowish brown (10YR 4/4) very gravelly sandy loam; common fine distinct irregular yellowish brown (10YR 5/6) lithochromic mottles; weak medium subangular blocky structure; friable, nonsticky, nonplastic; few very fine and fine roots; common very fine moderate-continuity tubular and irregular pores; 20 percent subangular sandstone channers and 30 percent subangular sandstone gravel; strongly acid; gradual wavy boundary.

C—49 to 63 inches; dark yellowish brown (10YR 4/4) very gravelly sandy loam; massive; friable, nonsticky, nonplastic; few very fine and fine roots; common very fine moderate-continuity tubular and irregular pores; common fine distinct irregular light brownish gray (10YR 6/2) iron depletions with sharp boundaries infused into matrix along faces of peds and common fine distinct irregular yellowish brown (10YR 5/6) masses of oxidized iron with sharp boundaries infused into matrix along faces of peds; 25 percent subangular sandstone channers and 30 percent subangular sandstone gravel; strongly acid.

**Range in Characteristics**

*Solum thickness:* 40 to 60 inches or more
*Depth to bedrock:* 60 inches or more
*Reaction:* Extremely acid to strongly acid
*Rock fragments (content, type):* 15 to 35 percent in the A and BA horizons, 15 to 50 percent in individual Bw horizons, and 35 to 90 percent in the BC and C horizons; average of 35 percent or more in the control section; mostly sandstone
*Other characteristics:* Some pedons have brown or gray lithochromic mottles and redoximorphic features in the BC and C horizons

*A horizon:*
Hue—10YR
Value—2 or 3 (3 to 5 dry)
Chroma—2 or 3
Fine-earth texture—silt loam

*BA horizon:*
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Fine-earth texture—loam or silt loam

*Bw horizon:*
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 to 6
Fine-earth texture—loam or silt loam

*BC and C horizons:*
Hue—10YR
Value—4 to 6
Chroma—4 to 6
Fine-earth texture—loam, silt loam, sandy loam, or fine sandy loam

## Cotaco Series

*Physiographic province:* Appalachian Plateau
*Landform:* Stream terraces and areas at the base of slopes of hills and mountains
*Parent material:* Alluvium and/or colluvium derived from sandstone and shale
*Drainage class:* Moderately well drained
*Slowest saturated hydraulic conductivity:* Moderately high
*Depth class:* Very deep
*Slope range:* 8 to 15 percent

### Associated Soils

- Philo soils, which are occasionally flooded; on flood plains
- Soils that have more rock fragments than the Cotaco soils and are frequently flooded; on flood plains
- Grigsby soils, which are well drained; on flood plains

### Taxonomic Classification

Fine-loamy, mixed, semiactive, mesic Aquic Hapludults

### Representative Pedon

Cotaco loam; in Wayne County, West Virginia; about 3.9 miles south of the confluence of Buffalo Creek and Twelvepole Creek and 0.8 mile northwest of Mills Chapel, in a pasture about 500 feet northeast of Buffalo Creek; Burnaugh, West Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 38 degrees 17 minutes 53.00 seconds N. and long. 82 degrees 30 minutes 32.00 seconds W.

Ap—0 to 8 inches; brown (10YR 5/3 and 4/3) loam; moderate fine and medium granular structure; very friable; many fine and medium roots; slightly alkaline; abrupt smooth boundary.

BA—8 to 12 inches; yellowish brown (10YR 5/4) loam; weak medium subangular blocky structure; friable; common fine and medium roots; neutral; clear wavy boundary.

Bt1—12 to 17 inches; yellowish brown (10YR 5/4) loam; weak medium subangular blocky structure; friable; common fine and medium roots; common discontinuous clay films on all faces of peds; common pale brown (10YR 6/3) iron-manganese masses and common yellowish brown (10YR 5/6) masses of oxidized iron; strongly acid; clear wavy boundary.

Bt2—17 to 28 inches; brownish yellow (10YR 6/6) clay loam; weak medium subangular blocky structure; friable; few fine roots; common discontinuous clay films on all faces of peds; common brown (10YR 4/3) iron-manganese concretions and many medium light gray (10YR 7/2) iron depletions; strongly acid; gradual wavy boundary.

BCg—28 to 39 inches; light gray (10YR 7/2) and brownish yellow (10YR 6/6) clay loam; weak medium and coarse subangular blocky structure; friable; few fine roots; common manganese coatings on faces of peds; strongly acid; gradual wavy boundary.

Cg1—39 to 50 inches; light gray (10YR 7/2) and brownish yellow (10YR 6/6) loam; massive; friable; 5 percent shale channers; strongly acid; gradual wavy boundary.

Cg2—50 to 65 inches; light gray (10YR 7/2) and brownish yellow (10YR 6/6) channery loam; massive; friable; many iron-manganese concretions; 5 percent siltstone channers and 10 percent shale channers; strongly acid.

### Range in Characteristics

*Solum thickness:* 30 to 50 inches
*Depth to bedrock:* More than 60 inches
*Reaction:* Extremely acid to strongly acid throughout the profile, except in limed areas
*Rock fragment content:* 0 to 30 percent in the solum and 0 to 50 percent in the C horizon

*A horizon:*
Hue—10YR
Value—4 to 6
Chroma—2 to 4
Fine-earth texture—loam

*BA horizon:*
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—3 to 6
Fine-earth texture—loam, silt loam, or fine sandy loam

*Bt horizon:*
Hue—5YR to 2.5Y
Value—4 to 6
Chroma—3 to 8
Fine-earth texture—loam, silt loam, sandy clay loam, clay loam, or silty clay loam

*BC horizon:*
Hue—5YR to 2.5Y
Value—4 to 6
Chroma—dominantly 3 to 8; chroma of 2 occurs where horizon is near gleying
Fine-earth texture—loam, silt loam, sandy clay loam, clay loam, or silty clay loam

*C horizon:*
Hue—7.5YR to 2.5Y
Value—4 to 8
Chroma—1 to 8
Fine-earth texture—loam, silt loam, sandy clay loam, clay loam, or silty clay loam

## Fiveblock Series

*Physiographic province:* Appalachian Plateau
*Landform:* Ridges and spurs of mountains that have been surface-mined for coal
*Parent material:* Mine spoil or earthy fill derived from sandstone and small amounts of siltstone, shale, and coal
*Drainage class:* Somewhat excessively drained
*Slowest saturated hydraulic conductivity:* High
*Depth class:* Very deep
*Slope range:* 0 to 80 percent

### Associated Soils

- Cedarcreek soils, which formed in mine spoil not dominated by sandstone fragments, are acid in reaction, and have more clay and silt and less sand than the Fiveblock soils; in similar positions
- Sewell soils, which formed in mine spoil dominated by sandstone fragments and are acid in reaction; in positions similar to those of the Fiveblock soils
- Itmann soils, which formed in acid regolith of material from deep-mined coal, are acid in reaction, are very deep to bedrock, and have more carbolithic rock fragments than the Fiveblock soils; on backslopes, in drainageways, and near coal-cleaning plants
- Kaymine soils, which which formed in mine spoil not dominated by sandstone fragments and are nonacid in reaction; in landscape positions similar to those of the Fiveblock soils
- Stonecoal soils, which formed in nonacid regolith of material from deep-mined coal, are nonacid in reaction, are very deep to bedrock, and have more carbolithic rock fragments than the Fiveblock soils; in similar positions and on higher landscape summits and shoulders

### Taxonomic Classification

Loamy-skeletal, mixed, semiactive, nonacid, mesic Typic Udorthents

### Representative Pedon

Fiveblock very channery sandy loam; in Wyoming County, West Virginia; Oceana District; 2.14 miles south of Lorado near Amherstdale Mine No. 4 access road, just southeast of the county line; Lorado, West Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 45 minutes 5.00 seconds N. and long. 81 degrees 42 minutes 24.00 seconds W.

A—0 to 6 inches; brown (10YR 4/3) very channery sandy loam; weak fine granular structure; very friable; many fine and medium roots throughout; 2 percent subangular sandstone boulders, 3 percent subangular sandstone stones, 5 percent subangular siltstone channers, and 40 percent subangular sandstone channers; moderately acid; gradual wavy boundary.

C1—6 to 25 inches; brown (10YR 4/3) very channery sandy loam; common brown (10YR 5/3) and yellow (10YR 7/6) lithochromic mottles; massive; friable; common fine and medium roots throughout; 5 percent subangular siltstone channers, 5 percent subangular sandstone boulders, 10 percent subangular sandstone stones, and 35 percent subangular sandstone channers; neutral; gradual wavy boundary.

C2—25 to 65 inches; dark grayish brown (10YR 4/2) extremely channery sandy loam; common yellow (10YR 7/6) and common brown (10YR 5/3) mottles; massive; friable; 5 percent subangular sandstone boulders, 15 percent subangular siltstone channers, 15 percent subangular sandstone stones, and 35 percent subangular sandstone channers; neutral.

### Range in Characteristics

*Solum thickness:* 2 to 10 inches
*Depth to bedrock:* More than 60 inches
*Reaction:* Moderately acid to slightly alkaline
*Rock fragments (content, type, size):* 35 to 60 percent, by volume, in the A horizon and 35 to 80 percent in the C horizon; mostly sandstone with small amounts of siltstone, shale, and coal; mostly channers but including stones and boulders

*A horizon:*
Hue—10YR
Value—3 to 5
Chroma—1 to 4
Fine-earth texture—sandy loam

*C horizon:*
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—1 to 6
Fine-earth texture—sandy loam

## Gilpin Series

*Physiographic province:* Appalachian Plateau
*Landform:* Ridges and spurs of mountains and hills
*Parent material:* Residuum weathered from sandstone and some shale and siltstone
*Drainage class:* Well drained
*Slowest saturated hydraulic conductivity:* Moderately high

*Depth class:* Moderately deep
*Slope range:* 8 to 70 percent

### Associated Soils

- Berks soils, which have more shale fragments and less clay than the Gilpin soils; on similar landscapes
- Cloverlick soils, which formed in sandstone, siltstone, and shale colluvium, are very deep to bedrock, and have a thick, dark surface layer; on cool aspects in lower backslope and footslope positions and in drainageways
- Shelocta soils, which formed in sandstone, siltstone, and shale colluvium and are very deep to bedrock; in lower backslope and footslope positions and in drainageways
- Highsplint soils, which formed in sandstone, siltstone, and shale colluvium, are very deep to bedrock, and have more rock fragments than the Gilpin soils; in lower backslope and footslope positions and in drainageways
- Wharton soils, which formed in shale, are very deep to bedrock, and are moderately well drained; in positions similar to those of the Gilpin soils and in lower positions

### Taxonomic Classification

Fine-loamy, mixed, active, mesic Typic Hapludults

### Representative Pedon

Gilpin silt loam in an area of Gilpin-Berks complex, 35 to 70 percent slopes (fig 13); in Buchanan County, Virginia; about 0.5 mile southwest of the West Virginia State line, 5.5 miles north of Slate Creek, 13.75 miles east of the town of Grundy, on a ridge above Mill and Betsey Branches near Kaiser Cemetery; Bradshaw, West Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 16 minutes 19.00 seconds N. and long. 81 degrees 49 minutes 53.00 seconds W.

Oi—0 to 1 inch; slightly decomposed plant material.

A—1 to 3 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable, nonsticky, nonplastic; many very fine roots throughout; many very fine moderate-continuity tubular and irregular pores; 5 percent subangular sandstone gravel; very strongly acid; abrupt wavy boundary.

BA—3 to 5 inches; yellowish brown (10YR 5/4) silt loam; weak medium subangular blocky structure; friable, slightly sticky, nonplastic; common very fine, fine, and medium roots throughout; many very fine moderate-continuity tubular and irregular pores; common medium faint cylindrical dark brown (10YR 3/3) root sheaths with sharp boundaries lining pores; 5 percent subangular sandstone gravel; strongly acid; clear wavy boundary.

Bt1—5 to 19 inches; yellowish brown (10YR 5/6) gravelly silt loam; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; common fine and medium roots throughout; many very fine moderate-continuity tubular and irregular pores; common faint yellowish brown (10YR 5/6) clay films on vertical faces of peds; common medium faint cylindrical dark brown (10YR 3/3) root sheaths lining pores; 15 percent subangular sandstone gravel; strongly acid; gradual wavy boundary.

Bt2—19 to 30 inches; yellowish brown (10YR 5/6) gravelly loam; moderate medium subangular blocky structure; friable, slightly sticky, nonplastic; few very fine, fine, and medium roots throughout; many very fine moderate-continuity irregular and tubular pores; common faint yellowish brown (10YR 5/6) clay films on vertical faces of peds; 30 percent subangular sandstone gravel; strongly acid; gradual wavy boundary.

C—30 to 35 inches; strong brown (7.5YR 5/6) very gravelly loam; massive; friable, slightly sticky, nonplastic; common very fine roots around fragments; many very


**Figure 13.—Profile of a Gilpin soil. Shale bedrock is at a depth of 34 inches. Depth is marked in inches.**

fine moderate-continuity tubular and irregular pores; 17 percent subangular sandstone channers and 38 percent subangular sandstone gravel; strongly acid; clear wavy boundary.

Cr—35 to 39 inches; reddish brown (2.5YR 4/4), strong brown (7.5YR 5/6), and brown (7.5YR 4/4) weathered sandstone bedrock that crushes to loamy fine sand; clear smooth boundary.

R—39 inches; sandstone bedrock.

### Range in Characteristics

*Solum thickness:* 18 to 36 inches
*Depth to bedrock:* 20 to 40 inches
*Reaction:* Extremely acid to strongly acid throughout the profile, except in limed areas
*Rock fragments (content, type, size):* 5 to 35 percent in the solum and 30 to 75 percent of the C horizon; shale, siltstone, or sandstone channers

*A horizon:*
Hue—10YR
Value—2 to 4
Chroma—2 or 3
Fine-earth texture—silt loam

*BA horizon:*
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 or 5
Fine-earth texture—silt loam or loam

*BE horizon (if it occurs):*
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Fine-earth texture—silt loam or loam

*Bt horizon:*
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 to 6
Fine-earth texture—silt loam, loam, or silty clay loam

*BC horizon: (if it occurs):*
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—4 to 6
Fine-earth texture—silt loam, silty clay loam, loam, or fine sandy loam

*C horizon:*
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—4 to 6
Fine-earth texture—silt loam, loam, sandy loam, or loamy fine sand

*Cr horizon:*
Hue—5YR to 10YR
Value—4 or 5
Chroma—4 to 6
Bedrock—soft bedrock that crushes to silt loam, loam, sandy loam, or loamy sand

## Grigsby Series

*Physiographic province:* Appalachian Plateau
*Landform:* Flood plains
*Parent material:* Alluvium derived from sandstone and shale
*Drainage class:* Well drained
*Slowest saturated hydraulic conductivity:* High
*Depth class:* Very deep
*Slope range:* 0 to 3 percent

### Associated Soils

- Soils that have more rock fragments than the Grigsby soils and are frequently flooded; on similar and lower landforms
- Philo soils, which are moderately well drained; on slightly lower landforms
- Cotaco soils, which are moderately well drained; on stream terraces

### Taxonomic Classification

Coarse-loamy, mixed, active, mesic Dystric Fluventic Eutrudepts

### Representative Pedon

Grigsby fine sandy loam, 0 to 3 percent slopes, occasionally flooded; in Buchanan County, Virginia; in a crop field, 1.4 measured miles east-northeast of the town limits of Grundy, 100 feet south of Highway VA-83, about 200 feet north of Slate Creek; Grundy, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 17 minutes 36.00 seconds N. and long. 82 degrees 3 minutes 11.00 seconds W.

Ap—0 to 11 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; friable, nonsticky, nonplastic; many very fine roots throughout; common very fine moderate-continuity tubular and irregular pores; moderately acid; abrupt wavy boundary.

Bw—11 to 32 inches; strong brown (7.5YR 4/6) fine sandy loam; weak fine subangular blocky structure; very friable, nonsticky, nonplastic; common fine roots throughout; common very fine and fine moderate-continuity tubular and irregular pores; moderately acid; gradual wavy boundary.

C1—32 to 43 inches; strong brown (7.5YR 5/6) loamy sand; single grain; loose; few very fine roots throughout; common very fine and fine moderate-continuity tubular and irregular pores; moderately acid; gradual wavy boundary.

C2—43 to 53 inches; dark yellowish brown (10YR 4/6) loamy sand; single grain; loose; common fine moderate-continuity tubular and irregular pores; 3 percent rounded sandstone gravel; slightly acid; gradual wavy boundary.

C3—53 to 61 inches; dark yellowish brown (10YR 4/6) gravelly sand with pockets of loam; common fine distinct irregular strong brown (7.5YR 5/6) and common medium faint irregular dark yellowish brown (10YR 4/4) lithochromic mottles; single grain; loose; common very fine and fine moderate-continuity tubular and irregular pores; 30 percent rounded sandstone gravel; slightly acid.

### Range in Characteristics

*Solum thickness:* 30 to 50 inches
*Depth to bedrock:* More than 60 inches
*Reaction:* Moderately acid to neutral in the solum and strongly acid to neutral in the C horizon
*Rock fragment content:* 0 to 15 percent in A and B horizons and 0 to 60 percent in C horizon

*Ap or A horizon:*
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—fine sandy loam

*Bw horizon:*
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 6
Fine-earth texture—sandy loam, fine sandy loam, or loam

*C horizon:*
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 6
Fine-earth texture—sandy loam, fine sandy loam, loamy sand, loamy fine sand, or sand; sand occurs only in the lower part of horizon

## Highsplint Series

*Physiographic province:* Appalachian Plateau
*Landform:* Ridges and spurs of mountains and hills and drainageways
*Parent material:* Colluvium derived from sandstone, siltstone, and shale
*Drainage class:* Well drained
*Slowest saturated hydraulic conductivity:* Moderately high
*Depth class:* Very deep
*Slope range:* 35 to 80 percent

### Associated Soils

- Cedarcreek and Kaymine soils, which formed in mine soil regolith derived from sandstone and shale from surface-mining operations and are very deep to bedrock; on landscapes similar to those of the Highsplint soils and on mine benches
- Gilpin soils, which formed in residuum weathered from shale and are moderately deep to bedrock; on landscapes similar to and higher than those of the Highsplint soils
- Marrowbone soils, which formed in residuum weathered from sandstone, are moderately deep to bedrock, and have more sand and less silt and clay than the Highsplint soils; on higher summits and shoulders
- Matewan soils, which formed in residuum weathered from sandstone and are moderately deep to bedrock; on higher summits and shoulders and on backslopes where sandstone outcrops are extensive
- Shelocta soils, which formed in mixed colluvium from shale, siltstone, and sandstone, are very deep to bedrock, have more silt and clay than the Highsplint soils, have less sand, and have fewer fragments; on similar landscapes

### Taxonomic Classification

Loamy-skeletal, mixed, active, mesic Typic Dystrudepts

### Representative Pedon

Highsplint channery silt loam in an area of Highsplint-Shelocta complex, 55 to 80 percent slopes, very stony (fig 14); in Buchanan County, Virginia; in woodland, about 2 miles south-southeast of the intersection of Highways VA-83 and VA-620, about 4.5 miles west-southwest of Oakwood, 100 feet east of Highway VA-620; Vansant, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 11 minutes 32.00 seconds N. and long. 82 degrees 5 minutes 12.00 seconds W.

Oi—0 to 1 inch; slightly decomposed plant material.

A—1 to 3 inches; brown (10YR 4/3) channery silt loam; weak fine granular structure; friable, nonsticky, nonplastic; many very fine and medium roots throughout; many very fine irregular and many very fine tubular pores; 15 percent subangular sandstone channers; moderately acid; abrupt wavy boundary.

Bw1—3 to 19 inches; dark yellowish brown (10YR 4/6) channery silt loam; weak medium and coarse subangular blocky structure; friable, slightly sticky, nonplastic; many fine and coarse roots throughout; many very fine irregular and tubular pores; 6 percent subangular sandstone flagstones and 24 percent subangular sandstone channers; very strongly acid; gradual wavy boundary.

Bw2—19 to 38 inches; dark yellowish brown (10YR 4/4) very channery silt loam; many very coarse faint irregular brown (10YR 5/3) lithochromic mottles; weak medium subangular blocky structure; friable, nonsticky, nonplastic; common very fine and medium roots throughout; many very fine tubular and irregular pores; 10 percent subangular sandstone flagstones and 40 percent subangular sandstone channers; very strongly acid; gradual wavy boundary.

**Figure 14.—Profile of a Highsplint soil. Many sandstone channers and flagstones are in the subsoil. Depth is marked in inches.**

Bw3—38 to 59 inches; yellowish brown (10YR 5/4) very flaggy silt loam; many very coarse faint irregular brown (10YR 4/3) lithochromic mottles; weak medium subangular blocky structure; friable, nonsticky, nonplastic; few very fine and fine roots throughout; many very fine tubular and irregular pores; 22 percent subangular sandstone flagstones and 33 percent subangular sandstone channers; very strongly acid; gradual wavy boundary.

C—59 to 82 inches; yellowish brown (10YR 5/4) very channery loam; common fine distinct irregular strong brown (7.5YR 5/6) and many very coarse distinct irregular dark brown (10YR 3/3) lithochromic mottles; massive; friable, slightly sticky, nonplastic; few very fine roots throughout; common very fine tubular and irregular pores; 10 percent subangular sandstone flagstones, 15 percent subangular sandstone gravel, and 30 percent subangular sandstone channers; very strongly acid.

## Range in Characteristics

*Solum thickness:* 40 to 80 inches

*Depth to bedrock:* More than 60 inches
*Reaction:* Extremely acid to slightly acid
*Rock fragment content:* 15 to 35 percent, by volume, in the A horizon, 25 to 60 percent in the B horizon, and 35 to 70 percent in the C horizon

*A horizon:*
Hue—10YR
Value—3 to 5
Chroma—2 to 4
Fine-earth texture—silt loam

*BA horizon (if it occurs):*
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Fine-earth texture—silt loam or loam

*Bw horizon:*
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Fine-earth texture—loam, silt loam, clay loam, or silty clay loam

*C horizon:*
Hue—10YR
Value—4 to 6
Chroma—3 to 6
Fine-earth texture—loam, silt loam, sandy loam, or fine sandy loam

## Itmann Series

*Physiographic province:* Appalachian Plateau
*Landform:* Ridges and spurs of mountains and hills that are used as refuse piles
*Parent material:* Acid regolith of waste materials from deep-mined coal and mixtures of partially weathered fine earth and fragments of bedrock, which consist mainly of acid carboliths with small amounts of sandstone, siltstone, and shale
*Drainage class:* Somewhat excessively drained
*Slowest saturated hydraulic conductivity:* High
*Depth class:* Very deep
*Slope range:* 0 to 80 percent

**Associated Soils**

- Berks, Gilpin, Matewan, and Marrowbone soils, which formed in residuum weathered from sandstone, siltstone, or shale and are moderately deep to bedrock; on adjacent landforms that have not been disturbed by coal-mining operations
- Shelocta and Highsplint soils, which formed in colluvium derived from sandstone and shale and are very deep to bedrock; on adjacent landforms that have not been disturbed by coal-mining operations
- Cedarcreek soils, which formed in mine spoil with sandstone, shale, and siltstone and have fewer coal fragments than the Itmann soils; on ridges, spur ridges, backslopes, and footslopes
- Fiveblock soils, which formed in mine spoil dominated by sandstone material, are less acid in reaction than the Itmann soils, and have more sand, less silt, and fewer coal fragments; on summits
- Kaymine soils, which formed in mine spoil with sandstone, shale, and siltstone, have

fewer coal fragments than the Itmann soils, and are less acid in reaction; on ridges, spur ridges, backslopes, and footslopes

- Sewell soils, which formed in mine spoil dominated by sandstone fragments and have more sand and less silt than the Itmann soils; on summits
- Stonecoal soils, which formed in nonacid regolith of material from deep-mined coal, are very deep to bedrock, and have more carbolithic rock fragments than the Itmann soils; on similar positions and higher summits and shoulders

### Taxonomic Classification

Loamy-skeletal, mixed, semiactive, acid, mesic Typic Udorthents

### Representative Pedon

Itmann gravelly loam, 0 to 80 percent slopes; in Buchanan County, Virginia; in a refuse area near Highways VA-616 and VA-621, about 16.5 miles east-southeast of the town of Grundy, 2.6 miles south-southeast of Dismal Creek, 0.3 mile north of the Tazewell County line, 0.55 mile northeast of Dismal Creek; Jewell Ridge, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 11 minutes 35.00 seconds N. and long. 81 degrees 47 minutes 43.00 seconds W.

A—0 to 4 inches; very dark gray (10YR 3/1) gravelly loam; weak fine granular structure; friable, nonsticky, nonplastic; many very fine roots; many very fine low-continuity irregular and tubular pores; 3 percent subangular coal gravel, 6 percent subangular shale channers, and 6 percent subangular sandstone gravel; very strongly acid; abrupt wavy boundary.

C1—4 to 27 inches; black (10YR 2/1) very channery sandy loam; common coarse distinct platy dark yellowish brown (10YR 4/4) lithochromic mottles; massive; friable, nonsticky, nonplastic; few very fine roots; common very fine and fine low-continuity irregular and tubular pores; 7 percent subangular sandstone gravel and 8 percent subangular sandstone cobbles, 10 percent subangular coal gravel, and 25 percent subangular shale channers; extremely acid; clear smooth boundary.

C2—27 to 63 inches; black (N 2.5/0) extremely gravelly sandy loam; few medium prominent platy gray (10YR 6/1) and few medium prominent irregular yellowish brown (10YR 5/6) lithochromic mottles; massive; very friable, nonsticky, nonplastic; few very fine, fine, and medium roots; common very fine and fine low-continuity irregular and tubular pores; 6 percent subangular sandstone cobbles, 6 percent subangular shale channers, and 48 percent subangular coal gravel; extremely acid.

### Range in Characteristics

*Solum thickness:* Less than 5 inches
*Depth to bedrock:* More than 60 inches
*Reaction:* Extremely acid to strongly acid
*Rock fragments (content, type):* 15 to 80 percent, by volume, throughout the profile; average of 35 percent or more in the control section; carbolith fragments make up more than 50 percent of the total amount of fragments and siltstone, sandstone, and shale make up the remainder
*Note:* In some pedons, the surface layer was formed by stockpiling native surficial soil and spreading over the land surface. In these pedons the A horizon is 6 to 20 inches thick. It has hue of 10YR, value of 4 to 6, and chroma of 4 to 8. The fine-earth texture is silt loam, loam, clay loam, silty clay loam, or sandy loam.

*A horizon:*
Hue—10YR or neutral
Value—2 or 3

Chroma—1 or 2
Fine-earth texture—loam

*C horizon:*
Hue—10YR or neutral
Value—2 or 3
Chroma—1 or 2
Fine-earth texture—loam or sandy loam

## Kaymine Series

*Physiographic province:* Appalachian Plateau
*Landform:* Ridges and spurs of mountains that have been surface-mined for coal
*Parent material:* Mine spoil or earthy fill derived from shale, siltstone, sandstone, and coal
*Drainage class:* Well drained
*Slowest saturated hydraulic conductivity:* Moderately high
*Depth class:* Very deep
*Slope range:* 0 to 80 percent

### Associated Soils

- Cedarcreek soils, which formed in mine spoil and are acid in reaction; in landscape positions similar to those of the Kaymine soils
- Fiveblock soils, which formed in mine spoil dominated by sandstone fragments, are nonacid in reaction, and have more sand and less silt than the Kaymine soils; on summits
- Itmann soils, which formed in acid regolith of material from deep-mined coal, are acid in reaction, are very deep to bedrock, and have more carbolithic rock fragments than the Kaymine soils; on backslopes, in drainageways, and near coal-cleaning plants
- Sewell soils, which formed in mine spoil dominated by sandstone fragments, have more sand and less silt than the Kaymine soils, and are acid in reaction; on summits
- Stonecoal soils, which formed in nonacid regolith of material from deep-mined coal, are very deep to bedrock, are nonacid in reaction, and have more carbolithic rock fragments than the Kaymine soils; in similar positions and on higher summits and shoulders

### Taxonomic Classification

Loamy-skeletal, mixed, active, nonacid, mesic Typic Udorthents

### Representative Pedon

Kaymine very channery silt loam, 15 to 35 percent slopes, extremely stony; in Buchanan County, Virginia; on a ridge above Elkins Branch and Lester Fork, about 3.6 measured miles north-northeast of the town limits of Grundy, 1/3 mile west of Highway VA-642; Grundy, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 20 minutes 27.00 seconds N. and long. 82 degrees 3 minutes 17.00 seconds W.

A—0 to 4 inches; dark grayish brown (10YR 4/2) very channery silt loam; weak fine granular structure; friable, slightly sticky, nonplastic; many very fine roots throughout; common very fine moderate-continuity tubular and irregular pores; 10 percent subangular sandstone channers and 25 percent subangular mudstone channers; neutral; clear wavy boundary.

C1—4 to 28 inches; dark brown (10YR 3/3) extremely channery silt loam; common medium faint irregular dark grayish brown (10YR 4/2) and common coarse distinct irregular yellowish brown (10YR 5/6) lithochromic mottles; massive; friable, slightly sticky, nonplastic; common very fine roots throughout; common very fine moderate-continuity tubular and irregular pores; 15 percent subangular sandstone channers and 45 percent subangular mudstone channers; neutral; gradual wavy boundary.

C2—28 to 64 inches; dark brown (10YR 3/3) very flaggy silt loam; common fine faint irregular dark grayish brown (10YR 4/2) and common medium distinct irregular yellowish brown (10YR 5/6) lithochromic mottles; massive; friable, nonsticky, nonplastic; few very fine roots throughout; common very fine moderate-continuity tubular and irregular pores; 3 percent subangular sandstone boulders, 8 percent subangular sandstone stones, 22 percent subangular mudstone flagstones, and 22 percent subangular mudstone channers; slightly alkaline.

### Range in Characteristics

*Solum thickness:* 2 to 12 inches
*Depth to bedrock:* More than 60 inches
*Reaction:* Moderately acid to slightly alkaline
*Rock fragments (content, type):* 35 to 60 percent, by volume, in the A horizon and 35 to 80 percent in the C horizon; sandstone, siltstone, shale, and coal

*A horizon:*
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—0 to 4
Fine-earth texture—silt loam

*C horizon:*
Hue—7.5YR to 2.5Y
Value—2 to 6
Chroma—1 to 8
Fine-earth texture—loam or silt loam

## Lily Series

*Physiographic province:* Valley and Ridge
*Landform:* Ridges and spurs of hills and mountains
*Parent material:* Residuum weathered from sandstone
*Drainage class:* Well drained
*Slowest saturated hydraulic conductivity:* Moderately high
*Depth class:* Moderately deep
*Slope range:* 8 to 55 percent

### Associated Soils

- Gilpin soils, which weathered from shale and have more silt and less sand than the Lily soils; on similar landforms
- Marrowbone soils, which weathered from sandstone and have more sand than the Lily soils; on similar landforms
- Calvin soils, which weathered from sandstone and are redder than the Lily soils; on similar landforms
- Wallen soils, which weathered from sandstone and have more sand and more rock fragments than the Lily soils; on similar landforms
- Oriskany soils, which are very deep to bedrock; on footslopes and near drainageways

### Taxonomic Classification

Fine-loamy, siliceous, semiactive, mesic Typic Hapludults

### Representative Pedon

Lily loam, 8 to 15 percent slopes; in Scott County, Virginia; in a wooded area on a summit with a south-southwest aspect, on a convex slope, 0.86 mile south-southwest of the intersection of Highway VA-619 and Forest Service road 2645, about 2.85 miles north of the intersection of Highways VA-619 and VA-653; Fort Blackmore, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 51 minutes 7.00 seconds N. and long. 82 degrees 36 minutes 55.00 seconds W.

A—0 to 3 inches; very dark grayish brown (10YR 3/2) loam; weak fine granular structure; very friable, slightly sticky, slightly plastic; few fine and medium and common very fine roots; many fine pores; 5 percent subangular sandstone gravel; strongly acid; abrupt smooth boundary.

BA—3 to 7 inches; brown (10YR 4/3) loam; weak medium granular structure; very friable, slightly sticky, slightly plastic; few very fine, fine, and medium roots; many fine pores; 5 percent subangular sandstone gravel; strongly acid; clear smooth boundary.

Bt1—7 to 15 inches; dark yellowish brown (10YR 4/4) loam; weak fine and medium subangular blocky structure; friable, moderately sticky, slightly plastic; common very fine roots; many fine pores; few faint clay films on all faces of peds; 5 percent subangular sandstone gravel; strongly acid; clear wavy boundary.

Bt2—15 to 24 inches; dark yellowish brown (10YR 4/6) loam; weak medium and coarse subangular blocky structure; friable, moderately sticky, slightly plastic; common very fine roots; many fine pores; common distinct clay films on all faces of peds; 5 percent subangular sandstone cobbles; strongly acid; clear smooth boundary.

C—24 to 28 inches; yellowish brown (10YR 5/6) cobbly sandy loam; massive; friable, slightly sticky, slightly plastic; few very fine roots; many fine pores; 5 percent subangular sandstone gravel and 15 percent subangular sandstone cobbles; strongly acid; abrupt smooth boundary.

R—28 inches; sandstone bedrock.

### Range in Characteristics

*Solum thickness:* 20 to 40 inches
*Depth to bedrock:* 20 to 40 inches
*Reaction:* Very strongly acid or strongly acid
*Rock fragment content:* 0 to 15 percent in the A horizon, 0 to 20 percent in the B horizon, and 0 to 35 percent in the C horizon

*A horizon:*
Hue—10YR
Value—2 to 4
Chroma—1 to 3
Texture—loam

*BA horizon:*
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Fine-earth texture—loam or sandy loam

*Bt horizon:*
Hue—5YR to 10YR
Value—4 or 5
Chroma—4 to 8
Fine-earth texture—loam, sandy clay loam, or clay loam

*C horizon:*
Hue—5YR to 10YR
Value—5 or 6
Chroma—4 to 8
Fine-earth texture—loam or sandy loam

## Marrowbone Series

*Physiographic province:* Appalachian Plateau
*Landform:* Ridges and spurs of mountains and hills
*Parent material:* Residuum weathered from sandstone
*Drainage class:* Well drained
*Slowest saturated hydraulic conductivity:* High
*Depth class:* Moderately deep
*Slope range:* 8 to 70 percent

### Associated Soils

- Gilpin soils, which formed in shale, siltstone, and fine-grained sandstone and have more clay and less sand than the Marrowbone soils; on similar landscapes
- Berks soils, which formed in shale and siltstone, have more rock fragments than the Marrowbone soils, have more clay and silt, and have less sand; on similar landscapes
- Matewan soils, which formed in sandstone and have more rock fragments than the Marrowbone soils; on similar landscapes
- Shelocta soils, which formed in sandstone and shale colluvium, are very deep to bedrock, and have more clay and silt and less sand than the Marrowbone soils; on lower landscape ridges and spur ridges and in drainageways
- Highsplint soils, which formed in sandstone and shale colluvium, are very deep to bedrock, have more clay and silt and less sand than the Marrowbone soils, and have more rock fragments; on lower landscape ridges and spur ridges and in drainageways

### Taxonomic Classification

Coarse-loamy, mixed, semiactive, mesic Typic Dystrudepts

### Representative Pedon

Marrowbone fine sandy loam in an area of Marrowbone-Gilpin complex, 25 to 35 percent slopes; in Buchanan County, Virginia; in woodland, about 3.95 miles north-northeast of the town of Grundy, 2.95 miles north of the intersection of Highways VA-83 and VA-642 near Slate Creek, 1 mile south-southeast of the intersection of Highways VA-650 and VA-651 at Roseann; Grundy, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 20 minutes 32.00 seconds N. and long. 82 degrees 2 minutes 40.00 seconds W.

Oi—0 to 1 inch; slightly decomposed plant material.
A—1 to 5 inches; brown (7.5YR 4/4) fine sandy loam; weak fine granular structure; friable, nonsticky, nonplastic; common very fine and fine roots; many very fine moderate-continuity irregular and tubular pores; 5 percent angular sandstone gravel; strongly acid; clear wavy boundary.
Bw1—5 to 10 inches; strong brown (7.5YR 5/6) sandy loam; weak medium subangular blocky structure; friable, nonsticky, nonplastic; common fine and medium and few very fine roots; common fine moderate-continuity and many very fine moderate-continuity tubular and irregular pores; common mica flakes; 10 percent angular sandstone gravel; strongly acid; gradual wavy boundary.

Bw2—10 to 22 inches; strong brown (7.5YR 5/6) gravelly sandy loam; weak medium subangular blocky structure; friable, nonsticky, nonplastic; few fine and common medium roots; many fine moderate-continuity tubular and irregular pores; common mica flakes; 25 percent angular sandstone gravel; strongly acid; gradual wavy boundary.

C—22 to 33 inches; strong brown (7.5YR 5/6) very gravelly loamy fine sand; common fine faint irregular strong brown (7.5YR 4/6) mottles; single grain; loose; few very fine and fine roots; common very fine and fine moderate-continuity tubular and irregular pores; common mica flakes; 10 percent subangular sandstone channers and 35 percent subangular sandstone gravel; strongly acid; gradual wavy boundary.

Cr—33 to 45 inches; strong brown (7.5YR 5/6) soft sandstone bedrock; common mica flakes; gradual wavy boundary.

R—45 inches; hard sandstone bedrock.

**Range in Characteristics**

*Solum thickness:* 20 to 40 inches
*Depth to bedrock:* 20 to 40 inches
*Reaction:* Very strongly acid to moderately acid throughout the profile, except in limed areas
*Rock fragments (content, type, size):* 0 to 15 percent, by volume, in the A horizon, 5 to 35 percent in individual horizons of the Bw horizon, and 10 to 50 percent in the C horizon; sandstone or orthoquartzite fragments that are mostly smaller than 3 inches in diameter but can be as much as 6 inches in diameter

*A horizon:*
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—2 to 4
Texture—fine sandy loam

*Bw horizon:*
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Fine-earth texture—sandy loam or fine sandy loam

*C horizon:*
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 6
Fine-earth texture—loamy sand, loamy fine sand, sandy loam, or fine sandy loam

*Cr horizon:*
Hue—7.5YR or 10YR
Value—5 or 6
Chroma—6
Bedrock—soft sandstone bedrock that crushes to loamy fine sand, fine sand, or sand

## Matewan Series

*Physiographic province:* Appalachian Plateau
*Landform:* Ridges and spurs of mountains and hills
*Parent material:* Residuum weathered from sandstone
*Drainage class:* Well drained

*Slowest saturated hydraulic conductivity:* High
*Depth class:* Moderately deep
*Slope range:* 55 to 80 percent

### Associated Soils

- Berks soils, which weathered from shale residuum; on landforms similar to those of the Matewan soils and on higher summits and shoulders
- Gilpin soils, which weathered from shale residuum; on landforms similar to those of the Matewan soils and on higher summits and shoulders
- Highsplint soils, which are derived from sandstone and shale colluvium, are very deep to bedrock, and have more clay and silt and less sand than the Matewan soils; on lower ridges and spurs and in drainageways
- Marrowbone soils, which have fewer rock fragments than the Matewan soils; on higher summits and shoulders
- Shelocta soils, which derived from sandstone and shale colluvium, are very deep to bedrock, have more clay and silt than the Matewan soils, have less sand, and have fewer rock fragments; on lower ridges and spurs and in drainageways

### Taxonomic Classification

Loamy-skeletal, mixed, active, mesic Typic Dystrudepts

### Representative Pedon

Matewan flaggy fine sandy loam in an area of Matewan-Gilpin-Rock outcrop complex, 55 to 80 percent slopes, extremely stony; in Buchanan County, Virginia; in woodland, about 400 feet north of Highway VA-600, about 1/4 mile west of the intersection of Highways VA-620 and VA-600, about 6.25 miles south-southeast of the town of Vansant; Vansant, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 8 minutes 37.00 seconds N. and long. 82 degrees 3 minutes 38.00 seconds W.

Oe—0 to 1 inch; moderately decomposed plant material.

A—1 to 4 inches; dark brown (10YR 3/3) flaggy fine sandy loam; weak fine granular structure; very friable, nonsticky, nonplastic; many very fine and fine roots; many very fine moderate-continuity tubular pores; 8 percent angular sandstone flagstones and 12 percent angular sandstone channers; moderately acid; abrupt wavy boundary.

Bw—4 to 21 inches; dark yellowish brown (10YR 4/6) very flaggy fine sandy loam; moderate medium subangular blocky structure; friable, slightly sticky, nonplastic; many fine and coarse roots; common very fine moderate-continuity tubular and irregular pores; 22 percent angular sandstone flagstones and 23 percent angular sandstone channers; strongly acid; gradual wavy boundary.

C1—21 to 31 inches; yellowish brown (10YR 5/6) very gravelly sandy loam; massive; very friable, nonsticky, nonplastic; few very fine and fine roots; common very fine moderate-continuity tubular and irregular pores; 35 percent angular sandstone gravel; strongly acid; gradual wavy boundary.

C2—31 to 38 inches; strong brown (7.5YR 5/6) extremely gravelly sandy loam; many coarse distinct irregular yellowish brown (10YR 5/6) lithochromic mottles; massive; very friable, nonsticky, nonplastic; few very fine roots; common very fine moderate-continuity tubular and irregular pores; 20 percent angular sandstone channers and 40 percent angular sandstone gravel; strongly acid; abrupt wavy boundary.

R—38 inches; weathered sandstone bedrock.

### Range in Characteristics

*Solum thickness:* 20 to 40 inches
*Depth to bedrock:* 20 to 40 inches

*Reaction:* Very strongly acid to moderately acid in the surface layer (except in limed areas) and extremely acid to strongly acid below the surface layer
*Rock fragments (content, type, size):* 15 to 25 percent, by volume, in the A horizon, 35 to 55 percent in the B horizon, and 35 to 75 percent in the C horizon; sandstone gravel, channers, cobblestones, flagstones, stones, and boulders (as much as 35 inches in diameter)

*A horizon:*
Hue—10YR
Value—2 to 4
Chroma—2 to 4
Fine-earth texture—fine sandy loam

*B horizon:*
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 6
Fine-earth texture—sandy loam, fine sandy loam, or loam

*C horizon:*
Hue—7.5YR or 10YR
Value—5 or 6
Chroma—5 or 6
Fine-earth texture—sandy loam, loamy sand, or loam

## Oriskany Series

*Physiographic province:* Valley and Ridge
*Landform:* Base of slopes of ridges and spurs and lower side slopes of ridges and spurs; all in areas of hills and mountains
*Parent material:* Colluvium derived from sandstone and shale
*Drainage class:* Well drained
*Slowest saturated hydraulic conductivity:* High
*Depth class:* Very deep
*Slope range:* 15 to 55 percent

### Associated Soils

- Calvin soils, which formed in siltstone and shale and are moderately deep to bedrock; on summits and shoulders
- Lily soils, which weathered from sandstone, are moderately deep to bedrock, and have more clay and fewer rock fragments than the Oriskany soils; on summits and shoulders
- Wallen soils, which weathered from sandstone and are moderately deep to bedrock; on summits and shoulders

### Taxonomic Classification

Loamy-skeletal, siliceous, semiactive, mesic Typic Hapludults

### Representative Pedon

Oriskany very cobbly fine sandy loam, 15 to 35 percent slopes, extremely stony; in Russell County, Virginia; in woodland, 1.4 miles east-northeast of the intersection of the Scott-Russell County line and Highway VA-607; Dungannon, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 52 minutes 21.00 seconds N. and long. 82 degrees 22 minutes 38.00 seconds W.

Oe—0 to 2 inches; moderately decomposed plant material.

A—2 to 6 inches; very dark grayish brown (10YR 3/2) very cobbly fine sandy loam; moderate fine granular structure; friable, slightly sticky, slightly plastic; common fine and medium roots; 20 percent subrounded sandstone gravel and 20 percent subrounded sandstone cobbles; slightly acid; abrupt smooth boundary.

E—6 to 10 inches; yellowish brown (10YR 5/4) very cobbly fine sandy loam; moderate coarse granular structure; friable, slightly sticky, slightly plastic; common fine and medium roots; 20 percent subrounded sandstone gravel and 20 percent subrounded sandstone cobbles; moderately acid; clear smooth boundary.

BE—10 to 17 inches; light yellowish brown (10YR 6/4) very gravelly loam; weak fine and medium subangular blocky structure; friable, slightly sticky, slightly plastic; common medium and coarse roots; 10 percent subrounded sandstone cobbles and 30 percent subrounded sandstone gravel; moderately acid; clear smooth boundary.

Bt1—17 to 26 inches; reddish yellow (7.5YR 6/6) very gravelly loam; weak fine and medium subangular blocky structure; friable, moderately sticky, moderately plastic; few fine roots; common distinct clay films on all faces of peds; 15 percent subrounded sandstone cobbles and 30 percent subrounded sandstone gravel; strongly acid; gradual wavy boundary.

Bt2—26 to 36 inches; reddish yellow (7.5YR 6/6) very cobbly loam; common fine prominent very pale brown (10YR 7/4) lithochromic mottles; moderate fine and medium subangular blocky structure; friable, moderately sticky, moderately plastic; few fine roots; common distinct clay films on all faces of peds; 20 percent subrounded sandstone cobbles and 25 percent subrounded sandstone gravel; strongly acid; gradual wavy boundary.

Bt3—36 to 52 inches; strong brown (7.5YR 5/6) very cobbly clay loam; common fine prominent very pale brown (10YR 7/4) lithochromic mottles; moderate fine and medium subangular blocky structure; friable, moderately sticky, moderately plastic; few very fine and fine roots; common distinct clay films on all faces of peds; 20 percent subrounded sandstone cobbles and 25 percent subrounded sandstone gravel; strongly acid; gradual wavy boundary.

Bt4—52 to 70 inches; reddish yellow (7.5YR 6/6) very cobbly sandy clay loam; common fine prominent yellowish brown (10YR 5/4) lithochromic mottles; weak coarse subangular blocky structure; friable, moderately sticky, moderately plastic; few very fine and fine roots; few distinct clay films on all faces of peds; 15 percent subrounded sandstone cobbles and 25 percent subrounded sandstone gravel; strongly acid.

### Range in Characteristics

*Solum thickness:* 40 to more than 60 inches
*Depth to bedrock:* More than 60 inches
*Reaction:* Very strongly acid or strongly acid, except in limed areas
*Rock fragments (content, type, size):* 35 to 60 percent in the A horizon, 35 to 65 percent in the E and BE horizons, and 35 to 75 percent in the Bt and C horizons; a combination of subrounded sandstone gravel, cobbles, and stones

*A horizon:*
Hue—10YR
Value—2 to 4
Chroma—2 to 4
Fine-earth texture—fine sandy loam

*E and BE horizons:*
Hue—7.5YR or 10YR
Value—4 to 6

Chroma—4 to 6
Fine-earth texture—fine sandy loam, sandy loam, or loam

*Bt horizon:*
Hue—5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Fine-earth texture—clay loam, sandy clay loam, or loam

*C horizon (if it occurs):*
Hue—7.5YR to 10YR
Value—4 to 6
Chroma—4 to 8
Fine-earth texture—sandy loam, sandy clay loam, or loam

## Philo Series

*Physiographic province:* Appalachian Plateau
*Landform:* Flood plains
*Parent material:* Alluvium derived from sandstone and shale
*Drainage class:* Moderately well drained
*Slowest saturated hydraulic conductivity:* Moderately high
*Depth class:* Very deep
*Slope range:* 0 to 3 percent

### Associated Soils

- Soils that have more rock fragments than the Philo soils and are frequently flooded; on similar and lower landforms
- Grigsby soils, which are well drained; on slightly higher landforms
- Cotaco soils, which are moderately well drained; on stream terraces

### Taxonomic Classification

Coarse-loamy, mixed, active, mesic Fluvaquentic Dystrudepts

### Representative Pedon

Philo fine sandy loam, 0 to 3 percent slopes, occasionally flooded; in Lee County, Virginia; 100 feet south of Highway VA-606 at a point 0.9 mile west of Highway VA-624, in a brushy field; Keokee, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 51 minutes 8.00 seconds N. and long. 82 degrees 54 minutes 50.00 seconds W.

Ap—0 to 8 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; few very fine and fine and few medium roots; strongly acid; abrupt smooth boundary.
Bw1—8 to 16 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak medium subangular blocky structure; very friable; few very fine roots; strongly acid; clear smooth boundary.
Bw2—16 to 30 inches; yellowish brown (10YR 5/6) fine sandy loam; weak medium subangular blocky structure; friable; few very fine roots; common coarse prominent grayish brown (10YR 5/2) iron depletions; 5 percent sandstone gravel; moderately acid; clear smooth boundary.
C—30 to 62 inches; light olive brown (2.5Y 5/4) sandy loam; massive; friable; few very fine roots; many medium prominent yellowish brown (10YR 5/8) masses of oxidized iron and many medium distinct dark grayish brown (10YR 4/2) iron depletions; moderately acid.

### Range in Characteristics

*Solum thickness:* 20 to 48 inches
*Depth to bedrock:* More than 60 inches
*Reaction:* Very strongly acid to moderately acid, except in limed areas
*Rock fragment content:* 0 to 15 percent in the A, Bw, and C horizons and 0 to 40 percent in the 2C horizon

*Ap or A horizon:*
Hue—10YR or 7.5YR
Value—3 or 4 (5 or more dry)
Chroma—2 or 3
Texture—fine sandy loam

*Bw horizon:*
Hue—7.5YR or 10YR
Value—3 to 6
Chroma—3 to 6
Texture—fine sandy loam, loam, or sandy loam

*C horizon:*
Hue—7.5YR to 2.5Y or neutral
Value—4 to 6
Chroma—1 to 4
Texture—fine sandy loam, loam, or sandy loam

*2C horizon (if it occurs):*
Hue—7.5YR to 2.5Y or neutral
Value—4 to 6
Chroma—0 to 4
Fine-earth texture—ranging from sand to loam

## Rough Series

*Physiographic province:* Valley and Ridge
*Landform:* Ridges and spurs of hills and mountains
*Parent material:* Channery, loamy residuum weathered from shale and siltstone
*Drainage class:* Somewhat excessively drained
*Slowest saturated hydraulic conductivity:* High
*Depth class:* Very shallow
*Slope range:* 35 to 80 percent

### Associated Soils

- Berks soils, which are moderately deep to bedrock and are less red than the Rough soils; on similar landforms
- Calvin soils, which are moderately deep to bedrock; on landforms similar to those of the Rough soils
- Wallen soils, which are moderately deep to sandstone bedrock; on landforms similar to those of the Rough soils

### Taxonomic Classification

Loamy, mixed, active, acid, mesic Lithic Udorthents

### Representative Pedon

Rough channery loam in an area of Calvin-Rough complex, 35 to 80 percent slopes, very rocky; in Russell County, Virginia; on a forested backslope, 800 feet north-northeast of the point where Highway VA-80 crosses over the top of Clinch Mountain at Hayters Gap; Hayters Gap, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 51 minutes 59.00 seconds N. and long. 81 degrees 56 minutes 44.00 seconds W.

Oe—0 to 1 inch; moderately decomposed plant material.
A—1 to 2 inches; dark brown (7.5YR 3/2) channery loam; weak fine granular structure; friable, nonsticky, nonplastic; common medium and many very fine roots; many very fine interstitial pores; 20 percent angular siltstone channers; very strongly acid; abrupt smooth boundary.
Bw—2 to 8 inches; dark reddish brown (2.5YR 3/3) very channery loam; weak medium subangular blocky structure; friable, nonsticky, nonplastic; few fine and medium roots; many very fine interstitial pores; 40 percent angular siltstone channers; very strongly acid; clear wavy boundary.
C—8 to 10 inches; dark reddish brown (2.5YR 3/3) extremely channery loam; massive; friable, nonsticky, nonplastic; few very fine roots; many very fine interstitial pores; 65 percent angular siltstone channers; very strongly acid; abrupt wavy boundary.
R—10 inches; shale bedrock.

**Range in Characteristics**

*Solum thickness:* 0 to 8 inches
*Depth to bedrock:* Less than 10 inches; typically ranging from 4 to 9 inches
*Reaction:* Extremely acid or very strongly acid
*Rock fragments (content, type):* 15 to 35 percent in the A horizon, 35 to 60 percent in the Bw horizon, and 60 to 80 percent in the C horizon; shale, siltstone, and sandstone fragments

*A horizon:*
Hue—7.5YR
Value—2 to 4
Chroma—2 or 3
Fine-earth texture—loam

*Bw horizon:*
Hue—2.5YR or 5YR
Value—3 or 4
Chroma—3 or 4
Fine-earth texture—silt loam or loam

*C horizon:*
Hue—2.5YR or 5YR
Value—3 or 4
Chroma—3 or 4
Fine-earth texture—silt loam or loam

## Sewell Series

*Physiographic province:* Appalachian Plateau
*Landform:* Ridges and spurs of mountains that have been surface-mined for coal
*Parent material:* Mine spoil or earthy fill derived from sandstone and small amounts of siltstone, shale, and coal
*Drainage class:* Somewhat excessively drained
*Slowest saturated hydraulic conductivity:* High

*Depth class:* Very deep
*Slope range:* 0 to 80 percent

### Associated Soils

- Cedarcreek soils, which formed in mine spoil not dominated by sandstone fragments, are acid in reaction, have more clay and silt than the Sewell soils, and have less sand; in similar positions
- Fiveblock soils, which formed in mine spoil dominated by sandstone fragments and are nonacid in reaction; in positions similar to those of the Sewell soils
- Itmann soils, which formed in acid regolith of material from deep-mined coal, are acid in reaction, are very deep to bedrock, and have more carbolithic rock fragments than the Sewell soils; on backslopes, in drainageways, and near coal-cleaning plants
- Kaymine soils, which formed in mine spoil not dominated by sandstone fragments and are nonacid in reaction; in landscape positions similar to those of the Sewell soils
- Stonecoal soils, which formed in nonacid regolith of material from deep-mined coal, are very deep to bedrock, have more carbolithic rock fragments than the Sewell soils, and are nonacid in reaction; in similar positions and on higher landscape summits and shoulders

### Taxonomic Classification

Loamy-skeletal, mixed, semiactive, acid, mesic Typic Udorthents

### Representative Pedon

Sewell channery sandy loam; in Wyoming County, West Virginia; in Barkers Ridge District, about 3,000 yards south-southeast of Corrine and 700 yards southwest of Sand Gap; Rhodell, West Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 32 minutes 53.00 seconds N. and long. 81 degrees 20 minutes 47.00 seconds W.

A—0 to 4 inches; yellowish brown (10YR 5/6) channery sandy loam; weak fine granular structure; very friable; many fine and medium roots; 3 percent subangular siltstone channers, 5 percent subangular sandstone boulders, 7 percent subangular sandstone stones, and 15 percent subangular sandstone channers; very strongly acid; gradual wavy boundary.

C1—4 to 9 inches; dark yellowish brown (10YR 4/6) very channery sandy loam; common gray (10YR 6/1), common yellow (2.5Y 7/6), and common red (2.5YR 5/6) lithochromic mottles; massive; friable; common fine roots; 3 percent subangular siltstone channers, 5 percent subangular sandstone boulders, 12 percent subangular sandstone stones, and 30 percent subangular sandstone channers; strongly acid; gradual wavy boundary.

C2—9 to 29 inches; yellowish brown (10YR 5/4) extremely channery sandy loam; common gray (10YR 6/1), common yellow (2.5Y 7/6), and common red (2.5YR 5/6) lithochromic mottles; massive; friable; few fine and medium roots; 7 percent subangular siltstone channers, 8 percent subangular sandstone boulders, 10 percent subangular sandstone stones, and 40 percent subangular sandstone channers; strongly acid; gradual wavy boundary.

C3—29 to 65 inches; yellowish brown (10YR 5/4) extremely channery sandy loam; common gray (10YR 6/1), common yellow (2.5Y 7/6), and common red (2.5YR 5/6) lithochromic mottles; massive; friable; 8 percent subangular sandstone boulders, 8 percent subangular siltstone channers, 9 percent subangular sandstone stones, and 50 percent subangular sandstone channers; strongly acid.

### Range in Characteristics

*Solum thickness:* 2 to 10 inches
*Depth to bedrock:* More than 60 inches
*Reaction:* Extremely acid to strongly acid
*Rock fragment (content, type, size):* 15 to 35 percent, by volume, in the A horizon and 35 to 80 percent in the C horizon; mostly sandstone with small amounts of siltstone, shale, and coal; mostly channers but including stones and boulders

*A horizon:*
Hue—10YR
Value—3 to 5
Chroma—2 to 6
Fine-earth texture—sandy loam

*C horizon:*
Hue—7.5YR or 10YR
Value—3 to 6
Chroma—1 to 6
Fine-earth texture—sandy loam, fine sandy loam, or loam

## Shelocta Series

*Physiographic province:* Appalachian Plateau
*Landform:* Ridges and spurs of mountains and hills and drainageways
*Parent material:* Colluvium derived from sandstone and shale
*Drainage class:* Well drained
*Slowest saturated hydraulic conductivity:* Moderately high
*Depth class:* Very deep
*Slope range:* 35 to 80 percent

### Associated Soils

- Berks soils, which formed in residuum weathered from shale, are moderately deep to bedrock, and have more fragments than the Shelocta soils; on higher summits and shoulders
- Cloverlick soils, which formed in colluvium derived from sandstone and shale and have a thick, dark surface layer; on cool aspects in lower backslope and footslope positions and in drainageways
- Gilpin soils, which formed in residuum weathered from shale and are moderately deep to bedrock; on higher summits and shoulders
- Highsplint soils, which formed in colluvium derived from sandstone and shale, are very deep to bedrock, and have more rock fragments than the Shelocta soils; on similar landscapes
- Matewan soils, which formed in residuum weathered from sandstone, are moderately deep to bedrock, have more sand than the Shelocta soils, have less silt and clay, and have more rock fragments; on backslopes and higher summits and shoulders

### Taxonomic Classification

Fine-loamy, mixed, active, mesic Typic Hapludults

### Representative Pedon

Shelocta gravelly loam in an area of Highsplint-Shelocta complex, 55 to 80 percent slopes, very stony (fig 15); in Buchanan County, Virginia; in woodland, about 250 yards


**Figure 15.—Profile of a Shelocta soil. This soil is well drained. Depth to bedrock is more than 60 inches. Depth is marked in inches.**

east of Grundy city limits, 1.25 miles east of Highway US-460, about 1.25 miles southeast of Highway VA-83, Watkins Branch; Grundy, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 15 minutes 49.00 seconds N. and long. 82 degrees 4 minutes 43.00 seconds W.

Oi—0 to 1 inch; slightly decomposed plant material.

A—1 to 4 inches; dark grayish brown (10YR 4/2) gravelly loam; weak fine granular structure; friable, nonsticky, nonplastic; many very fine and coarse roots; common very fine moderate-continuity tubular and irregular pores; 20 percent subangular sandstone gravel; strongly acid; abrupt wavy boundary.

BA—4 to 13 inches; yellowish brown (10YR 5/6) loam; weak medium subangular blocky structure; friable, nonsticky, nonplastic; many coarse and many very fine roots; common very fine moderate-continuity tubular and irregular pores; 10 percent subangular sandstone gravel; strongly acid; clear wavy boundary.

Bt1—13 to 30 inches; strong brown (7.5YR 5/6) gravelly silt loam; common coarse and very coarse distinct irregular dark yellowish brown (10YR 4/4) pockets of loam; moderate medium subangular blocky structure; friable, slightly sticky, nonplastic; few very fine and medium roots; common very fine moderate-continuity tubular and irregular pores; 3 percent subangular sandstone cobbles and 12 percent subangular sandstone gravel; very strongly acid; clear wavy boundary.

Bt2—30 to 50 inches; strong brown (7.5YR 5/6) gravelly loam; common medium faint irregular yellowish red (5YR 5/6) lithochromic mottles; moderate fine and medium subangular blocky structure; friable, slightly sticky, nonplastic; few very fine and medium roots; common very fine moderate-continuity tubular and irregular pores; 9 percent subangular sandstone cobbles and 21 percent subangular sandstone gravel; very strongly acid; gradual wavy boundary.

BC—50 to 62 inches; strong brown (7.5YR 5/6) very gravelly loam; common coarse distinct irregular yellowish brown (10YR 5/4) lithochromic mottles; weak medium subangular blocky structure; friable, slightly sticky, nonplastic; soil is firm in place; few very fine and medium roots; common very fine moderate-continuity tubular and irregular pores; 40 percent subangular sandstone gravel; strongly acid; gradual wavy boundary.

C—62 to 86 inches; yellowish brown (10YR 5/6) extremely gravelly loam; massive; friable, slightly sticky, nonplastic; soil is very firm in place; common very fine moderate-continuity tubular and irregular pores; common medium distinct irregular pale brown (10YR 6/3) iron depletions and common medium faint irregular strong brown (7.5YR 5/6) masses of oxidized iron; 60 percent subangular sandstone gravel; strongly acid.

### Range in Characteristics

*Solum thickness:* 40 to 60 inches
*Depth to bedrock:* More than 60 inches
*Reaction:* Extremely acid to strongly acid throughout the profile, except in limed areas
*Rock fragments (content, type, size):* 15 to 35 percent in the A horizon, 5 to 35 in the E, BA, and BE horizons, 5 to 50 percent in individual Bt horizons, and 15 to 60 percent in the C horizon; sandstone and shale gravel and cobbles and some stones in the lower part of the subsoil

*A horizon:*
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—2 to 4
Fine-earth texture—loam

*E horizon (if it occurs):*
Hue—10YR
Value—5 or 6
Chroma—2 to 4
Fine-earth texture—loam or silt loam

*BA or BE horizon (if it occurs):*
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 to 6
Fine-earth texture—loam, silt loam, or silty clay loam

*Bt horizon:*
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 to 6
Fine-earth texture—silt loam, loam, or silty clay loam

*BC horizon:*
Hue—7.5YR or 10YR
Value—4 or 5

Chroma—3 to 6
Fine-earth texture—silt loam, loam, silty clay loam, or clay loam

*C horizon:*
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Fine-earth texture—silt loam, loam, silty clay loam, or clay loam

## Stonecoal Series

*Physiographic province:* Appalachian Plateau
*Landform:* Ridges and spurs of mountains and hills that are used as refuse piles
*Parent material:* Nonacid regolith of waste materials from deep-mined coal and mixtures of partially weathered fine earth and fragments of bedrock, which consist of nonacid carboliths, sandstone, siltstone, and shale
*Drainage class:* Somewhat excessively drained
*Slowest saturated hydraulic conductivity:* High
*Depth class:* Very deep
*Slope range:* 0 to 80 percent

### Associated Soils

- Berks, Gilpin, Matewan, and Marrowbone soils, which formed in residuum weathered from sandstone, siltstone, or shale and are moderately deep to bedrock; on adjacent landforms that have not been disturbed by coal-mining operations
- Shelocta and Highsplint soils, which formed in colluvium derived from sandstone and shale and are very deep to bedrock; on adjacent landforms that have not been disturbed by coal-mining operations
- Cedarcreek soils, which formed in mine spoil with sandstone, shale, and siltstone, have fewer coal fragments than the Stonecoal soils, and are more acid in reaction; on ridges, spur ridges, backslopes, and footslopes
- Fiveblock soils, which formed in mine spoil dominated by sandstone material, have more sand and less silt than the Stonecoal soils, and have fewer coal fragments; on summits
- Kaymine soils, which formed in mine spoil with sandstone, shale, and siltstone and have fewer coal fragments than the Stonecoal soils; on ridges, spur ridges, backslopes, and footslopes
- Sewell soils, which formed in mine spoil dominated by sandstone fragments, are more acid in reaction than the Stonecoal soils, and have more sand and less silt; on summits
- Itmann soils, which formed in acid regolith of material from deep-mined coal and are very deep to bedrock; in positions similar to those of the Stonecoal soils and on lower summits and shoulders

### Taxonomic Classification

Loamy-skeletal, mixed, semiactive, nonacid, mesic Typic Udorthents

### Representative Pedon

Stonecoal extremely channery sandy loam, 0 to 80 percent slopes (fig. 16); in Russell County, Virginia; in an area of refuse on a southeast aspect, about 1.2 miles north-northeast of Highways VA-615 and VA-616; Carbo, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 57 minutes 30.00 seconds N. and long. 82 degrees 11 minutes 35.00 seconds W.

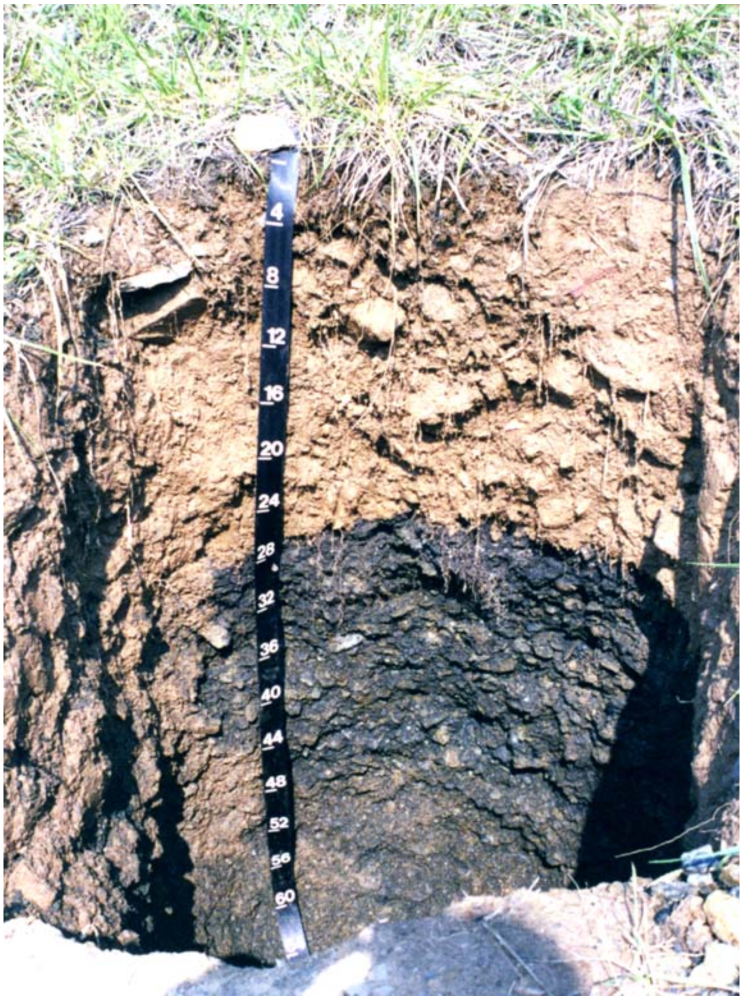


**Figure 16.—Profile of a Stonecoal soil buried beneath a layer of mine spoil material. These types of areas can support grassy vegetation. Depth is marked in inches.**

C1—0 to 31 inches; black (10YR 2/1) extremely channery sandy loam; massive; firm, slightly sticky, nonplastic; 2 percent subangular coal gravel, 3 percent subangular sandstone flagstones, 10 percent subangular sandstone channers, 30 percent subangular siltstone channers, and 35 percent subangular shale channers; slightly alkaline; gradual wavy boundary.

C2—31 to 39 inches; black (10YR 2/1) extremely channery sandy loam; massive; firm, slightly sticky, nonplastic; 2 percent subangular coal gravel, 3 percent subangular sandstone flagstones, 5 percent subangular sandstone channers, 30 percent subangular siltstone channers, and 40 percent subangular shale channers; moderately alkaline; clear wavy boundary.

C3—39 to 68 inches; black (10YR 2/1) extremely channery loamy sand; massive; firm, nonsticky, nonplastic; 2 percent subangular coal gravel, 3 percent subangular sandstone channers, 35 percent subangular siltstone channers, and 40 percent subangular shale channers; moderately alkaline.

### Range in Characteristics

*Solum thickness:* 0 to 30 inches

*Depth to bedrock:* More than 60 inches
*Reaction:* Moderately acid to strongly alkaline, except where surface layers have been limed
*Rock fragments (content, type, size):* 15 to 80 percent in the A and AC horizons and 35 to 80 percent in the C horizon; mostly hard shale and siltstone channers and small amounts of sandstone and coal
*Other characteristics:* Some pedons have an A or AC horizon that is as much as 20 inches thick. This horizon was formed by stockpiling native surficial soil and spreading this material over the land surface.

*A horizon (if it occurs):*
Hue—10YR
Value—4 to 6
Chroma—4 to 8
Fine-earth texture—clay loam, silty clay loam, or loam

*AC horizon (if it occurs):*
Hue—10YR
Value—4 to 6
Chroma—4 to 8
Fine-earth texture—clay loam, silty clay loam, or loam

*C horizon:*
Hue—neutral or 10YR
Value—2 or 3
Chroma—0 to 2
Fine-earth texture—sandy loam, loamy sand, or fine sandy loam; including thin layers or pockets of loam

## Udorthents

*Physiographic province:* Appalachian Plateau
*Landform:* Cut and fill areas
*Parent material:* Fill material
*Drainage class:* Variable
*Slowest saturated hydraulic conductivity:* Unspecified
*Depth class:* Variable
*Slope range:* Variable

**Associated Soils**

- Cedarcreek and Kaymine soils, which formed in overburden from coal-mining operations, contain sandstone, siltstone, shale, and carbolithic fragments, and are very deep to bedrock
- Shelocta, Highsplint, and Cloverlick soils, which formed in colluvium, are well drained, and are very deep to bedrock
- Gilpin and Berks soils, which formed in residuum weathered from siltstone and shale, are well drained, and are moderately deep to bedrock
- Wharton soils, which formed in residuum weathered from siltstone and shale, are moderately well drained, and are deep and very deep to bedrock
- Marrowbone soils, which formed in residuum weathered from sandstone, are well drained to somewhat excessively drained, and are moderately deep to bedrock

**Representative Pedon**

The properties and characteristics of Udorthents vary to the extent that these soils do not have a representative profile. Udorthents formed when soils were disturbed by land-leveling, excavation, or filling. They consist of soil material with variable textures and colors and varying amounts of rock fragments. Depth to bedrock varies from a few inches to more than 5 feet. Areas range from slightly compacted to severely compacted. Unvegetated areas are susceptible to severe erosion. Drainage is variable.

## Wallen Series

*Physiographic province:* Valley and Ridge
*Landform:* Ridges and spurs of hills and mountains
*Parent material:* Residuum weathered from acid sandstone interbedded with shale and siltstone
*Drainage class:* Somewhat excessively drained
*Slowest saturated hydraulic conductivity:* High
*Depth class:* Moderately deep
*Slope range:* 15 to 80 percent

### Associated Soils

- Calvin soils, which formed in residuum derived from sandstone, are redder than the Wallen soils, and have more silt and less sand; on similar landforms
- Lily soils, which have fewer rock fragments and more clay than the Wallen soils; on similar landforms
- Oriskany soils, which formed in colluvium derived from sandstone and shale and are very deep to bedrock; on footslopes and near drainageways

### Taxonomic Classification

Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts

### Representative Pedon

Wallen channery sandy loam in an area of Wallen-Rock outcrop complex, 35 to 80 percent slopes, extremely stony; in Tazewell County, Virginia; in woodland, about 10.5 miles southwest of Tazewell, 2.7 miles northwest of the county line, 125 feet north of Highway VA-91 on Clinch Mountain; Broadford, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 36 degrees 59 minutes 9.00 seconds N. and long. 81 degrees 39 minutes 3.00 seconds W.

A—0 to 4 inches; very dark grayish brown (10YR 3/2) channery sandy loam; weak fine granular structure; friable; many very fine roots; many very fine pores; 20 percent angular sandstone channers; strongly acid; abrupt wavy boundary.
Bw1—4 to 12 inches; yellowish brown (10YR 5/6) very channery sandy loam; weak fine subangular blocky structure; very friable; many medium roots; many very fine pores; 40 percent angular sandstone channers; very strongly acid; clear wavy boundary.
Bw2—12 to 22 inches; yellowish brown (10YR 5/6) very channery sandy loam; weak fine subangular blocky structure; very friable; common very fine and medium roots; many very fine pores; 15 percent angular sandstone flagstones and 40 percent angular sandstone channers; very strongly acid; gradual wavy boundary.
C—22 to 24 inches; strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) extremely channery sandy loam; single grain; loose; few fine roots; many very fine pores; 20 percent angular sandstone flagstones and 45 percent angular sandstone channers; very strongly acid; clear wavy boundary.
R—24 inches; sandstone bedrock.

### Range in Characteristics

*Solum thickness:* 20 to 40 inches

*Depth to bedrock:* 20 to 40 inches
*Reaction:* Very strongly acid to moderately acid
*Rock fragments (content, type):* 15 to 35 percent in the A horizon, 35 to 60 percent in the Bw horizon, and 40 to 70 percent in the C horizon; mostly sandstone but including siltstone and shale

A horizon:
Hue—10YR
Value—3 or 4
Chroma—1 to 3
Fine-earth texture—sandy loam

Bw horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 6
Fine-earth texture—sandy loam, fine sandy loam, or loam

C horizon:
Hue—7.5YR or 10YR
Value—5 or 6
Chroma—4 to 6
Fine-earth texture—sandy loam

## Wharton Series

*Physiographic province:* Appalachian Plateau
*Landform:* Ridges and spurs of mountains and hills
*Parent material:* Residuum weathered from shale and siltstone
*Drainage class:* Moderately well drained
*Slowest saturated hydraulic conductivity:* Moderately low
*Depth class:* Very deep
*Slope range:* 8 to 25 percent

### Associated Soils

- Berks soils, which are well drained, are moderately deep to bedrock, and have more fragments than the Wharton soils; on similar, steeper, and higher landscapes
- Gilpin soils, which are well drained and are moderately deep to bedrock; on landscapes similar to, steeper than, and higher than those of the Wharton soils
- Marrowbone soils, which are well drained, are moderately deep to bedrock, and have more sand and less silt and less clay than Wharton soils; on similar, steeper, and higher landscapes

### Taxonomic Classification

Fine-loamy, mixed, active, mesic Aquic Hapludults

### Representative Pedon

Wharton-Gilpin-Berks complex, 15 to 25 percent slopes; in Buchanan County, Virginia; in a field, about 0.2 mile northeast of Highway VA-83, about 0.45 mile east-northeast of the Buchanan-Dickenson County line, 0.625 mile south of Highway VA-608; Prater, Virginia USGS 7.5 Minute Quadrangle, NAD27; lat. 37 degrees 12 minutes 37.00 seconds N. and long. 82 degrees 13 minutes 34.00 seconds W.

A—0 to 2 inches; yellowish brown (10YR 5/4) silt loam; weak fine granular structure; friable, slightly sticky, nonplastic; many very fine and fine roots; common very fine moderate-continuity tubular and irregular pores; 2 percent angular shale channers; strongly acid; abrupt wavy boundary.

BA—2 to 9 inches; yellowish brown (10YR 5/6) silt loam; many coarse distinct irregular dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; friable, slightly sticky, nonplastic; common very fine and medium roots; common very fine moderate-continuity tubular and irregular pores; 1 percent angular shale channers; very strongly acid; clear wavy boundary.

Bt1—9 to 17 inches; strong brown (7.5YR 5/6) silty clay loam; many coarse prominent irregular dark yellowish brown (10YR 4/4) mottles; moderate medium subangular blocky structure; friable, moderately sticky, slightly plastic; few very fine and medium roots; common very fine moderate-continuity tubular and irregular pores; common faint clay films on all faces of peds; very strongly acid; gradual wavy boundary.

Bt2—17 to 35 inches; light yellowish brown (10YR 6/4) silty clay loam; moderate medium subangular blocky structure; friable, slightly sticky, slightly plastic; few very fine roots; common very fine moderate-continuity tubular pores; common faint clay films on all faces of peds; common fine and medium prominent irregular light gray (10YR 7/1) iron depletions with sharp boundaries infused into matrix along faces of peds and many coarse prominent irregular strong brown (7.5YR 5/6) masses of oxidized iron with sharp boundaries infused into matrix along faces of peds; very strongly acid; gradual wavy boundary.

BC—35 to 55 inches; yellowish brown (10YR 5/6) silt loam; weak medium subangular blocky structure; friable, nonsticky, nonplastic; few very fine roots; common very fine moderate-continuity tubular and irregular pores; many medium prominent irregular light gray (10YR 7/1) iron depletions with sharp boundaries throughout and many medium distinct irregular strong brown (7.5YR 5/6) masses of oxidized iron with sharp boundaries throughout; 10 percent angular shale channers; very strongly acid; gradual wavy boundary.

C—55 to 65 inches; yellowish brown (10YR 5/6) silt loam with pockets of silty clay loam; massive; friable, slightly sticky, nonplastic; common very fine moderate-continuity tubular and irregular pores; many medium prominent irregular light gray (10YR 7/1) iron depletions with sharp boundaries throughout and many fine prominent irregular yellowish red (5YR 5/6) masses of oxidized iron with sharp boundaries throughout; 10 percent angular shale channers; very strongly acid; abrupt wavy boundary.

R—65 inches; moderately hard shale bedrock.

### Range in Characteristics

*Solum thickness:* 30 to 60 inches
*Depth to bedrock:* 40 to more than 72 inches
*Reaction:* Extremely acid to strongly acid throughout the profile, except in limed areas
*Rock fragments (content, type, size):* 0 to 10 percent in the A, BA, and Bt horizons, 5 to 40 percent in the BC horizon, and 10 to 50 percent in the C horizon; channers of mostly shale and some sandstone

*Ap horizon (if it occurs):*
Hue—10YR
Value—3 to 5
Chroma—3 or 4
Texture—silt loam

*A horizon:*
Hue—10YR
Value—4 or 5

Chroma—3 or 4
Texture—silt loam or loam

*BA horizon:*
Hue—10YR
Value—5
Chroma—4 to 6
Texture—silt loam, loam, or silty clay loam

*Bt horizon:*
Hue—7.5YR to 2.5Y
Value—5 or 6
Chroma—4 to 6
Texture—silt loam, silty clay loam, or loam
Redoximorphic features—in shades of light gray, gray, brown, and red

*BC horizon:*
Hue—7.5YR or 2.5Y
Value—5 or 6
Chroma—4 to 6
Fine-earth texture—silt loam or loam
Redoximorphic features—in shades of light gray, gray, brown, and red

*C horizon:*
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—2 to 6
Fine-earth texture—silt loam, loam, fine sandy loam, or sandy loam; including pockets of silty clay loam
Redoximorphic features—in shades of light gray, gray, brown, and red

# Formation of the Soils

This section describes the factors of soil formation and relates them to the soils in the survey area. It also discusses the morphology of the soils and the processes of horizon differentiation.

## Factors of Soil Formation

Soils form through the interaction of five major factors. The soil-forming factors are climate, plant and animal life, parent material, relief, and time. The relative influence of each factor usually varies from place to place *(7)*.

Climate and plants and animals are the active forces of soil formation. They act on the parent material that has accumulated through the weathering of rocks and slowly change it into soil. All five factors contribute to the formation of every soil. The relative importance of each factor dominates soil formation and determines most of the soil properties. In some places, one factor may dominate the formation of a soil and determine most of its properties. However, it is generally the combined action of the five factors that determines the character of each soil.

Figures 17, 18, and 19 show the spatial relationship between soils, landform position, and parent material.

### Climate

Precipitation and temperature are the main climatic influences on soil formation. Water dissolves minerals, supports biological activity, and transports mineral and organic residue through the soil. Temperature determines the types of physical, chemical, and biological activities that take place in the soil and the speed at which they occur.

Because the amount of precipitation exceeds evapotranspiration, the soils in Buchanan County have been leached. Much of the soluble material that originally was in the soil or was released through weathering has been removed. Exceptions to this are alluvial areas which have weatherable minerals deposited by floodwaters. In addition to the leaching of soluble materials, water that percolates through the soil moves small amounts of clay from the surface layers into the subsoil. Precipitation is mainly responsible for the increased clay content in the subsoil that characterizes some soils in the county. Consequently, many of the colluvial soils on mountainsides and a few of the soils on ridges have more clay in the subsoil than in the surface layer.

The climate of Buchanan County is a humid continental type that is marked by extreme seasonal temperature changes. Average annual precipitation is about 41 inches, and the average air temperature is about 56 degrees. Adequate annual precipitation and warm temperatures have provided conditions for the rapid decomposition of organic matter and limited the accumulation of organic matter in the surface layer of soils. For more detailed information on climate, see the section “General Nature of the Survey Area.”

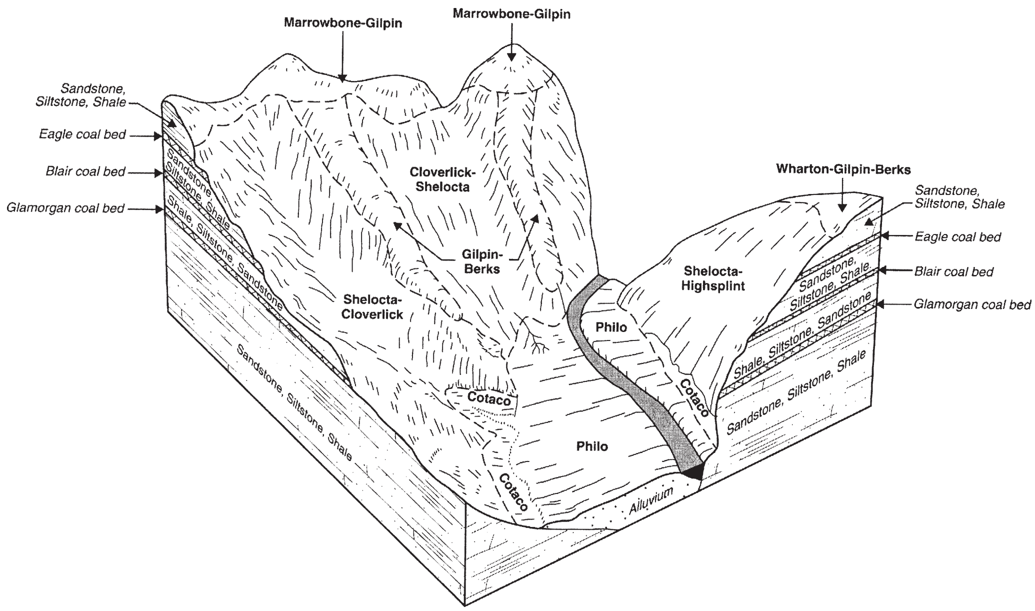


**Figure 17.—Diagram of a sequence of residual, colluvial, and alluvial soils. The soils named on the land surface are shown in their natural relationship to each other and in their relationship to landform position.**

## Plant and Animal Life

Biologic forces are important in the formation of soils in Buchanan County. Trees, shrubs, grasses, and other herbaceous plants as well as micro-organisms, earthworms, and other plant and animal life are active agents in the soil-forming process. Climate, parent material relief, age of the soil, and other environmental factors determine the kinds of plants and animals that live on and in the soil. Where either climate or vegetation varies significantly, the soils vary accordingly.

Plants supply organic matter and transfer moisture and plant nutrients from the lower horizons to the upper horizons. As organic matter decomposes, it is mixed into the soil by micro-organisms and earthworms or by chemical reactions. The rate of decomposition is fairly rapid because of the favorable temperatures, the generally abundant soil moisture, and the kinds of micro-organisms in the soil. The soil's organic matter content is medium or low; it generally ranges from 1 to 3 percent, by volume, in the surface layer.

Originally, the vegetation in the county was dense forest of hardwoods or mixed hardwoods and pine. The density of the stands, the proportion of different species, and the kinds of ground cover were, to some extent, varied. The forests are not likely the reason for all the differences in soil properties throughout the county. The leaves of deep-rooted deciduous trees vary in content of plant nutrients, but generally return more bases and phosphorus to the soils than coniferous trees. The litter of conifers, rhododendron, and mountain laurel produces more organic acid than maples and oaks. Soils that form under layers of acid-forming leaf litter tend to be more highly leached than other soils and commonly have very low base saturation. The layer of leaf litter also helps to recycle nutrients, reduces the depth of frost penetration, helps moisture retention, and reduces the hazard of erosion on steep slopes.

As agriculture and surface-mining for coal developed in Buchanan County, human activities influenced soil formation. They included the clearing of forests and the introduction of new kinds of plants. Cultivation, artificial drainage, liming and fertilizing,

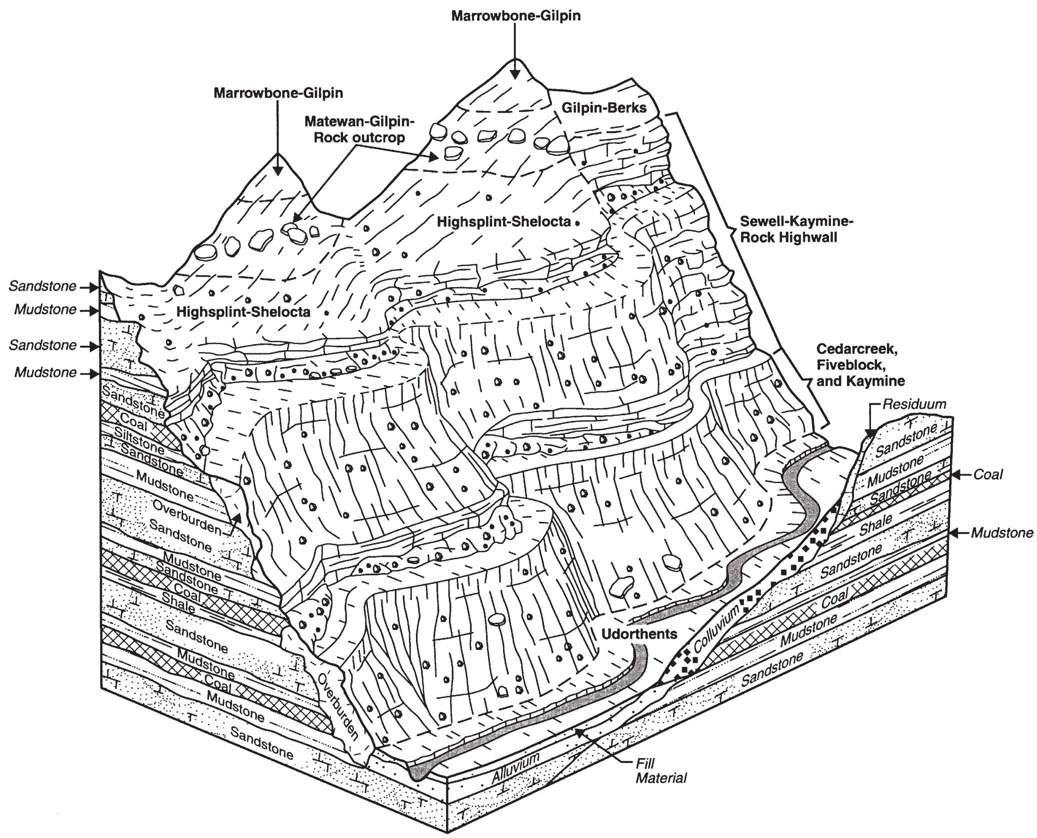


**Figure 18.—An illustration of an area that has been surface-mined for coal that shows a sequence of native residual and colluvial soils, mine soils, rock outcrop, and multiple exposed highwalls. The soils named on the land surface are shown in their natural relationship to each other and in their relationship to landform position and geologic strata.**

and land disturbance have changed some soil characteristics. Human activities have also caused accelerated erosion. Hence, the soil in many areas is thinner and vegetation is difficult to establish. Some soil material washed from sloping areas onto depressions and flood plains. Young, or immature, soils, such as Pnilo soils, formed in this washed material.

Other human activities that influenced soil formation are coal mining and the grading, shaping, and filling required by road construction and urban development. Kaymine soils formed in coal-mining spoil. Udorthents formed in urban areas where the soil has been disturbed.

## Parent Material

Parent material is the unconsolidated mass from which soils are formed. It is largely responsible for the mineralogical and chemical composition of the soil and the rate at which soil-forming processes take place.

In Buchanan County, the soils have formed in four kinds of parent material: (1) residual, (2) alluvial, (3) colluvial, and (4) regolith from surface and deep coal-mine operations.

The common residual parent materials are sandstone, shale, and siltstone. Soils that formed from sandstone are most extensive on the ridges and in the rocky areas of mountainsides. Sandstone-derived soils typically have a sandy surface layer and a sandy subsoil. Examples are Marrowbone and Matewan soils. Residuum from acid

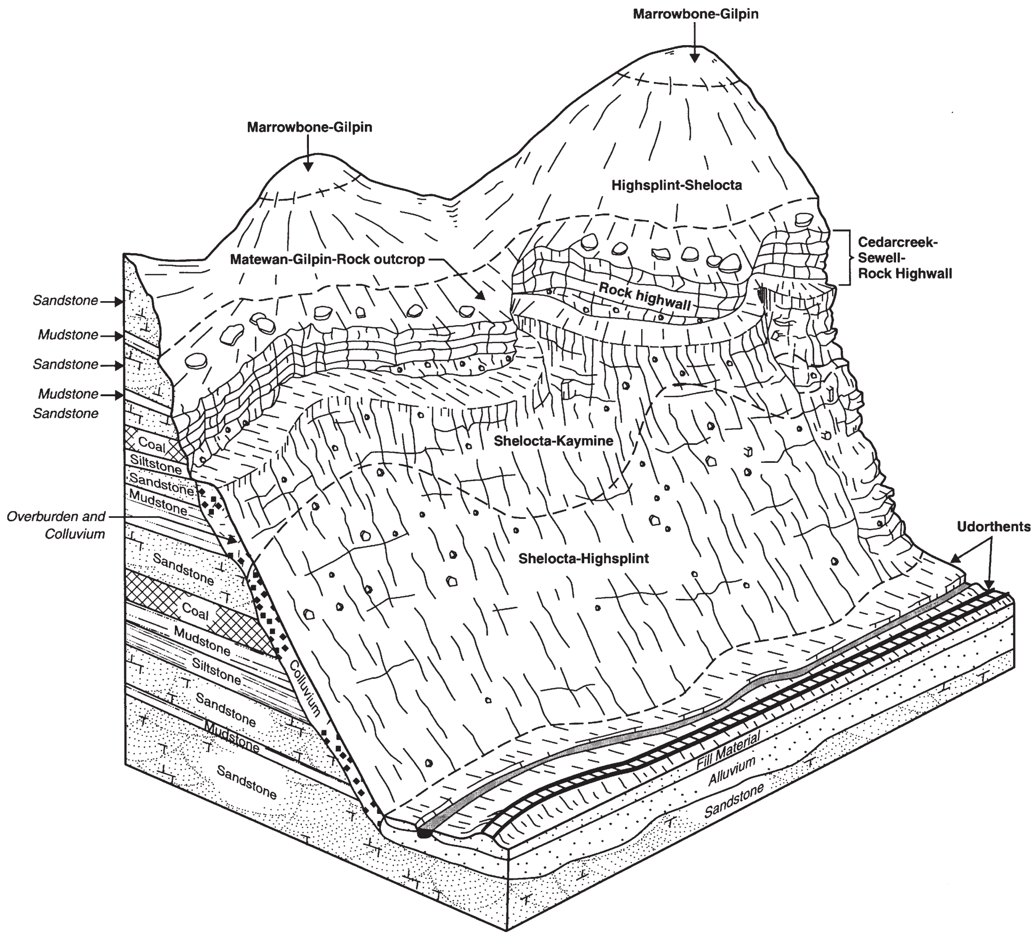


**Figure 19.—An illustration of an area that has been surface-mined for coal that shows a sequence of native residual and colluvial soils, mine soils, rock outcrop, and a single exposed highwall. The soils named on the land surface are shown in their natural relationship to each other and in their relationship to landform position and geologic strata.**

shale and siltstone is the parent material for Berks and Gilpin soils. These soils typically have a loamy or silty fine-earth texture in both the surface layer and subsoil.

Alluvial parent materials are deposits along streams which were laid down by floodwaters. They are of local origin along the small streams and larger streams, such as Levisa Fork, Russell Fork, Dismal Creek, Slate Creek, and Knox Creek. Soils derived from alluvium have variable soil characteristics and are influenced by the types of soils in the surrounding watershed. Examples are Grigsby and Philo soils.

Colluvial parent materials are deposits from soil movement from higher slopes to lower slopes as a result of gravity or mass movement. They dominantly are on middle and lower mountain slopes and are primarily moderately coarse textured, medium textured, or moderately fine textured. Examples are Highsplint and Shelocta soils.

Minespoil, or mine soils, consists of regolith replaced on the land surface during surface-mining for coal. The nature of the regolith is a direct reflection of the type of overburden above the mined coal seam. This regolith consists of varying amounts of shale fragments, siltstone fragments, coal fragments, and sandstone fragments ranging in size from gravel to boulders. The mine soils primarily are coarse textured, moderately coarse textured, or medium textured. Examples are Kaymine and Sewell soils.

### Relief

The relief of an area is largely determined by the underlying geologic formations, the geologic history of the general region, and the effects of dissection by rivers and streams. Relief influences soil formation through its effects on soil moisture, erosion, soil temperature, and plant cover.

Buchanan County is mainly in the Cumberland Plateau and Mountains Major Land Resource Area, in the Appalachian Plateau physiographic province. The plateau is deeply incised and is characterized by steep hillsides and narrow ridgetops and valleys. Ridgetops are typically 300 to 1,000 feet above the valleys. The county has a largely defined dendritic drainage pattern. The main geologic formations underlying this province are the Norton and Wise Formations, which are composed of sandstone, siltstone, shale, and coal beds.

Most soils on uplands are naturally well drained. Soils on flood plains range from poorly drained to well drained. Soil drainage commonly is related to landscape position. Soils in the low, nearly level positions commonly are poorly drained, and soils in the more sloping areas on higher landscapes are typically well drained.

### Time

The degree of development or horizon differentiation within the soil is related to the length of time that the soil has been subjected to the other soil-forming factors. A soil that has little or no horizon development is considered a young soil, and one that has strongly developed horizons is considered old or mature.

The oldest soils in Buchanan County mainly are those that formed in residuum and colluvium, such as Gilpin and Shelocta soils. In general, these soils have formed in more weatherable material and they have a strong degree of horizon differentiation. Soils that formed in alluvium, such as Philo and Grigsby soils, have been in place only a relatively short time and show little development other than an accumulation of organic matter in the surface layer. They commonly are stratified and have an irregular distribution of organic matter throughout the profile. Soils in areas of mining operations, on mountaintop removal, benches, and outslopes, such as Kaymine and Sewell soils, have little or no horizon development and generally are the youngest soils in degree of development. On very steep slopes, geologic erosion has removed soil material in a relatively short period of time and the soils generally in these areas have not been in place long enough to have more than moderate horizon differentiation.

## Morphology of the Soils

The interaction of soil-forming factors results in distinguishable layers, or horizons, in a soil profile. The soil profile extends from the surface of the soil down to materials that are little altered by the soil-forming processes. The five major horizons that occur in the soils in the survey area are the O, A, E, B, and C horizons.

The *O horizon* is a very dark, organic horizon that forms above the mineral soil. In Buchanan County, O horizons are almost exclusively in forested areas. They result mainly from the decomposition of hardwood leaf litter and are quickly destroyed by such activities as land clearing and plowing.

The *A horizon* is a mineral surface layer which has been darkened by the accumulation of organic matter.

The *E horizon* is an eluvial horizon which has been leached of clay, iron, and aluminum. Typically, it is a light-colored layer composed of resistant materials such as sand- and silt-sized quartz. Although it does not occur in all soils, the E horizon is distinct in sandy or loamy textured forest soils.

The *B horizon* is an illuvial horizon which has an accumulation of clay, iron, aluminum, and other compounds leached from the A and E horizons. These horizons generally have weak blocky structure and are brighter in color than the overlying horizons.

The *C horizon* is the parent material of the soil. It consists of material that has been modified by weathering but has been only slightly altered by the soil-forming processes. It generally lacks structure and contains few, if any, roots.

Many processes have been involved in the formation of soil horizons in the survey area. These include the accumulation of organic matter, the leaching of soluble salts, the reduction and transfer of iron, the formation and translocation of clay minerals, and the formation of soil structure. In most soils, these processes have been taking place for thousands of years.

Most of the well drained or moderately well drained soils on uplands have a yellowish brown to yellowish red B horizon. These colors are mainly caused by the presence of iron oxides. Zones of gray colors where iron has been reduced and transferred occur in the B horizons of moderately well drained soils. Reoxidized iron forms red, yellowish red, strong brown, or yellowish brown colors in areas that are oxygenated.

Somewhat poorly drained to very poorly drained soils commonly have layers of gray colors. These colors are the result of gleying, a process of intense reduction of iron during soil formation.

The weathering of primary minerals to form silicate clay minerals, largely through hydrolysis, commonly occurs in the soils of Buchanan County. Through this process, different clay minerals such as kaolinite, vermiculite, and, to a lesser extent, smectite form. These clay minerals are translocated through the soil profile, often resulting in heavy, clayey subsoils. Typically, in the soils of the survey area, no one type of clay mineral dominates. The soils are a mixture of clay minerals.

## Processes of Horizon Differentiation

Soils form as the result of the physical and chemical weathering of parent rocks and organic material, the transfer of materials, the transformation of materials, and the gains and losses of organic matter and minerals.

Soil formation begins with the physical weathering of rocks. Frost action, expansion, contraction, and other forces break large pieces of rock into smaller pieces. The rocks and rock fragments are further reduced to sand-, silt-, and clay-sized particles. These particles form the unconsolidated material in which plants can grow. When plants and animals die, organic matter is added to the mineral material.

It is common for materials to transfer from one part of the soil to another. Organic matter in suspension moves from the surface layer into the subsoil. Calcium and other elements are leached from the surface layer. To some extent, the clay in the subsoil or in the substratum holds these elements, but percolating ground water also leaches some elements from the soil. In addition, percolating water transfers clay from the upper horizons to the lower horizons.

The roots of plants absorb bases and store them in stems, leaves, and twigs. When plants die and decay, they return to the soil the elements they had absorbed from it. In most soils in the county, the translocation and development in place of clay minerals have strongly influenced the development of soil horizons. As the soil develops, horizons gradually develop recognizable characteristics that make one horizon distinguishable from another.

The accumulation and incorporation of organic matter takes place with the decomposition of plant residue. Organic matter darkens the surface layer and helps to form the A horizon. In many places much of the surface layer has eroded away or has been mixed with materials from underlying layers by cultivation. Replacing lost organic matter normally takes a long time.

Some lime and soluble salts must be leached from soils before the translocation of clay minerals and the formation of a distinct subsoil can occur. Factors that affect leaching include the kind of original salts present in the soils, the depth to which the soil solution percolates, and the texture of the soils.

One transformation is the reduction and solubilization of ferrous iron. This change takes place under wet, saturated conditions in which water replaces molecular oxygen. It mainly occurs in soils that are not well drained. Gleying, or the reduction of iron, is evident in Dunning and Purdy soils, which have a dominantly gray subsoil. The gray color indicates the transformation of iron to the ferrous form and implies wetness. Reduced iron, which is soluble and mobile, commonly has been moved short distances in the soils. It has stopped either in the horizon where it originated or in an underlying horizon. It can be partly reoxidized and segregated in the form of stains, concretions, or bright yellow and red redoxiomorphic features.

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# Glossary

**ABC soil.** A soil having an A, a B, and a C horizon.

**AC soil.** A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

**Aeration, soil.** The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

**Aggregate, soil.** Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

**Alkali (sodic) soil.** A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

**Alluvial cone.** A semiconical type of alluvial fan having very steep slopes. It is higher, narrower, and steeper than a fan and is composed of coarser and thicker layers of material deposited by a combination of alluvial episodes and (to a much lesser degree) landslides (debris flow). The coarsest materials tend to be concentrated at the apex of the cone.

**Alluvial fan.** A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.

**Alluvium.** Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

**Alpha,alpha-dipyridyl.** A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

**Animal unit month (AUM).** The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

**Aquic conditions.** Current soil wetness characterized by saturation, reduction, and redoximorphic features.

**Argillic horizon.** A subsoil horizon characterized by an accumulation of illuvial clay.

**Available water capacity (available moisture capacity).** The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

| | |
|---|---|
| Very low | 0 to 3 |
| Low | 3 to 6 |
| Moderate | 6 to 9 |
| High | 9 to 12 |
| Very high | more than 12 |

**Backslope.** The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

**Backswamp.** A flood-plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.

**Basal area.** The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

**Base saturation.** The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

**Base slope** (geomorphology). A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

**Bedding plane.** A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology) from the preceding or following layer; a plane of deposition. It commonly marks a change in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.

**Bedding system.** A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

**Bedrock.** The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

**Bedrock-controlled topography.** A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

**Bench.** In surface mining, a nearly level to gently inclined cut section in a mountain slope or footslope from which a seam of coal has been removed.

**Bench terrace.** A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

**Bisequum.** Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

**Blowout.** A saucer-, cup-, or trough-shaped depression formed by wind erosion on a preexisting dune or other sand deposit, especially in an area of shifting sand or loose soil or where protective vegetation is disturbed or destroyed; the adjoining accumulation of sand derived from the depression, where recognizable, is commonly included. Blowouts are commonly small.

**Bottom land.** An informal term loosely applied to various portions of a flood plain.

**Boulders.** Rock fragments larger than 2 feet (60 centimeters) in diameter.

**Breaks.** A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.

**Breast height.** An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

**Brush management.** Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

**Cable yarding.** A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

**Calcareous soil.** A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

**California bearing ratio** (CBR). The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

**Canopy.** The leafy crown of trees or shrubs. (See Crown.)

**Capillary water.** Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

**Catena.** A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.

**Cation.** An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

**Cation-exchange capacity.** The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

**Catsteps.** See Terracettes.

**Cement rock.** Shaly limestone used in the manufacture of cement.

**Channery soil material.** Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

**Chemical treatment.** Control of unwanted vegetation through the use of chemicals.

**Chiseling.** Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

**Clay.** As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

**Clay depletions.** See Redoximorphic features.

**Clay film.** A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

**Claypan.** A dense, compact, slowly permeable subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. A claypan is commonly hard when dry and plastic and sticky when wet.

**Climax plant community.** The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

**Concretions.** See Redoximorphic features.

**Coarse textured soil.** Sand or loamy sand.

**Cobble (or cobblestone).** A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

**Cobbly soil material.** Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

**COLE (coefficient of linear extensibility).** See Linear extensibility.

**Colluvium.** Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

**Complex slope.** Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

**Complex, soil.** A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

**Concretions.** Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

**Conglomerate.** A coarse-grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

**Conservation cropping system.** Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

**Conservation tillage.** A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

**Consistence, soil.** Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the “Soil Survey Manual.”

**Contour stripcropping.** Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

**Control section.** The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

**Coprogenous earth (sedimentary peat).** A type of limnic layer composed predominantly of fecal material derived from aquatic animals.

**Corrosion** (geomorphology). A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

**Corrosion** (soil survey interpretations). Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

**Cover crop.** A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

**Crop residue management.** Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

**Cropping system.** Growing crops according to a planned system of rotation and management practices.

**Cross-slope farming.** Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

**Crown.** The upper part of a tree or shrub, including the living branches and their foliage.

**Cryoturbate.** A mass of soil or other unconsolidated earthy material moved or disturbed by frost action. It is typically coarser than the underlying material.

**Cuesta.** An asymmetric ridge capped by resistant rock layers of slight or moderate dip (commonly less than 15 percent slopes); a type of homocline produced by differential erosion of interbedded resistant and weak rocks. A cuesta has a long, gentle slope on one side (dip slope) that roughly parallels the inclined beds; on the other side, it has a relatively short and steep or clifflike slope (scarp) that cuts through the tilted rocks.

**Culmination of the mean annual increment (CMAI).** The average annual increase per acre in the volume of a stand of trees. 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.

**Cut and filled**. An area that has been disturbed or altered by human activity. As a result, the natural soil was removed and was replaced by soil or other material in an unnatural process.

**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.

**Delta.** A body of alluvium having a surface that is fan shaped and nearly flat; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

**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.

**Differential settling.** Uneven settling of earthy material.

**Diatomaceous earth.** A geologic deposit of fine, grayish siliceous material composed chiefly or entirely of the remains of diatoms.

**Dip slope.** A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

**Diversion (or diversion terrace).** A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

**Divided-slope farming.** A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

**Drainage class** (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat* *poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the “Soil Survey Manual.”

**Drainage, surface.** Runoff, or surface flow of water, from an area.

**Drainageway.** A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

**Draw.** A small stream valley that generally is shallower and more open than a ravine or gulch and that has a broader bottom. The present stream channel may appear inadequate to have cut the drainageway that it occupies.

**Duff.** A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

**Dune.** A low mound, ridge, bank, or hill of loose, windblown granular material (generally sand), either barren and capable of movement from place to place or covered and stabilized with vegetation but retaining its characteristic shape.

**Earthy fill.** See Mine spoil.

**Ecological site.** An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

**Eluviation.** The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

**Endosaturation.** A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

**Ephemeral stream.** A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

**Episaturation.** A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

**Erosion.** The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

*Erosion* (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

*Erosion* (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

**Erosion pavement.** A surficial lag concentration or layer of gravel and other rock fragments that remains on the soil surface after sheet or rill erosion or wind has removed the finer soil particles and that tends to protect the underlying soil from further erosion.

**Erosion surface.** A land surface shaped by the action of erosion, especially by running water.

**Escarpment.** A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

**Fallow.** Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

**Fan remnant.** A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, that have been either dissected or partially buried.

**Fertility, soil.** The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

**Fibric soil material (peat).** The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

**Field moisture capacity.** The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

**Fill slope.** A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

**Fine textured soil.** Sandy clay, silty clay, or clay.

**Firebreak.** An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

**First bottom.** An obsolete, informal term loosely applied to the lowest flood-plain steps that are subject to regular flooding.

**Flaggy soil material.** Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

**Flagstone.** A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

**Flood plain.** The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

**Flood-plain landforms.** A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

**Flood-plain splay.** A fan-shaped deposit or other outspread deposit formed where an overloaded stream breaks through a levee (natural or artificial) and deposits its material (commonly coarse grained) on the flood plain.

**Flood-plain step.** An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.

**Fluvial.** Of or pertaining to rivers or streams; produced by stream or river action.

**Foothills.** A region of steeply sloping hills that fringes a mountain range or high-plateau escarpment. The hills have relief of as much as 1,000 feet (300 meters).

**Footslope.** The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

**Forb.** Any herbaceous plant not a grass or a sedge.

**Forest cover.** All trees and other woody plants (underbrush) covering the ground in a forest.

**Forest type.** A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

**Fragipan.** A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

**Genesis, soil.** The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

**Gilgai.** Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.

**Gleyed soil.** Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

**Graded stripcropping.** Growing crops in strips that grade toward a protected waterway.

**Grassed waterway.** A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

**Gravel.** Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

**Gravelly soil material.** Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

**Green manure crop** (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

**Ground water.** Water filling all the unblocked pores of the material below the water table.

**Gully.** A small channel with steep sides caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

**Hard bedrock.** Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

**Hard to reclaim** (in tables). Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

**Hardpan.** A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

**Head slope (geomorphology).** A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

**Hemic soil material (mucky peat).** Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

**High-residue crops.** Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

**Highwall.** A high, very steep to perpendicular face of rock or earth. The face was exposed in surface mining to remove coal from a seam along a mountain slope.

**Hill.** A generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

**Hillslope.** A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

**Horizon, soil.** A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

*O horizon.*—An organic layer of fresh and decaying plant residue.

*L horizon.*—A layer of organic and mineral limnic materials, including coprogenous earth (sedimentary peat), diatomaceous earth, and marl.

*A horizon.*—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

*E horizon.*—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

*B horizon.*—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

*C horizon.*—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

*Cr horizon.*—Soft, consolidated bedrock beneath the soil.

*R layer.*—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

**Humus.** The well decomposed, more or less stable part of the organic matter in mineral soils.

**Hydrologic soil groups.** Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

**Igneous rock.** Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

**Illuviation.** The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

**Impervious soil.** A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

**Infiltration.** The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

**Infiltration capacity.** The maximum rate at which water can infiltrate into a soil under a given set of conditions.

**Infiltration rate.** The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

**Intake rate.** The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

| | |
|---|---|
| Less than 0.2 | very low |
| 0.2 to 0.4 | low |
| 0.4 to 0.75 | moderately low |
| 0.75 to 1.25 | moderate |
| 1.25 to 1.75 | moderately high |
| 1.75 to 2.5 | high |
| More than 2.5 | very high |

**Interfluve.** A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

**Interfluve** (geomorphology). A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

**Intermittent stream.** A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

**Iron depletions.** See Redoximorphic features.

**Irrigation.** Application of water to soils to assist in production of crops. Methods of irrigation are:

*Basin.*—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

*Border.*—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

*Controlled flooding.*—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

*Corrugation.*—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

*Drip (or trickle).*—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

*Furrow.*—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

*Sprinkler.*—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

*Subirrigation.*—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

*Wild flooding.*—Water, released at high points, is allowed to flow onto an area without controlled distribution.

**Karst** (topography). A kind of topography that formed in limestone, gypsum, or other soluble rocks by dissolution and that is characterized by closed depressions, sinkholes, caves, and underground drainage.

**Knoll.** A small, low, rounded hill rising above adjacent landforms.

**$K_{sat}$.** Saturated hydraulic conductivity. (See Permeability.)

**Lacustrine deposit.** Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

**Lake plain.** A nearly level surface marking the floor of an extinct lake filled by well sorted, generally fine textured, stratified deposits, commonly containing varves.

**Lake terrace.** A narrow shelf, partly cut and partly built, produced along a lakeshore in front of a scarp line of low cliffs and later exposed when the water level falls.

**Landslide.** A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

**Large stones** (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

**Leaching.** The removal of soluble material from soil or other material by percolating water.

**Linear extensibility.** Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

**Liquid limit.** The moisture content at which the soil passes from a plastic to a liquid state.

**Loam.** Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

**Loess.** Material transported and deposited by wind and consisting dominantly of silt-sized particles.

**Low strength.** The soil is not strong enough to support loads.

**Low-residue crops.** Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

**Marl.** An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions; formed primarily under freshwater lacustrine conditions but also formed in more saline environments.

**Mass movement.** A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.

**Masses.** See Redoximorphic features.

**Meander belt.** The zone within which migration of a meandering channel occurs; the flood-plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.

**Meander scar.** A crescent-shaped, concave or linear mark on the face of a bluff or valley wall, produced by the lateral erosion of a meandering stream that impinged upon and undercut the bluff.

**Meander scroll.** One of a series of long, parallel, close-fitting, crescent-shaped ridges and troughs formed along the inner bank of a stream meander as the channel migrated laterally down-valley and toward the outer bank.

**Mechanical treatment.** Use of mechanical equipment for seeding, brush management, and other management practices.

**Medium textured soil.** Very fine sandy loam, loam, silt loam, or silt.

**Mesa.** A broad, nearly flat-topped and commonly isolated landmass bounded by steep slopes or precipitous cliffs and capped by layers of resistant, nearly horizontal rocky material. The summit width is characteristically greater than the height of the bounding escarpments.

**Metamorphic rock.** Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement at depth in the earth's crust. Nearly all such rocks are crystalline.

**Mine spoil.** An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

**Mineral soil.** Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

**Minimum tillage.** Only the tillage essential to crop production and prevention of soil damage.

**Miscellaneous area.** A kind of map unit that has little or no natural soil and supports little or no vegetation.

**Moderately coarse textured soil.** Coarse sandy loam, sandy loam, or fine sandy loam.

**Moderately fine textured soil.** Clay loam, sandy clay loam, or silty clay loam.

**Mollic epipedon.** A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

**Morphology, soil.** The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

**Mottling, soil.** Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

**Mountain.** A generic term for an elevated area of the land surface, rising more than 1,000 feet (300 meters) above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range. Mountains are formed primarily by tectonic activity and/or volcanic action but can also be formed by differential erosion.

**Muck.** Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

**Mudstone.** A blocky or massive, fine-grained sedimentary rock in which the proportions of clay and silt are approximately equal. Also, a general term for such material as clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.

**Munsell notation.** A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

**Natric horizon.** A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

**Neutral soil.** A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)
**Nodules.** See Redoximorphic features.
**Nose slope (geomorphology).** A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).
**Nutrient, plant.** Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.
**Organic matter.** Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

| | |
|---|---|
| Very low | less than 0.5 percent |
| Low | 0.5 to 1.0 percent |
| Moderately low | 1.0 to 2.0 percent |
| Moderate | 2.0 to 4.0 percent |
| High | 4.0 to 8.0 percent |
| Very high | more than 8.0 percent |

**Outslope.** An area containing deposits of overburden or earth fill downslope of a surface-mine bench, which contains materials excavated from above coal seams during surface mining.
**Paleoterrace.** An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.
**Pan.** A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.
**Parent material.** The unconsolidated organic and mineral material in which soil forms.
**Peat.** Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)
**Ped.** An individual natural soil aggregate, such as a granule, a prism, or a block.
**Pedisediment.** A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on and is being (or was) transported across a gently sloping erosional surface at the foot of a receding hill or mountain slope.
**Pedon.** The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.
**Percolation.** The movement of water through the soil.
**Permafrost.** Ground, soil, or rock that remains at or below 0 degrees C for at least 2 years. It is defined on the basis of temperature and is not necessarily frozen.
**Permeability.** The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as “saturated hydraulic conductivity,” which is defined in the “Soil Survey Manual.” In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as “permeability.” Terms describing permeability, measured in inches per hour, are as follows:

| | |
|---|---|
| Impermeable | less than 0.0015 inch |
| Very slow | 0.0015 to 0.06 inch |
| Slow | 0.06 to 0.2 inch |
| Moderately slow | 0.2 to 0.6 inch |

| | |
|---|---|
| Moderate | 0.6 inch to 2.0 inches |
| Moderately rapid | 2.0 to 6.0 inches |
| Rapid | 6.0 to 20 inches |
| Very rapid | more than 20 inches |

**pH value.** A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

**Phase, soil.** A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

**Piping** (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

**Pitting** (in tables). Pits caused by melting around ice. They form on the soil after plant cover is removed.

**Plastic limit.** The moisture content at which a soil changes from semisolid to plastic.

**Plasticity index.** The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

**Plateau** (geomorphology). A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower-lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.

**Playa.** The generally dry and nearly level lake plain that occupies the lowest parts of closed depressions, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff. Playa deposits are fine grained and may or may not have a high water table and saline conditions.

**Plinthite.** The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

**Plowpan.** A compacted layer formed in the soil directly below the plowed layer.

**Ponding.** Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

**Poorly graded.** Refers to a coarse-grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

**Pore linings.** See Redoximorphic features.

**Potential native plant community.** See Climax plant community.

**Potential rooting depth (effective rooting depth).** Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

**Prescribed burning.** Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

**Productivity, soil.** The capability of a soil for producing a specified plant or sequence of plants under specific management.

**Profile, soil.** A vertical section of the soil extending through all its horizons and into the parent material.

**Proper grazing use.** Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

**Reaction, soil.** A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

| | |
|---|---|
| Ultra acid | less than 3.5 |
| Extremely acid | 3.5 to 4.4 |
| Very strongly acid | 4.5 to 5.0 |
| Strongly acid | 5.1 to 5.5 |
| Moderately acid | 5.6 to 6.0 |
| Slightly acid | 6.1 to 6.5 |
| Neutral | 6.6 to 7.3 |
| Slightly alkaline | 7.4 to 7.8 |
| Moderately alkaline | 7.9 to 8.4 |
| Strongly alkaline | 8.5 to 9.0 |
| Very strongly alkaline | 9.1 and higher |

**Red beds.** Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

**Redoximorphic concentrations.** See Redoximorphic features.

**Redoximorphic depletions.** See Redoximorphic features.

**Redoximorphic features.** Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features. The redoximorphic features are defined as follows:

1. *Redoximorphic concentrations.*—These are zones of apparent accumulation of iron-manganese oxides and include nodules and concretions, masses, and pore linings. *Nodules and concretions* are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure. *Masses* are noncemented concentrations of substances within the soil matrix. *Pore linings* are zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.
2. *Redoximorphic depletions.*—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out. They include iron depletions and clay depletions. *Iron depletions* are zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix. *Clay depletions* are zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).
3. *Reduced matrix.*—This is a soil matrix that has low chroma in situ but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

**Reduced matrix.** See Redoximorphic features.

**Regolith.** All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

**Relief.** The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

**Residuum (residual soil material).** Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

**Ridge.** A long, narrow elevation of the land surface, generally with a sharp crest and steep sides. It forms an extended upland between valleys. The term is used in areas of both hill and mountain relief.

**Rill.** A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

**Riser.** The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

**Road cut.** A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

**Rock fragments.** Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

**Root zone.** The part of the soil that can be penetrated by plant roots.

**Runoff.** The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

**Saline soil.** A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

**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.

**Sapric soil material (muck).** The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

**Saturated hydraulic conductivity ($K_{sat}$).** See Permeability.

**Saturation.** Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

**Scarification.** The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

**Sedimentary rock.** A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

**Sequum.** A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

**Series, soil.** A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

**Shale.** Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.

**Sheet erosion.** The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

**Shoulder.** The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.

**Shrink-swell** (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

**Shrub-coppice dune.** A small, streamlined dune that forms around brush and clump vegetation.

**Side slope (geomorphology).** A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

**Silica.** A combination of silicon and oxygen. The mineral form is called quartz.

**Silica-sesquioxide ratio.** The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

**Silt.** As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

**Siltstone.** An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.

**Similar soils.** Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

**Sinkhole.** A closed, circular or elliptical depression, commonly funnel shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock (e.g., limestone, gypsum, or salt) or by collapse of underlying caves within bedrock. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.

**Site index.** A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

**Slickensides** (pedogenic). Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

**Slope.** The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

| | |
|---|---|
| Nearly level | 0 to 3 percent |
| Gently sloping | 3 to 8 percent |
| Strongly sloping | 8 to 15 percent |
| Moderately steep | 15 to 25 percent |
| Steep | 25 to 35 percent |
| Very steep | 35 percent and higher |

**Slope alluvium.** Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines.

Burnished peds and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

**Slow refill** (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

**Sodic (alkali) soil.** A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

**Sodicity.** The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of $Na^{+}$ to $Ca^{++}$ + $Mg^{++}$. The degrees of sodicity and their respective ratios are:

| | |
|---|---|
| Slight | less than 13:1 |
| Moderate | 13-30:1 |
| Strong | more than 30:1 |

**Sodium adsorption ratio (SAR).** A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

**Soft bedrock.** Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

**Soil.** A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

**Soil crusts.** Relatively thin, somewhat continuous layers of the soil surface that often restrict water movement, air entry, and seedling emergence from the soil. They generally are less than 2 inches thick and are massive.

**Soil separates.** Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

| | |
|---|---|
| Very coarse sand | 2.0 to 1.0 |
| Coarse sand | 1.0 to 0.5 |
| Medium sand | 0.5 to 0.25 |
| Fine sand | 0.25 to 0.10 |
| Very fine sand | 0.10 to 0.05 |
| Silt | 0.05 to 0.002 |
| Clay | less than 0.002 |

**Solum.** 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.

**Spur.** A subordinate ridge or lesser elevation that projects sharply from the crest or side of a hill, mountain, or other prominent range of hills or mountains.

**Stone line.** In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

**Stones.** Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

**Stony.** Refers to a soil containing stones in numbers that interfere with or prevent tillage.

**Strath terrace.** A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).

**Stream terrace.** One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

**Stripcropping.** Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

**Structure, soil.** The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

**Stubble mulch.** Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

**Subsoil.** Technically, the B horizon; roughly, the part of the solum below plow depth.

**Subsoiling.** Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

**Substratum.** The part of the soil below the solum.

**Subsurface layer.** Any surface soil horizon (A, E, AB, or EB) below the surface layer.

**Summer fallow.** The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

**Summit.** The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

**Surface layer.** The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

**Surface soil.** The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

**Talus.** Rock fragments of any size or shape (commonly coarse and angular) derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose broken rock formed chiefly by falling, rolling, or sliding.

**Terrace** (conservation). An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

**Terrace** (geomorphology). A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.

**Terracettes.** Small, irregular steplike forms on steep hillslopes, especially in pasture, formed by creep or erosion of surficial materials that may be induced or enhanced by trampling of livestock, such as sheep or cattle.

**Texture, soil.** The relative proportions of sand, silt, and clay particles in a mass of soil.

The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

**Thin layer** (in tables). Otherwise suitable soil material that is too thin for the specified use.

**Tilth, soil.** The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

**Toeslope.** The gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

**Topsoil.** The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

**Trace elements.** Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

**Tread.** The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

**Unstable fill (in tables).** There is a risk of caving or sloughing on banks of fill material. Fill material that is subject to differential settling.

**Upland.** An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.

**Valley.** An elongate, relatively large, externally drained depression of the earth's surface primarily developed by stream erosion.

**Variegation.** Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

**Water bars.** Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

**Weathering.** All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

**Well graded.** Refers to soil material consisting of coarse-grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

**Wilting point (or permanent wilting point).** The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

**Windthrow.** The uprooting and tipping over of trees by the wind.

# Tables

Table 1.—Temperature and Precipitation

(Recorded in the period 1961-1990 at Grundy, Virginia)

| Month | Temperature: Average daily maximum | Temperature: Average daily minimum | Temperature: Average daily | Temperature: 2 years in 10 will have-- Maximum temp. higher than-- | Temperature: 2 years in 10 will have-- Minimum temp. lower than-- | Temperature: Average number of growing degree days* | Precipitation: Average | Precipitation: 2 years in 10 will have-- Less than-- | Precipitation: 2 years in 10 will have-- More than-- | Precipitation: Average number of days with 0.10 inch or more | Precipitation: Average snow-fall |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | °F | °F | °F | °F | °F | Units | In | In | In | | In |
| January-- | 44.9 | 22.7 | 33.8 | 71 | -6 | 54 | 3.34 | 1.76 | 4.72 | 7 | 7.1 |
| February- | 49.6 | 25.2 | 37.4 | 75 | 3 | 84 | 3.31 | 1.99 | 4.50 | 7 | 5.9 |
| March---- | 60.1 | 33.0 | 46.5 | 84 | 14 | 247 | 3.58 | 2.03 | 4.96 | 8 | 1.6 |
| April---- | 69.8 | 40.0 | 54.9 | 90 | 24 | 440 | 3.78 | 1.94 | 5.40 | 7 | 1.2 |
| May------ | 77.3 | 49.7 | 63.5 | 92 | 31 | 722 | 4.29 | 2.05 | 6.23 | 8 | 0.0 |
| June----- | 84.1 | 58.3 | 71.2 | 96 | 44 | 931 | 4.28 | 1.61 | 6.51 | 7 | 0.0 |
| July----- | 86.9 | 63.1 | 75.0 | 97 | 41 | 1,078 | 4.66 | 2.16 | 6.81 | 8 | 0.0 |
| August--- | 86.1 | 62.5 | 74.3 | 96 | 50 | 1,056 | 3.64 | 2.54 | 4.65 | 6 | 0.0 |
| September | 80.5 | 56.3 | 68.4 | 93 | 39 | 850 | 3.49 | 1.93 | 4.86 | 6 | 0.0 |
| October-- | 70.5 | 42.1 | 56.3 | 87 | 24 | 505 | 3.17 | 1.92 | 4.53 | 5 | 0.0 |
| November- | 60.2 | 34.0 | 47.1 | 82 | 16 | 247 | 3.21 | 1.51 | 4.68 | 7 | 0.8 |
| December- | 49.2 | 26.0 | 37.6 | 74 | 2 | 88 | 3.02 | 1.88 | 4.05 | 7 | 3.2 |
| Yearly: | | | | | | | | | | | |
| Average | 68.3 | 42.7 | 55.5 | --- | --- | --- | --- | --- | --- | --- | --- |
| Extreme | 101 | -14 | --- | 98 | -7 | --- | --- | --- | --- | --- | --- |
| Total-- | --- | --- | --- | --- | --- | 6,301 | 43.78 | 24.61 | 52.06 | 83 | 19.9 |

* 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 1961-1990 at Grundy, Virginia)

| 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. 15 | Apr. 23 | May 9 |
| 2 years in 10 later than-- | Apr. 6 | Apr. 19 | May 4 |
| 5 years in 10 later than-- | Mar. 23 | Apr. 11 | Apr. 24 |
| First freezing temperature in fall: | | | |
| 1 year in 10 earlier than-- | Oct. 20 | Oct. 13 | Oct. 7 |
| 2 years in 10 earlier than-- | Oct. 28 | Oct. 19 | Oct. 12 |
| 5 years in 10 earlier than- | Nov. 11 | Oct. 31 | Oct. 21 |

Table 3.—Growing Season

(Recorded in the period 1961-1990 at Grundy, Virginia)

| 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 | 199 | 185 | 159 |
| 8 years in 10 | 209 | 192 | 166 |
| 5 years in 10 | 228 | 204 | 181 |
| 2 years in 10 | 247 | 217 | 195 |
| 1 year in 10 | 257 | 223 | 203 |

Table 4.—Acreage and Proportionate Extent of the Soils

| Map symbol | Soil name | Acres | Percent |
|---|---|---|---|
| 1D | Calvin loam, 15 to 35 percent slopes | 29 | * |
| 2F | Calvin-Rough complex, 35 to 80 percent slopes, very rocky | 74 | * |
| 3F | Cedarcreek, Fiveblock, and Kaymine soils, 55 to 80 percent slopes, extremely stony | 12,732 | 4.0 |
| 4C | Cedarcreek-Sewell-Rock outcrop complex, 0 to 15 percent slopes, very stony | 9,231 | 2.9 |
| 5F | Cloverlick-Shelocta complex, 55 to 80 percent slopes, very stony | 43,579 | 13.5 |
| 6C | Cotaco loam, 8 to 15 percent slopes | 206 | * |
| 7 | Dumps, mine-Urban land complex | 758 | 0.2 |
| 8C | Fiveblock-Sewell complex, 0 to 15 percent slopes, extremely stony | 1,692 | 0.5 |
| 9E | Gilpin-Berks complex, 25 to 35 percent slopes | 3,233 | 1.0 |
| 9F | Gilpin-Berks complex, 35 to 70 percent slopes | 5,771 | 1.8 |
| 10A | Grigsby fine sandy loam, 0 to 3 percent slopes, occasionally flooded | 514 | 0.2 |
| 11F | Highsplint-Shelocta complex, 55 to 80 percent slopes, very stony | 63,731 | 19.8 |
| 12F | Itmann gravelly loam, 0 to 80 percent slopes | 116 | * |
| 13D | Kaymine very channery silt loam, 15 to 35 percent slopes, extremely stony | 1,448 | 0.4 |
| 14E | Kaymine-Cedarcreek complex, 35 to 55 percent slopes, extremely stony | 8,589 | 2.7 |
| 15C | Kaymine-Fiveblock-Cedarcreek complex, 0 to 15 percent slopes, extremely stony | 1,681 | 0.5 |
| 16C | Lily loam, 8 to 15 percent slopes | 5 | * |
| 16D | Lily loam, 15 to 35 percent slopes | 65 | * |
| 16E | Lily loam, 35 to 55 percent slopes | 44 | * |
| 17D | Marrowbone-Gilpin complex, 15 to 25 percent slopes | 2,496 | 0.8 |
| 17E | Marrowbone-Gilpin complex, 25 to 35 percent slopes | 11,611 | 3.6 |
| 17F | Marrowbone-Gilpin complex, 35 to 70 percent slopes | 20,617 | 6.4 |
| 18F | Matewan-Gilpin-Rock outcrop complex, 55 to 80 percent slopes, extremely stony | 47,891 | 14.9 |
| 19D | Oriskany very cobbly fine sandy loam, 15 to 35 percent slopes, extremely stony | 111 | * |
| 19E | Oriskany very cobbly fine sandy loam, 35 to 55 percent slopes, extremely stony | 370 | 0.1 |
| 20A | Philo fine sandy loam, 0 to 3 percent slopes, occasionally flooded | 703 | 0.2 |
| 21F | Sewell-Kaymine-Rock outcrop complex, 0 to 80 percent slopes, extremely stony | 7,082 | 2.2 |
| 22E | Shelocta-Cedarcreek complex, 35 to 55 percent slopes, very bouldery | 9,435 | 2.9 |
| 23E | Shelocta-Cloverlick complex, 35 to 55 percent slopes, very stony | 8,440 | 2.6 |
| 24E | Shelocta-Highsplint complex, 35 to 55 percent slopes, very stony | 20,124 | 6.2 |
| 25F | Shelocta-Kaymine complex, 55 to 80 percent slopes, very bouldery | 20,215 | 6.3 |
| 26F | Stonecoal extremely channery sandy loam, 0 to 80 percent slopes | 2,263 | 0.7 |
| 27 | Udorthents-Urban land complex, 0 to 80 percent slopes | 9,604 | 3.0 |
| 28 | Udorthents-Urban land complex, occasionally flooded | 5,292 | 1.6 |
| 29D | Wallen channery sandy loam, 15 to 35 percent slopes, very stony | 14 | * |
| 29F | Wallen channery sandy loam, 35 to 70 percent slopes, very stony | 98 | * |
| 30F | Wallen-Rock outcrop complex, 35 to 80 percent slopes, extremely stony | 44 | * |
| 31D | Wharton-Gilpin-Berks complex, 15 to 25 percent slopes | 1,126 | 0.3 |
| 32C | Wharton-Gilpin-Marrowbone complex, 8 to 15 percent slopes | 711 | 0.2 |
| W | Water | 555 | 0.2 |
| | Total | 322,300 | 100.0 |

* Less than 0.1 percent.

Table 5.—Land Capability, Virginia Soil Management Group, 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 | Virginia Soil Management Group | Alfalfa hay | Corn | Grass-legume hay | Pasture | Wheat |
|---|---|---|---|---|---|---|---|
| | | | Tons | Bu | Tons | AUM | Bu |
| 1D: | | | | | | | |
| Calvin------------ | 6e | JJ | --- | --- | --- | 3.0 | --- |
| 2F: | | | | | | | |
| Calvin------------ | 7e | JJ | --- | --- | --- | --- | --- |
| Rough------------- | 7e | JJ | --- | --- | --- | --- | --- |
| 3F: | | | | | | | |
| Cedarcreek-------- | 7e | JJ | --- | --- | --- | --- | --- |
| Fiveblock--------- | 7e | JJ | --- | --- | --- | --- | --- |
| Kaymine----------- | 7e | JJ | --- | --- | --- | --- | --- |
| 4C: | | | | | | | |
| Cedarcreek-------- | 6s | JJ | --- | --- | --- | 2.5 | --- |
| Sewell------------ | 6s | JJ | --- | --- | --- | 2.0 | --- |
| Rock outcrop------ | 8s | --- | --- | --- | --- | --- | --- |
| 5F: | | | | | | | |
| Cloverlick-------- | 7e | JJ | --- | --- | --- | --- | --- |
| Shelocta---------- | 7e | L | --- | --- | --- | --- | --- |
| 6C: | | | | | | | |
| Cotaco------------ | 3e | G | 4.8 | 123 | 4.0 | 8.0 | 56 |
| 7: | | | | | | | |
| Dumps, mine------- | 8 | --- | --- | --- | --- | --- | --- |
| Urban land-------- | 8 | --- | --- | --- | --- | --- | --- |
| 8C: | | | | | | | |
| Fiveblock--------- | 7s | JJ | --- | --- | --- | --- | --- |
| Sewell------------ | 7s | JJ | --- | --- | --- | --- | --- |
| 9E: | | | | | | | |
| Gilpin------------ | 6e | U | --- | --- | --- | 3.5 | --- |
| Berks------------- | 6e | JJ | --- | --- | --- | 2.5 | --- |
| 9F: | | | | | | | |
| Gilpin------------ | 7e | U | --- | --- | --- | --- | --- |
| Berks------------- | 7e | JJ | --- | --- | --- | --- | --- |
| 10A: | | | | | | | |
| Grigsby----------- | 1 | A | 6.0 | 160 | 4.5 | 9.0 | 64 |

Table 5.—Land Capability, Virginia Soil Management Group, and Yields per Acre of Crops and Pasture—Continued

| Map symbol and soil name | Land capability | Virginia Soil Management Group | Alfalfa hay | Corn | Grass-legume hay | Pasture | Wheat |
|---|---|---|---|---|---|---|---|
| | | | Tons | Bu | Tons | AUM | Bu |
| 11F: | | | | | | | |
| Highsplint-------- | 7e | CC | --- | --- | --- | --- | --- |
| Shelocta---------- | 7e | L | --- | --- | --- | --- | --- |
| 12F: | | | | | | | |
| Itmann------------ | 7e | JJ | --- | --- | --- | --- | --- |
| 13D: | | | | | | | |
| Kaymine----------- | 7s | JJ | --- | --- | --- | --- | --- |
| 14E: | | | | | | | |
| Kaymine----------- | 7e | JJ | --- | --- | --- | --- | --- |
| Cedarcreek-------- | 7e | JJ | --- | --- | --- | --- | --- |
| 15C: | | | | | | | |
| Kaymine----------- | 7s | JJ | --- | --- | --- | --- | --- |
| Fiveblock--------- | 7s | JJ | --- | --- | --- | --- | --- |
| Cedarcreek-------- | 7s | JJ | --- | --- | --- | --- | --- |
| 16C: | | | | | | | |
| Lily-------------- | 3e | U | 3.5 | 97 | 3.1 | 4.5 | 49 |
| 16D: | | | | | | | |
| Lily-------------- | 6e | U | --- | --- | --- | 4.0 | --- |
| 16E: | | | | | | | |
| Lily-------------- | 7e | U | --- | --- | --- | --- | --- |
| 17D: | | | | | | | |
| Marrowbone-------- | 4e | FF | --- | 68 | 2.8 | 4.0 | 38 |
| Gilpin------------ | 4e | U | 3.2 | 88 | 2.8 | 4.0 | 45 |
| 17E: | | | | | | | |
| Marrowbone-------- | 6e | FF | --- | --- | --- | 3.5 | --- |
| Gilpin------------ | 6e | U | --- | --- | --- | 3.5 | --- |
| 17F: | | | | | | | |
| Marrowbone-------- | 7e | FF | --- | --- | --- | --- | --- |
| Gilpin------------ | 7e | U | --- | --- | --- | --- | --- |
| 18F: | | | | | | | |
| Matewan----------- | 7s | FF | --- | --- | --- | --- | --- |
| Gilpin------------ | 7s | U | --- | --- | --- | --- | --- |
| Rock outcrop------ | 8s | --- | --- | --- | --- | --- | --- |
| 19D: | | | | | | | |
| Oriskany---------- | 7s | CC | --- | --- | --- | --- | --- |
| 19E: | | | | | | | |
| Oriskany---------- | 7e | CC | --- | --- | --- | --- | --- |

Table 5.—Land Capability, Virginia Soil Management Group, and Yields per Acre of Crops and Pasture—Continued

| Map symbol and soil name | Land capability | Virginia Soil Management Group | Alfalfa hay | Corn | Grass-legume hay | Pasture | Wheat |
|---|---|---|---|---|---|---|---|
| | | | Tons | Bu | Tons | AUM | Bu |
| 20A: | | | | | | | |
| Philo | 2w | H | --- | 140 | 3.0 | 4.0 | 48 |
| 21F: | | | | | | | |
| Sewell | 7s | JJ | --- | --- | --- | --- | --- |
| Kaymine | 7s | JJ | --- | --- | --- | --- | --- |
| Rock outcrop | 8s | --- | --- | --- | --- | --- | --- |
| 22E: | | | | | | | |
| Shelocta | 7e | L | --- | --- | --- | --- | --- |
| Cedarcreek | 7e | JJ | --- | --- | --- | --- | --- |
| 23E: | | | | | | | |
| Shelocta | 7e | L | --- | --- | --- | --- | --- |
| Cloverlick | 7e | JJ | --- | --- | --- | --- | --- |
| 24E: | | | | | | | |
| Shelocta | 7e | L | --- | --- | --- | --- | --- |
| Highsplint | 7e | CC | --- | --- | --- | --- | --- |
| 25F: | | | | | | | |
| Shelocta | 7e | L | --- | --- | --- | --- | --- |
| Kaymine | 7e | JJ | --- | --- | --- | --- | --- |
| 26F: | | | | | | | |
| Stonecoal | 7e | JJ | --- | --- | --- | --- | --- |
| 27: | | | | | | | |
| Udorthents. | | | | | | | |
| Urban land | 8 | --- | --- | --- | --- | --- | --- |
| 28: | | | | | | | |
| Udorthents. | | | | | | | |
| Urban land | 8 | --- | --- | --- | --- | --- | --- |
| 29D: | | | | | | | |
| Wallen | 7s | JJ | --- | --- | --- | --- | --- |
| 29F: | | | | | | | |
| Wallen | 7e | JJ | --- | --- | --- | --- | --- |
| 30F: | | | | | | | |
| Wallen | 7s | JJ | --- | --- | --- | --- | --- |
| Rock outcrop | 8s | --- | --- | --- | --- | --- | --- |
| 31D: | | | | | | | |
| Wharton | 4e | AA | --- | 80 | 2.4 | 3.0 | 45 |
| Gilpin | 4e | U | 3.2 | 88 | 2.8 | 4.0 | 45 |
| Berks | 4e | JJ | --- | 52 | 2.4 | 3.0 | 32 |

Table 5.—Land Capability, Virginia Soil Management Group, and Yields per Acre of Crops and Pasture—Continued

| Map symbol and soil name | Land capability | Virginia Soil Management Group | Alfalfa hay | Corn | Grass-legume hay | Pasture | Wheat |
|---|---|---|---|---|---|---|---|
| | | | Tons | Bu | Tons | AUM | Bu |
| 32C: | | | | | | | |
| Wharton----------- | 3e | AA | --- | 88 | 2.6 | 3.5 | 49 |
| Gilpin------------ | 3e | U | 3.5 | 97 | 3.1 | 4.5 | 49 |
| Marrowbone-------- | 3e | FF | --- | 75 | 3.1 | 4.5 | 42 |
| W. | | | | | | | |
| Water | | | | | | | |

Table 6.—Agricultural Waste Management, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

| Map symbol and soil name | Pct. of map unit | Application of manure and food-processing waste | | Application of sewage sludge | |
|---|---|---|---|---|---|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| 1D: | | | | | |
| Calvin | 85 | Very limited | | Very limited | |
| | | Slope | 1.00 | Low adsorption | 1.00 |
| | | Droughty | 0.84 | Slope | 1.00 |
| | | Too acid | 0.62 | Too acid | 1.00 |
| 2F: | | | | | |
| Calvin | 70 | Very limited | | Very limited | |
| | | Slope | 1.00 | Low adsorption | 1.00 |
| | | Droughty | 0.84 | Slope | 1.00 |
| | | Too acid | 0.62 | Too acid | 1.00 |
| Rough | 20 | Very limited | | Very limited | |
| | | Slope | 1.00 | Droughty | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 |
| | | Droughty | 1.00 | Low adsorption | 1.00 |
| 3F: | | | | | |
| Cedarcreek | 35 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 1.00 | Too acid | 1.00 |
| | | Droughty | 0.86 | Droughty | 0.86 |
| Fiveblock | 30 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 1.00 | Droughty | 0.99 |
| | | Droughty | 0.99 | Too acid | 0.42 |
| Kaymine | 25 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 1.00 | | |
| 4C: | | | | | |
| Cedarcreek | 35 | Somewhat limited | | Very limited | |
| | | Droughty | 0.86 | Too acid | 1.00 |
| | | Too acid | 0.68 | Droughty | 0.86 |
| | | Large stones content | 0.53 | Slope | 0.01 |
| Sewell | 30 | Very limited | | Very limited | |
| | | Droughty | 1.00 | Too acid | 1.00 |
| | | Large stones content | 0.76 | Droughty | 1.00 |
| | | Too acid | 0.68 | Large stones on the surface | 0.08 |
| Rock outcrop | 10 | Not rated | | Not rated | |

Table 6.—Agricultural Waste Management, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Application of manure and food-processing waste: Rating class and limiting features | Value | Application of sewage sludge: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 5F: | | | | | |
| Cloverlick---------- | 45 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Too acid | 0.27 | Too acid | 0.85 |
| | | Large stones content | 0.19 | | |
| Shelocta------------ | 40 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Too acid | 0.37 | Too acid | 0.96 |
| | | Large stones content | 0.31 | | |
| 6C: | | | | | |
| Cotaco-------------- | 90 | Very limited | | Very limited | |
| | | Depth to saturated zone | 0.99 | Depth to saturated zone | 0.99 |
| | | Slope | 0.37 | Too acid | 0.77 |
| | | Too acid | 0.22 | Slope | 0.37 |
| 7: | | | | | |
| Dumps, mine--------- | 60 | Not rated | | Not rated | |
| Urban land---------- | 30 | Not rated | | Not rated | |
| 8C: | | | | | |
| Fiveblock----------- | 80 | Very limited | | Somewhat limited | |
| | | Large stones content | 1.00 | Droughty | 0.99 |
| | | | | Too acid | 0.42 |
| | | Droughty | 0.99 | Large stones on the surface | 0.02 |
| | | Too acid | 0.11 | | |
| Sewell-------------- | 20 | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Too acid | 1.00 |
| | | | | Droughty | 1.00 |
| | | Droughty | 1.00 | Large stones on the surface | 0.08 |
| | | Too acid | 0.68 | | |
| 9E: | | | | | |
| Gilpin-------------- | 55 | Very limited | | Very limited | |
| | | Slope | 1.00 | Low adsorption | 1.00 |
| | | Too acid | 0.50 | Slope | 1.00 |
| | | Droughty | 0.28 | Too acid | 0.99 |
| Berks--------------- | 30 | Very limited | | Very limited | |
| | | Slope | 1.00 | Low adsorption | 1.00 |
| | | Droughty | 0.92 | Slope | 1.00 |
| | | Too acid | 0.50 | Too acid | 0.99 |
| 9F: | | | | | |
| Gilpin-------------- | 55 | Very limited | | Very limited | |
| | | Slope | 1.00 | Low adsorption | 1.00 |
| | | Too acid | 0.50 | Slope | 1.00 |
| | | Droughty | 0.28 | Too acid | 0.99 |
| Berks--------------- | 35 | Very limited | | Very limited | |
| | | Slope | 1.00 | Low adsorption | 1.00 |
| | | Droughty | 0.92 | Slope | 1.00 |
| | | Too acid | 0.50 | Too acid | 0.99 |

Table 6.—Agricultural Waste Management, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Application of manure and food-processing waste | | Application of sewage sludge | |
|---|---|---|---|---|---|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| 10A: | | | | | |
| Grigsby | 81 | Somewhat limited | | Very limited | |
| | | Flooding | 0.60 | Flooding | 1.00 |
| | | Too acid | 0.11 | Too acid | 0.42 |
| | | Filtering capacity | 0.01 | Filtering capacity | 0.01 |
| 11F: | | | | | |
| Highsplint | 55 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.31 | Too acid | 0.55 |
| | | Too acid | 0.14 | | |
| Shelocta | 40 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Too acid | 0.37 | Too acid | 0.96 |
| | | Large stones content | 0.31 | | |
| 12F: | | | | | |
| Itmann | 95 | Very limited | | Very limited | |
| | | Filtering capacity | 1.00 | Filtering capacity | 1.00 |
| | | Slope | 1.00 | Too acid | 1.00 |
| | | Droughty | 1.00 | Droughty | 1.00 |
| 13D: | | | | | |
| Kaymine | 90 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 1.00 | | |
| 14E: | | | | | |
| Kaymine | 85 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 1.00 | | |
| Cedarcreek | 15 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 1.00 | Too acid | 1.00 |
| | | | | Droughty | 0.86 |
| | | Droughty | 0.86 | | |
| 15C: | | | | | |
| Kaymine | 55 | Very limited | | Somewhat limited | |
| | | Large stones content | 1.00 | Slope | 0.01 |
| | | Slope | 0.01 | | |
| Fiveblock | 25 | Very limited | | Somewhat limited | |
| | | Large stones content | 1.00 | Droughty | 0.99 |
| | | | | Too acid | 0.42 |
| | | Droughty | 0.99 | Large stones on the surface | 0.02 |
| | | Too acid | 0.11 | | |

Table 6.—Agricultural Waste Management, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Application of manure and food-processing waste: Rating class and limiting features | Value | Application of sewage sludge: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 15C: | | | | | |
| Cedarcreek---------- | 20 | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Too acid | 1.00 |
| | | Droughty | 0.86 | Droughty | 0.86 |
| | | Too acid | 0.68 | Slope | 0.01 |
| 16C: | | | | | |
| Lily---------------- | 85 | Somewhat limited | | Very limited | |
| | | Depth to bedrock | 0.65 | Low adsorption | 1.00 |
| | | Slope | 0.63 | Too acid | 0.96 |
| | | Droughty | 0.47 | Depth to bedrock | 0.65 |
| 16D: | | | | | |
| Lily---------------- | 95 | Very limited | | Very limited | |
| | | Slope | 1.00 | Low adsorption | 1.00 |
| | | Depth to bedrock | 0.65 | Slope | 1.00 |
| | | Droughty | 0.47 | Too acid | 0.96 |
| 16E: | | | | | |
| Lily---------------- | 80 | Very limited | | Very limited | |
| | | Slope | 1.00 | Low adsorption | 1.00 |
| | | Depth to bedrock | 0.65 | Slope | 1.00 |
| | | Droughty | 0.47 | Too acid | 0.96 |
| 17D: | | | | | |
| Marrowbone---------- | 50 | Very limited | | Very limited | |
| | | Slope | 1.00 | Low adsorption | 1.00 |
| | | Droughty | 1.00 | Slope | 1.00 |
| | | Too acid | 0.27 | Droughty | 1.00 |
| Gilpin-------------- | 45 | Very limited | | Very limited | |
| | | Slope | 1.00 | Low adsorption | 1.00 |
| | | Too acid | 0.50 | Slope | 1.00 |
| | | Droughty | 0.28 | Too acid | 0.99 |
| 17E: | | | | | |
| Marrowbone---------- | 60 | Very limited | | Very limited | |
| | | Slope | 1.00 | Low adsorption | 1.00 |
| | | Droughty | 1.00 | Slope | 1.00 |
| | | Too acid | 0.27 | Droughty | 1.00 |
| Gilpin-------------- | 35 | Very limited | | Very limited | |
| | | Slope | 1.00 | Low adsorption | 1.00 |
| | | Too acid | 0.50 | Slope | 1.00 |
| | | Droughty | 0.28 | Too acid | 0.99 |
| 17F: | | | | | |
| Marrowbone---------- | 75 | Very limited | | Very limited | |
| | | Slope | 1.00 | Low adsorption | 1.00 |
| | | Droughty | 1.00 | Slope | 1.00 |
| | | Too acid | 0.27 | Droughty | 1.00 |
| Gilpin-------------- | 15 | Very limited | | Very limited | |
| | | Slope | 1.00 | Low adsorption | 1.00 |
| | | Too acid | 0.50 | Slope | 1.00 |
| | | Droughty | 0.28 | Too acid | 0.99 |

Table 6.—Agricultural Waste Management, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Application of manure and food-processing waste: Rating class and limiting features | Value | Application of sewage sludge: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 18F: | | | | | |
| Matewan | 55 | Very limited | | Very limited | |
| | | Slope | 1.00 | Filtering capacity | 1.00 |
| | | Filtering capacity | 1.00 | Low adsorption | 1.00 |
| | | Large stones content | 1.00 | Slope | 1.00 |
| Gilpin | 30 | Very limited | | Very limited | |
| | | Slope | 1.00 | Low adsorption | 1.00 |
| | | Large stones content | 1.00 | Slope | 1.00 |
| | | Too acid | 0.50 | Too acid | 0.99 |
| Rock outcrop | 10 | Not rated | | Not rated | |
| 19D: | | | | | |
| Oriskany | 95 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 1.00 | Too acid | 0.99 |
| | | Cobble content | 0.50 | Cobble content | 0.50 |
| 19E: | | | | | |
| Oriskany | 95 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 1.00 | Too acid | 0.99 |
| | | Cobble content | 0.50 | Cobble content | 0.50 |
| 20A: | | | | | |
| Philo | 95 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Flooding | 0.60 | Flooding | 1.00 |
| | | Too acid | 0.37 | Too acid | 0.96 |
| 21F: | | | | | |
| Sewell | 55 | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Too acid | 1.00 |
| | | Slope | 1.00 | Droughty | 1.00 |
| | | Droughty | 1.00 | Slope | 1.00 |
| Kaymine | 30 | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Slope | 1.00 |
| | | Slope | 1.00 | | |
| Rock outcrop | 10 | Not rated | | Not rated | |
| 22E: | | | | | |
| Shelocta | 70 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Too acid | 0.37 | Too acid | 0.96 |
| | | Large stones content | 0.31 | | |

Table 6.—Agricultural Waste Management, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Application of manure and food-processing waste: Rating class and limiting features | Value | Application of sewage sludge: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 22E: | | | | | |
| Cedarcreek---------- | 25 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Droughty | 0.86 | Too acid | 1.00 |
| | | Too acid | 0.68 | Droughty | 0.86 |
| 23E: | | | | | |
| Shelocta----------- | 55 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Too acid | 0.37 | Too acid | 0.96 |
| | | Large stones content | 0.31 | | |
| Cloverlick---------- | 35 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Too acid | 0.27 | Too acid | 0.85 |
| | | Large stones content | 0.19 | | |
| 24E: | | | | | |
| Shelocta----------- | 50 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Too acid | 0.37 | Too acid | 0.96 |
| | | Large stones content | 0.31 | | |
| Highsplint---------- | 40 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.31 | Too acid | 0.55 |
| | | Too acid | 0.14 | | |
| 25F: | | | | | |
| Shelocta----------- | 55 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Too acid | 0.37 | Too acid | 0.96 |
| | | Large stones content | 0.31 | | |
| Kaymine------------ | 40 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.31 | | |
| 26F: | | | | | |
| Stonecoal---------- | 85 | Very limited | | Very limited | |
| | | Slope | 1.00 | Droughty | 1.00 |
| | | Droughty | 1.00 | Slope | 1.00 |
| | | Cobble content | 0.87 | Cobble content | 0.87 |
| 27: | | | | | |
| Udorthents---------- | 45 | Not rated | | Not rated | |
| Urban land---------- | 30 | Not rated | | Not rated | |
| 28: | | | | | |
| Udorthents---------- | 45 | Not rated | | Not rated | |
| Urban land---------- | 35 | Not rated | | Not rated | |

Table 6.—Agricultural Waste Management, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Application of manure and food-processing waste: Rating class and limiting features | Value | Application of sewage sludge: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 29D: | | | | | |
| Wallen | 90 | Very limited | | Very limited | |
| | | Slope | 1.00 | Droughty | 1.00 |
| | | Droughty | 1.00 | Low adsorption | 1.00 |
| | | Depth to bedrock | 0.90 | Slope | 1.00 |
| 29F: | | | | | |
| Wallen | 75 | Very limited | | Very limited | |
| | | Slope | 1.00 | Droughty | 1.00 |
| | | Droughty | 1.00 | Low adsorption | 1.00 |
| | | Depth to bedrock | 0.90 | Slope | 1.00 |
| 30F: | | | | | |
| Wallen | 85 | Very limited | | Very limited | |
| | | Slope | 1.00 | Droughty | 1.00 |
| | | Droughty | 1.00 | Low adsorption | 1.00 |
| | | Large stones content | 1.00 | Slope | 1.00 |
| Rock outcrop | 10 | Not rated | | Not rated | |
| 31D: | | | | | |
| Wharton | 45 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to saturated zone | 1.00 |
| | | Depth to saturated zone | 1.00 | Low adsorption | 1.00 |
| | | Slow water movement | 0.86 | Slope | 1.00 |
| Gilpin | 40 | Very limited | | Very limited | |
| | | Slope | 1.00 | Low adsorption | 1.00 |
| | | Too acid | 0.50 | Slope | 1.00 |
| | | Droughty | 0.28 | Too acid | 0.99 |
| Berks | 15 | Very limited | | Very limited | |
| | | Slope | 1.00 | Low adsorption | 1.00 |
| | | Droughty | 0.92 | Slope | 1.00 |
| | | Too acid | 0.50 | Too acid | 0.99 |
| 32C: | | | | | |
| Wharton | 45 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 0.86 | Low adsorption | 1.00 |
| | | | | Too acid | 0.96 |
| | | Too acid | 0.37 | | |
| Gilpin | 35 | Somewhat limited | | Very limited | |
| | | Too acid | 0.50 | Low adsorption | 1.00 |
| | | Droughty | 0.28 | Too acid | 0.99 |
| | | Slope | 0.16 | Droughty | 0.28 |
| Marrowbone | 20 | Very limited | | Very limited | |
| | | Droughty | 1.00 | Low adsorption | 1.00 |
| | | Too acid | 0.27 | Droughty | 1.00 |
| | | Depth to bedrock | 0.20 | Too acid | 0.85 |
| W: | | | | | |
| Water | 100 | Not rated | | Not rated | |

Table 6.—Agricultural Waste Management, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

| Map symbol and soil name | Pct. of map unit | Disposal of wastewater by irrigation: Rating class and limiting features | Value | Overland flow of wastewater: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 1D: | | | | | |
| Calvin | 85 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Seepage | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Depth to bedrock | 1.00 |
| | | Too acid | 1.00 | Too steep for surface application | 1.00 |
| 2F: | | | | | |
| Calvin | 70 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Seepage | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Depth to bedrock | 1.00 |
| | | Too acid | 1.00 | Too steep for surface application | 1.00 |
| Rough | 20 | Very limited | | Very limited | |
| | | Droughty | 1.00 | Seepage | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 |
| | | Too steep for surface application | 1.00 | Too steep for surface application | 1.00 |
| 3F: | | | | | |
| Cedarcreek | 35 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Too steep for surface application | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Seepage | 1.00 |
| | | Too acid | 1.00 | Too acid | 1.00 |
| Fiveblock | 30 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Seepage | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Too steep for surface application | 1.00 |
| | | Droughty | 0.99 | Stone content | 1.00 |
| Kaymine | 25 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Too steep for surface application | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Seepage | 1.00 |
| | | | | Cobble content | 0.27 |

Table 6.—Agricultural Waste Management, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Disposal of wastewater by irrigation: Rating class and limiting features | Value | Overland flow of wastewater: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 4C: | | | | | |
| Cedarcreek---------- | 35 | Very limited | | Very limited | |
| | | Too acid | 1.00 | Seepage | 1.00 |
| | | Too steep for surface application | 1.00 | Too acid | 1.00 |
| | | | | Stone content | 0.32 |
| | | Droughty | 0.86 | | |
| Sewell-------------- | 30 | Very limited | | Very limited | |
| | | Too acid | 1.00 | Seepage | 1.00 |
| | | Droughty | 1.00 | Too acid | 1.00 |
| | | Too steep for surface application | 1.00 | Stone content | 1.00 |
| Rock outcrop-------- | 10 | Not rated | | Not rated | |
| 5F: | | | | | |
| Cloverlick---------- | 45 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Too steep for surface application | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Seepage | 1.00 |
| | | | | Too acid | 0.85 |
| | | Too acid | 0.85 | | |
| Shelocta------------ | 40 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Too steep for surface application | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Seepage | 1.00 |
| | | | | Too acid | 0.96 |
| | | Too acid | 0.96 | | |
| 6C: | | | | | |
| Cotaco-------------- | 90 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Seepage | 1.00 |
| | | | | Depth to saturated zone | 0.99 |
| | | Depth to saturated zone | 0.99 | Too steep for surface application | 0.94 |
| | | Too acid | 0.77 | | |
| 7: | | | | | |
| Dumps, mine--------- | 60 | Not rated | | Not rated | |
| Urban land---------- | 30 | Not rated | | Not rated | |
| 8C: | | | | | |
| Fiveblock----------- | 80 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Seepage | 1.00 |
| | | | | Stone content | 1.00 |
| | | | | Too acid | 0.42 |
| | | Droughty | 0.99 | | |
| | | Too acid | 0.42 | | |

Table 6.—Agricultural Waste Management, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Disposal of wastewater by irrigation: Rating class and limiting features | Value | Overland flow of wastewater: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 8C: | | | | | |
| Sewell | 20 | Very limited | | Very limited | |
| | | Too acid | 1.00 | Seepage | 1.00 |
| | | Droughty | 1.00 | Too acid | 1.00 |
| | | Too steep for surface application | 1.00 | Stone content | 1.00 |
| 9E: | | | | | |
| Gilpin | 55 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Depth to bedrock | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Too steep for surface application | 1.00 |
| | | Too acid | 0.99 | Seepage | 1.00 |
| Berks | 30 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Depth to bedrock | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Too steep for surface application | 1.00 |
| | | Too acid | 0.99 | Seepage | 1.00 |
| 9F: | | | | | |
| Gilpin | 55 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Depth to bedrock | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Too steep for surface application | 1.00 |
| | | Too acid | 0.99 | Seepage | 1.00 |
| Berks | 35 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Depth to bedrock | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Too steep for surface application | 1.00 |
| | | Too acid | 0.99 | Seepage | 1.00 |
| 10A: | | | | | |
| Grigsby | 81 | Somewhat limited | | Very limited | |
| | | Flooding | 0.60 | Flooding | 1.00 |
| | | Too acid | 0.42 | Seepage | 1.00 |
| | | Filtering capacity | 0.01 | Too acid | 0.42 |

Table 6.—Agricultural Waste Management, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Disposal of wastewater by irrigation: Rating class and limiting features | Value | Overland flow of wastewater: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 11F: | | | | | |
| Highsplint---------- | 55 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Too steep for surface application | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Seepage | 1.00 |
| | | Too acid | 0.55 | Too acid | 0.55 |
| Shelocta------------ | 40 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Too steep for surface application | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Seepage | 1.00 |
| | | Too acid | 0.96 | Too acid | 0.96 |
| 12F: | | | | | |
| Itmann-------------- | 95 | Very limited | | Very limited | |
| | | Filtering capacity | 1.00 | Seepage | 1.00 |
| | | Too acid | 1.00 | Too acid | 1.00 |
| | | Droughty | 1.00 | Too steep for surface application | 1.00 |
| 13D: | | | | | |
| Kaymine------------- | 90 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Too steep for surface application | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Seepage | 1.00 |
| | | | | Cobble content | 0.27 |
| 14E: | | | | | |
| Kaymine------------- | 85 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Too steep for surface application | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Seepage | 1.00 |
| | | | | Cobble content | 0.27 |
| Cedarcreek---------- | 15 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Too steep for surface application | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Seepage | 1.00 |
| | | Too acid | 1.00 | Too acid | 1.00 |

Table 6.—Agricultural Waste Management, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Disposal of wastewater by irrigation: Rating class and limiting features | Value | Overland flow of wastewater: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 15C: | | | | | |
| Kaymine | 55 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Seepage | 1.00 |
| | | Too steep for sprinkler application | 0.10 | Cobble content | 0.27 |
| | | | | Too steep for surface application | 0.22 |
| Fiveblock | 25 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Seepage | 1.00 |
| | | Droughty | 0.99 | Stone content | 1.00 |
| | | Too acid | 0.42 | Too acid | 0.42 |
| Cedarcreek | 20 | Very limited | | Very limited | |
| | | Too acid | 1.00 | Seepage | 1.00 |
| | | Too steep for surface application | 1.00 | Too acid | 1.00 |
| | | Droughty | 0.86 | Stone content | 0.32 |
| 16C: | | | | | |
| Lily | 85 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Depth to bedrock | 1.00 |
| | | Too acid | 0.96 | Seepage | 1.00 |
| | | Too steep for sprinkler application | 0.78 | Too steep for surface application | 1.00 |
| 16D: | | | | | |
| Lily | 95 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Depth to bedrock | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Too steep for surface application | 1.00 |
| | | Too acid | 0.96 | Seepage | 1.00 |
| 16E: | | | | | |
| Lily | 80 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Depth to bedrock | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Too steep for surface application | 1.00 |
| | | Too acid | 0.96 | Seepage | 1.00 |

Table 6.—Agricultural Waste Management, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Disposal of wastewater by irrigation: Rating class and limiting features | Value | Overland flow of wastewater: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 17D: | | | | | |
| Marrowbone---------- | 50 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Seepage | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Depth to bedrock | 1.00 |
| | | Droughty | 1.00 | Too steep for surface application | 1.00 |
| Gilpin-------------- | 45 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Depth to bedrock | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Too steep for surface application | 1.00 |
| | | Too acid | 0.99 | Seepage | 1.00 |
| 17E: | | | | | |
| Marrowbone---------- | 60 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Seepage | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Depth to bedrock | 1.00 |
| | | Droughty | 1.00 | Too steep for surface application | 1.00 |
| Gilpin-------------- | 35 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Depth to bedrock | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Too steep for surface application | 1.00 |
| | | Too acid | 0.99 | Seepage | 1.00 |
| 17F: | | | | | |
| Marrowbone---------- | 75 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Seepage | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Depth to bedrock | 1.00 |
| | | Droughty | 1.00 | Too steep for surface application | 1.00 |
| Gilpin-------------- | 15 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Depth to bedrock | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Too steep for surface application | 1.00 |
| | | Too acid | 0.99 | Seepage | 1.00 |

Table 6.—Agricultural Waste Management, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Disposal of wastewater by irrigation: Rating class and limiting features | Value | Overland flow of wastewater: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 18F: | | | | | |
| Matewan | 55 | Very limited | | Very limited | |
| | | Filtering capacity | 1.00 | Seepage | 1.00 |
| | | Too steep for surface application | 1.00 | Depth to bedrock | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Too steep for surface application | 1.00 |
| Gilpin | 30 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Depth to bedrock | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Too steep for surface application | 1.00 |
| | | Too acid | 0.99 | Seepage | 1.00 |
| Rock outcrop | 10 | Not rated | | Not rated | |
| 19D: | | | | | |
| Oriskany | 95 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Seepage | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Too steep for surface application | 1.00 |
| | | Too acid | 0.99 | Too acid | 0.99 |
| 19E: | | | | | |
| Oriskany | 95 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Seepage | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Too steep for surface application | 1.00 |
| | | Too acid | 0.99 | Too acid | 0.99 |
| 20A: | | | | | |
| Philo | 95 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Flooding | 1.00 |
| | | Too acid | 0.96 | Depth to saturated zone | 1.00 |
| | | Flooding | 0.60 | Seepage | 1.00 |
| 21F: | | | | | |
| Sewell | 55 | Very limited | | Very limited | |
| | | Too acid | 1.00 | Seepage | 1.00 |
| | | Droughty | 1.00 | Too acid | 1.00 |
| | | Too steep for surface application | 1.00 | Stone content | 1.00 |

Table 6.—Agricultural Waste Management, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Disposal of wastewater by irrigation: Rating class and limiting features | Value | Overland flow of wastewater: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 21F: | | | | | |
| Kaymine------------- | 30 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Seepage | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Too steep for surface application | 1.00 |
| | | | | Cobble content | 0.27 |
| Rock outcrop-------- | 10 | Not rated | | Not rated | |
| 22E: | | | | | |
| Shelocta------------ | 70 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Too steep for surface application | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Seepage | 1.00 |
| | | Too acid | 0.96 | Too acid | 0.96 |
| Cedarcreek---------- | 25 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Too steep for surface application | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Seepage | 1.00 |
| | | Too acid | 1.00 | Too acid | 1.00 |
| 23E: | | | | | |
| Shelocta------------ | 55 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Too steep for surface application | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Seepage | 1.00 |
| | | Too acid | 0.96 | Too acid | 0.96 |
| Cloverlick---------- | 35 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Too steep for surface application | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Seepage | 1.00 |
| | | Too acid | 0.85 | Too acid | 0.85 |
| 24E: | | | | | |
| Shelocta------------ | 50 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Too steep for surface application | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Seepage | 1.00 |
| | | Too acid | 0.96 | Too acid | 0.96 |

Table 6.—Agricultural Waste Management, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Disposal of wastewater by irrigation: Rating class and limiting features | Value | Overland flow of wastewater: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 24E: | | | | | |
| Highsplint---------- | 40 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Too steep for surface application | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Seepage | 1.00 |
| | | Too acid | 0.55 | Too acid | 0.55 |
| 25F: | | | | | |
| Shelocta----------- | 55 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Too steep for surface application | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Seepage | 1.00 |
| | | Too acid | 0.96 | Too acid | 0.96 |
| Kaymine------------ | 40 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Too steep for surface application | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Seepage | 1.00 |
| | | | | Cobble content | 0.27 |
| 26F: | | | | | |
| Stonecoal---------- | 85 | Very limited | | Very limited | |
| | | Droughty | 1.00 | Seepage | 1.00 |
| | | Too steep for surface application | 1.00 | Too steep for surface application | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Cobble content | 0.87 |
| 27: | | | | | |
| Udorthents---------- | 45 | Not rated | | Not rated | |
| Urban land---------- | 30 | Not rated | | Not rated | |
| 28: | | | | | |
| Udorthents---------- | 45 | Not rated | | Not rated | |
| Urban land---------- | 35 | Not rated | | Not rated | |
| 29D: | | | | | |
| Wallen-------------- | 90 | Very limited | | Very limited | |
| | | Droughty | 1.00 | Seepage | 1.00 |
| | | Too steep for surface application | 1.00 | Depth to bedrock | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Too steep for surface application | 1.00 |

Table 6.—Agricultural Waste Management, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Disposal of wastewater by irrigation: Rating class and limiting features | Value | Overland flow of wastewater: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 29F: | | | | | |
| Wallen-------------- | 75 | Very limited | | Very limited | |
| | | Droughty | 1.00 | Seepage | 1.00 |
| | | Too steep for surface application | 1.00 | Depth to bedrock | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Too steep for surface application | 1.00 |
| 30F: | | | | | |
| Wallen-------------- | 85 | Very limited | | Very limited | |
| | | Droughty | 1.00 | Seepage | 1.00 |
| | | Too steep for surface application | 1.00 | Depth to bedrock | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Too steep for surface application | 1.00 |
| Rock outcrop-------- | 10 | Not rated | | Not rated | |
| 31D: | | | | | |
| Wharton------------- | 45 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Too steep for surface application | 1.00 | Too steep for surface application | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Too acid | 0.96 |
| Gilpin-------------- | 40 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Depth to bedrock | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Too steep for surface application | 1.00 |
| | | Too acid | 0.99 | Seepage | 1.00 |
| Berks--------------- | 15 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Depth to bedrock | 1.00 |
| | | Too steep for sprinkler application | 1.00 | Too steep for surface application | 1.00 |
| | | Too acid | 0.99 | Seepage | 1.00 |
| 32C: | | | | | |
| Wharton------------- | 45 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Too steep for surface application | 1.00 | Too acid | 0.96 |
| | | Too acid | 0.96 | Seepage | 0.94 |

Table 6.—Agricultural Waste Management, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Disposal of wastewater by irrigation | | Overland flow of wastewater | |
|---|---|---|---|---|---|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| 32C: | | | | | |
| Gilpin-------------- | 35 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Depth to bedrock | 1.00 |
| | | | | Seepage | 1.00 |
| | | | | Too acid | 0.99 |
| | | Too acid | 0.99 | | |
| | | Too steep for sprinkler application | 0.40 | | |
| Marrowbone---------- | 20 | Very limited | | Very limited | |
| | | Too steep for surface application | 1.00 | Seepage | 1.00 |
| | | | | Depth to bedrock | 1.00 |
| | | | | Too acid | 0.85 |
| | | Droughty | 1.00 | | |
| | | Too acid | 0.85 | | |
| W: | | | | | |
| Water--------------- | 100 | Not rated | | Not rated | |

Table 6.—Agricultural Waste Management, Part III

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

| Map symbol and soil name | Pct. of map unit | Rapid infiltration of wastewater: Rating class and limiting features | Value | Slow rate treatment of wastewater: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 1D: | | | | | |
| Calvin | 85 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 0.32 | Too steep for sprinkler irrigation | 1.00 |
| 2F: | | | | | |
| Calvin | 70 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 0.32 | Too steep for sprinkler irrigation | 1.00 |
| Rough | 20 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Too acid | 0.42 | Too steep for sprinkler irrigation | 1.00 |
| 3F: | | | | | |
| Cedarcreek | 35 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | Too steep for sprinkler irrigation | 1.00 |
| | | Stone content | 0.46 | Too acid | 1.00 |
| Fiveblock | 30 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Stone content | 1.00 | Too steep for sprinkler irrigation | 1.00 |
| | | Slow water movement | 0.78 | Too acid | 0.42 |

Table 6.—Agricultural Waste Management, Part III—Continued

| Map symbol and soil name | Pct. of map unit | Rapid infiltration of wastewater: Rating class and limiting features | Value | Slow rate treatment of wastewater: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 3F: | | | | | |
| Kaymine | 25 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | Too steep for sprinkler irrigation | 1.00 |
| | | Stone content | 0.63 | | |
| 4C: | | | | | |
| Cedarcreek | 35 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too acid | 1.00 |
| | | Slow water movement | 1.00 | Too steep for surface application | 1.00 |
| | | Stone content | 0.46 | Too steep for sprinkler irrigation | 0.22 |
| Sewell | 30 | Very limited | | Very limited | |
| | | Stone content | 1.00 | Too acid | 1.00 |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 0.78 | Too steep for sprinkler irrigation | 0.22 |
| Rock outcrop | 10 | Not rated | | Not rated | |
| 5F: | | | | | |
| Cloverlick | 45 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | Too steep for sprinkler irrigation | 1.00 |
| | | Too acid | 0.14 | Too acid | 0.85 |
| Shelocta | 40 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | Too steep for sprinkler irrigation | 1.00 |
| | | | | Too acid | 0.96 |
| 6C: | | | | | |
| Cotaco | 90 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 0.99 |
| | | Slow water movement | 1.00 | Too steep for sprinkler irrigation | 0.94 |

Table 6.—Agricultural Waste Management, Part III—Continued

| Map symbol and soil name | Pct. of map unit | Rapid infiltration of wastewater: Rating class and limiting features | Value | Slow rate treatment of wastewater: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 7: | | | | | |
| Dumps, mine | 60 | Not rated | | Not rated | |
| Urban land | 30 | Not rated | | Not rated | |
| 8C: | | | | | |
| Fiveblock | 80 | Very limited | | Very limited | |
| | | Stone content | 1.00 | Too steep for surface application | 1.00 |
| | | Slope | 1.00 | Too acid | 0.42 |
| | | Slow water movement | 0.78 | Too steep for sprinkler irrigation | 0.22 |
| Sewell | 20 | Very limited | | Very limited | |
| | | Stone content | 1.00 | Too acid | 1.00 |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 0.78 | Too steep for sprinkler irrigation | 0.22 |
| 9E: | | | | | |
| Gilpin | 55 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | Too steep for sprinkler irrigation | 1.00 |
| Berks | 30 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 0.32 | Too steep for sprinkler irrigation | 1.00 |
| 9F: | | | | | |
| Gilpin | 55 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | Too steep for sprinkler irrigation | 1.00 |
| Berks | 35 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 0.32 | Too steep for sprinkler irrigation | 1.00 |

Table 6.—Agricultural Waste Management, Part III—Continued

| Map symbol and soil name | Pct. of map unit | Rapid infiltration of wastewater: Rating class and limiting features | Value | Slow rate treatment of wastewater: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 10A: | | | | | |
| Grigsby | 81 | Very limited | | Somewhat limited | |
| | | Depth to saturated zone | 1.00 | Flooding | 0.60 |
| | | Flooding | 0.60 | Too acid | 0.42 |
| | | Slow water movement | 0.32 | Filtering capacity | 0.01 |
| 11F: | | | | | |
| Highsplint | 55 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | Too steep for sprinkler irrigation | 1.00 |
| | | Cobble content | 0.20 | Too acid | 0.55 |
| Shelocta | 40 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | Too steep for sprinkler irrigation | 1.00 |
| | | | | Too acid | 0.96 |
| 12F: | | | | | |
| Itmann | 95 | Very limited | | Very limited | |
| | | Slope | 1.00 | Filtering capacity | 1.00 |
| | | Too acid | 0.55 | Too acid | 1.00 |
| | | | | Too steep for surface application | 1.00 |
| 13D: | | | | | |
| Kaymine | 90 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | Too steep for sprinkler irrigation | 1.00 |
| | | Stone content | 0.63 | | |
| 14E: | | | | | |
| Kaymine | 85 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | Too steep for sprinkler irrigation | 1.00 |
| | | Stone content | 0.63 | | |

Table 6.—Agricultural Waste Management, Part III—Continued

| Map symbol and soil name | Pct. of map unit | Rapid infiltration of wastewater: Rating class and limiting features | Value | Slow rate treatment of wastewater: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 14E: | | | | | |
| Cedarcreek | 15 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | Too steep for sprinkler irrigation | 1.00 |
| | | Stone content | 0.46 | Too acid | 1.00 |
| 15C: | | | | | |
| Kaymine | 55 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | Too steep for sprinkler irrigation | 0.22 |
| | | Stone content | 0.63 | | |
| Fiveblock | 25 | Very limited | | Very limited | |
| | | Stone content | 1.00 | Too steep for surface application | 1.00 |
| | | Slope | 1.00 | Too acid | 0.42 |
| | | Slow water movement | 0.78 | Too steep for sprinkler irrigation | 0.22 |
| Cedarcreek | 20 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too acid | 1.00 |
| | | Slow water movement | 1.00 | Too steep for surface application | 1.00 |
| | | Stone content | 0.46 | Too steep for sprinkler irrigation | 0.22 |
| 16C: | | | | | |
| Lily | 85 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 0.62 | Too steep for sprinkler irrigation | 1.00 |
| 16D: | | | | | |
| Lily | 95 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 0.62 | Too steep for sprinkler irrigation | 1.00 |

Table 6.—Agricultural Waste Management, Part III—Continued

| Map symbol and soil name | Pct. of map unit | Rapid infiltration of wastewater: Rating class and limiting features | Value | Slow rate treatment of wastewater: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 16E: | | | | | |
| Lily | 80 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 0.62 | Too steep for sprinkler irrigation | 1.00 |
| 17D: | | | | | |
| Marrowbone | 50 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 0.32 | Too steep for sprinkler irrigation | 1.00 |
| Gilpin | 45 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | Too steep for sprinkler irrigation | 1.00 |
| 17E: | | | | | |
| Marrowbone | 60 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 0.32 | Too steep for sprinkler irrigation | 1.00 |
| Gilpin | 35 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | Too steep for sprinkler irrigation | 1.00 |
| 17F: | | | | | |
| Marrowbone | 75 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 0.32 | Too steep for sprinkler irrigation | 1.00 |

Table 6.—Agricultural Waste Management, Part III—Continued

| Map symbol and soil name | Pct. of map unit | Rapid infiltration of wastewater: Rating class and limiting features | Value | Slow rate treatment of wastewater: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 17F: | | | | | |
| Gilpin | 15 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | Too steep for sprinkler irrigation | 1.00 |
| 18F: | | | | | |
| Matewan | 55 | Very limited | | Very limited | |
| | | Slope | 1.00 | Filtering capacity | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 |
| | | Stone content | 0.01 | Too steep for surface application | 1.00 |
| Gilpin | 30 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | Too steep for sprinkler irrigation | 1.00 |
| Rock outcrop | 10 | Not rated | | Not rated | |
| 19D: | | | | | |
| Oriskany | 95 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Cobble content | 0.61 | Too steep for sprinkler irrigation | 1.00 |
| | | Slow water movement | 0.32 | Too acid | 0.99 |
| 19E: | | | | | |
| Oriskany | 95 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Cobble content | 0.61 | Too steep for sprinkler irrigation | 1.00 |
| | | Slow water movement | 0.32 | Too acid | 0.99 |
| 20A: | | | | | |
| Philo | 95 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Flooding | 0.60 | Too acid | 0.96 |
| | | Slow water movement | 0.32 | Flooding | 0.60 |

Table 6.—Agricultural Waste Management, Part III—Continued

| Map symbol and soil name | Pct. of map unit | Rapid infiltration of wastewater: Rating class and limiting features | Value | Slow rate treatment of wastewater: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 21F: | | | | | |
| Sewell | 55 | Very limited | | Very limited | |
| | | Stone content | 1.00 | Too acid | 1.00 |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 0.78 | | |
| | | | | Too steep for sprinkler irrigation | 1.00 |
| Kaymine | 30 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | | |
| | | Stone content | 0.63 | Too steep for sprinkler irrigation | 1.00 |
| Rock outcrop | 10 | Not rated | | Not rated | |
| 22E: | | | | | |
| Shelocta | 70 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | | |
| | | | | Too steep for sprinkler irrigation | 1.00 |
| | | | | Too acid | 0.96 |
| Cedarcreek | 25 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | | |
| | | Stone content | 0.46 | Too steep for sprinkler irrigation | 1.00 |
| | | | | Too acid | 1.00 |
| 23E: | | | | | |
| Shelocta | 55 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | | |
| | | | | Too steep for sprinkler irrigation | 1.00 |
| | | | | Too acid | 0.96 |
| Cloverlick | 35 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | | |
| | | Too acid | 0.14 | Too steep for sprinkler irrigation | 1.00 |
| | | | | Too acid | 0.85 |

Table 6.—Agricultural Waste Management, Part III—Continued

| Map symbol and soil name | Pct. of map unit | Rapid infiltration of wastewater: Rating class and limiting features | Value | Slow rate treatment of wastewater: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 24E: | | | | | |
| Shelocta------------ | 50 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | Too steep for sprinkler irrigation | 1.00 |
| | | | | Too acid | 0.96 |
| Highsplint---------- | 40 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | Too steep for sprinkler irrigation | 1.00 |
| | | Cobble content | 0.20 | Too acid | 0.55 |
| 25F: | | | | | |
| Shelocta------------ | 55 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | Too steep for sprinkler irrigation | 1.00 |
| | | | | Too acid | 0.96 |
| Kaymine------------- | 40 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | Too steep for sprinkler irrigation | 1.00 |
| | | Stone content | 0.63 | | |
| 26F: | | | | | |
| Stonecoal----------- | 85 | Very limited | | Very limited | |
| | | Slope | 1.00 | Too steep for surface application | 1.00 |
| | | Cobble content | 0.87 | Too steep for sprinkler irrigation | 1.00 |
| | | | | Cobble content | 0.87 |
| 27: | | | | | |
| Udorthents---------- | 45 | Not rated | | Not rated | |
| Urban land---------- | 30 | Not rated | | Not rated | |
| 28: | | | | | |
| Udorthents---------- | 45 | Not rated | | Not rated | |
| Urban land---------- | 35 | Not rated | | Not rated | |

Table 6.—Agricultural Waste Management, Part III—Continued

| Map symbol and soil name | Pct. of map unit | Rapid infiltration of wastewater: Rating class and limiting features | Value | Slow rate treatment of wastewater: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 29D: | | | | | |
| Wallen | 90 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 0.32 | Too steep for sprinkler irrigation | 1.00 |
| 29F: | | | | | |
| Wallen | 75 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 0.32 | Too steep for sprinkler irrigation | 1.00 |
| 30F: | | | | | |
| Wallen | 85 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 0.32 | Too steep for sprinkler irrigation | 1.00 |
| Rock outcrop | 10 | Not rated | | Not rated | |
| 31D: | | | | | |
| Wharton | 45 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 1.00 | Too steep for surface application | 1.00 |
| | | Depth to saturated zone | 1.00 | Too steep for sprinkler irrigation | 1.00 |
| Gilpin | 40 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | Too steep for sprinkler irrigation | 1.00 |
| Berks | 15 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 0.32 | Too steep for sprinkler irrigation | 1.00 |

Table 6.—Agricultural Waste Management, Part III—Continued

| Map symbol and soil name | Pct. of map unit | Rapid infiltration of wastewater: Rating class and limiting features | Value | Slow rate treatment of wastewater: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 32C: | | | | | |
| Wharton | 45 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to saturated zone | 1.00 |
| | | Slow water movement | 1.00 | Too steep for surface application | 1.00 |
| | | Depth to saturated zone | 1.00 | Too acid | 0.96 |
| Gilpin | 35 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 1.00 | Too acid | 0.99 |
| Marrowbone | 20 | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Too steep for surface application | 1.00 |
| | | Slow water movement | 0.32 | Too acid | 0.85 |
| W: | | | | | |
| Water | 100 | Not rated | | Not rated | |

Table 7.—Forestland Productivity

(Absence of an entry indicates that information was not available or that trees do not commonly grow in areas of that soil)

| Map symbol and soil name | Potential productivity: Common trees | Site index | Volume of wood fiber | Trees to manage |
|---|---|---|---|---|
| | | | cu ft/ac | |
| 1D: | | | | |
| Calvin | northern red oak | 65 | 47 | northern red oak, eastern white pine, black oak, white oak |
| | black oak | 60 | 43 | |
| | white oak | 60 | 43 | |
| | chestnut oak | 60 | 43 | |
| | hickory | 55 | --- | |
| 2F: | | | | |
| Calvin | northern red oak | 65 | 47 | northern red oak, eastern white pine, black oak, white oak |
| | black oak | 60 | 43 | |
| | white oak | 60 | 43 | |
| | chestnut oak | 60 | 43 | |
| | hickory | 55 | --- | |
| Rough | chestnut oak | 40 | 29 | chestnut oak, eastern white pine, white oak, pitch pine, shortleaf pine |
| | black oak | 40 | 29 | |
| | scarlet oak | 40 | 29 | |
| | white oak | 40 | 29 | |
| | Virginia pine | 40 | --- | |
| | pitch pine | 40 | --- | |
| | shortleaf pine | 40 | --- | |
| 3F: | | | | |
| Cedarcreek | American sycamore | 90 | 100 | American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar |
| | black locust | 100 | --- | |
| | eastern white pine | 94 | 172 | |
| | northern red oak | 80 | 62 | |
| | red maple | 75 | --- | |
| | yellow-poplar | 105 | 114 | |
| Fiveblock | American sycamore | 90 | --- | American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar |
| | eastern white pine | 94 | 175 | |
| | northern red oak | 80 | 62 | |
| | yellow-poplar | 105 | 114 | |
| Kaymine | American sycamore | 90 | 100 | American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar |
| | black locust | 100 | --- | |
| | eastern white pine | 94 | 172 | |
| | northern red oak | 80 | 62 | |
| | red maple | --- | --- | |
| | yellow-poplar | 105 | 114 | |
| 4C: | | | | |
| Cedarcreek | American sycamore | 90 | 100 | American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar |
| | black locust | 100 | --- | |
| | eastern white pine | 94 | 172 | |
| | northern red oak | 80 | 62 | |
| | red maple | 75 | --- | |
| | yellow-poplar | 105 | 114 | |

Table 7.—Forestland Productivity—Continued

| Map symbol and soil name | Potential productivity: Common trees | Site index | Volume of wood fiber | Trees to manage |
|---|---|---|---|---|
| | | | cu ft/ac | |
| 4C: | | | | |
| Sewell | American sycamore | 90 | 100 | American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar |
| | black locust | --- | --- | |
| | eastern white pine | 94 | 172 | |
| | northern red oak | 80 | 62 | |
| | red maple | --- | --- | |
| | yellow-poplar | 105 | 114 | |
| Rock outcrop. | | | | |
| 5F: | | | | |
| Cloverlick | chestnut oak | 80 | 62 | northern red oak, white oak, yellow-poplar |
| | hickory | 80 | 62 | |
| | northern red oak | 85 | 65 | |
| | red maple | 80 | 62 | |
| | white oak | 85 | 65 | |
| | yellow-poplar | 90 | 90 | |
| Shelocta | chestnut oak | 80 | 62 | northern red oak, white oak, yellow-poplar |
| | hickory | 80 | 62 | |
| | northern red oak | 85 | 65 | |
| | red maple | 80 | 62 | |
| | white oak | 85 | 65 | |
| | yellow-poplar | 90 | 90 | |
| 6C: | | | | |
| Cotaco | black oak | 87 | 72 | eastern white pine, sweetgum, white oak, yellow-poplar |
| | Virginia pine | 81 | 129 | |
| | yellow-poplar | 95 | 100 | |
| 7. | | | | |
| Dumps, mine-Urban land | | | | |
| 8C: | | | | |
| Fiveblock | American sycamore | 90 | --- | American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar |
| | eastern white pine | 94 | 175 | |
| | northern red oak | 80 | 62 | |
| | yellow-poplar | 105 | 114 | |
| Sewell | American sycamore | 90 | 100 | American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar |
| | eastern white pine | 94 | 172 | |
| | northern red oak | 80 | 62 | |
| | red maple | 75 | --- | |
| | yellow-poplar | 105 | 114 | |
| 9E: | | | | |
| Gilpin | black oak | 65 | 47 | black oak, hickory |
| | chestnut oak | 65 | 47 | |
| | hickory | 65 | 41 | |
| | scarlet oak | 65 | 47 | |
| Berks | black oak | 60 | 43 | black oak, hickory |
| | chestnut oak | 60 | 43 | |
| | hickory | 60 | 38 | |
| | scarlet oak | 60 | 43 | |

Table 7.—Forestland Productivity—Continued

| Map symbol and soil name | Potential productivity: Common trees | Site index | Volume of wood fiber | Trees to manage |
|---|---|---|---|---|
| | | | cu ft/ac | |
| 9F: | | | | |
| Gilpin------------------ | black oak----------- | 65 | 47 | black oak, hickory |
| | chestnut oak-------- | 65 | 47 | |
| | hickory------------- | 65 | 41 | |
| | scarlet oak--------- | 65 | 47 | |
| Berks------------------- | black oak----------- | 60 | 43 | black oak, hickory |
| | chestnut oak-------- | 60 | 43 | |
| | hickory------------- | 60 | 38 | |
| | scarlet oak--------- | 60 | 43 | |
| 10A: | | | | |
| Grigsby----------------- | black walnut-------- | 75 | --- | white oak, black walnut, red maple, northen red oak, yellow-poplar |
| | northern red oak---- | 85 | 57 | |
| | red maple----------- | 80 | --- | |
| | sweetgum------------ | 60 | --- | |
| | white oak----------- | 85 | 57 | |
| | yellow-poplar------- | 110 | 129 | |
| 11F: | | | | |
| Highsplint-------------- | chestnut oak-------- | 75 | 57 | northern red oak, white oak, yellow-poplar |
| | hickory------------- | 75 | 53 | |
| | northern red oak---- | 80 | 62 | |
| | red maple----------- | 75 | 53 | |
| | white oak----------- | 80 | 62 | |
| | yellow-poplar------- | 85 | 80 | |
| Shelocta---------------- | chestnut oak-------- | 75 | 57 | northern red oak, white oak, yellow-poplar |
| | hickory------------- | 75 | 53 | |
| | northern red oak---- | 80 | 62 | |
| | red maple----------- | 75 | 53 | |
| | white oak----------- | 80 | 62 | |
| | yellow-poplar------- | 85 | 80 | |
| 12F. Itmann | | | | |
| 13D: | | | | |
| Kaymine----------------- | American sycamore--- | 90 | 100 | American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar |
| | black locust-------- | 100 | --- | |
| | eastern white pine-- | 94 | 172 | |
| | northern red oak---- | 80 | 62 | |
| | red maple----------- | 75 | --- | |
| | yellow-poplar------- | 105 | 114 | |
| 14E: | | | | |
| Kaymine----------------- | American sycamore--- | 90 | 100 | American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar |
| | black locust-------- | 100 | --- | |
| | eastern white pine-- | 94 | 172 | |
| | northern red oak---- | 80 | 62 | |
| | red maple----------- | 75 | --- | |
| | yellow-poplar------- | 105 | 114 | |
| Cedarcreek-------------- | American sycamore--- | 90 | 100 | American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar |
| | black locust-------- | 100 | --- | |
| | eastern white pine-- | 94 | 172 | |
| | northern red oak---- | 80 | 62 | |
| | red maple----------- | 75 | --- | |
| | yellow-poplar------- | 105 | 114 | |

Table 7.—Forestland Productivity—Continued

| Map symbol and soil name | Potential productivity: Common trees | Site index | Volume of wood fiber | Trees to manage |
|---|---|---|---|---|
| | | | cu ft/ac | |
| 15C: | | | | |
| Kaymine | American sycamore | 90 | 100 | American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar |
| | black locust | 100 | --- | |
| | eastern white pine | 94 | 172 | |
| | northern red oak | 80 | 62 | |
| | red maple | 75 | --- | |
| | yellow-poplar | 105 | 114 | |
| Fiveblock | American sycamore | 90 | --- | American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar |
| | eastern white pine | 94 | 175 | |
| | northern red oak | 80 | 62 | |
| | yellow-poplar | 105 | 114 | |
| Cedarcreek | American sycamore | 90 | 100 | American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar |
| | black locust | 100 | --- | |
| | eastern white pine | 94 | 172 | |
| | northern red oak | 80 | 62 | |
| | red maple | 75 | --- | |
| | yellow-poplar | 105 | 114 | |
| 16C: | | | | |
| Lily | northern red oak | 65 | 47 | northern red oak, chestnut oak, white oak, black oak |
| | chestnut oak | 60 | 43 | |
| | black oak | 60 | 43 | |
| | white oak | 60 | 43 | |
| | hickory | 55 | --- | |
| | red maple | 55 | --- | |
| 16D: | | | | |
| Lily | northern red oak | 65 | 47 | northern red oak, chestnut oak, white oak, black oak |
| | chestnut oak | 60 | 43 | |
| | black oak | 60 | 43 | |
| | white oak | 60 | 43 | |
| | hickory | 55 | --- | |
| | red maple | 55 | --- | |
| 16E: | | | | |
| Lily | northern red oak | 65 | 47 | northern red oak, chestnut oak, white oak, black oak |
| | chestnut oak | 60 | 43 | |
| | black oak | 60 | 43 | |
| | white oak | 60 | 43 | |
| | hickory | 55 | --- | |
| | red maple | 55 | --- | |
| 17D: | | | | |
| Marrowbone | chestnut oak | 50 | 35 | hickory |
| | hickory | 50 | 33 | |
| | scarlet oak | 50 | 35 | |
| | Virginia pine | 50 | --- | |
| Gilpin | black oak | 65 | 47 | black oak, hickory |
| | chestnut oak | 65 | 47 | |
| | hickory | 65 | 41 | |
| | scarlet oak | 65 | 47 | |

Table 7.—Forestland Productivity—Continued

| Map symbol and soil name | Potential productivity: Common trees | Site index | Volume of wood fiber | Trees to manage |
|---|---|---|---|---|
| | | | cu ft/ac | |
| 17E: | | | | |
| Marrowbone | chestnut oak | 50 | 35 | hickory |
| | hickory | 50 | 33 | |
| | scarlet oak | 50 | 35 | |
| | Virginia pine | 50 | --- | |
| Gilpin | black oak | 65 | 47 | black oak, hickory |
| | chestnut oak | 65 | 47 | |
| | hickory | 65 | 41 | |
| | scarlet oak | 65 | 47 | |
| 17F: | | | | |
| Marrowbone | chestnut oak | 50 | 35 | hickory |
| | hickory | 50 | 33 | |
| | scarlet oak | 50 | 35 | |
| | Virginia pine | 50 | --- | |
| Gilpin | black oak | 65 | 47 | black oak, hickory |
| | chestnut oak | 65 | 47 | |
| | hickory | 65 | 41 | |
| | scarlet oak | 65 | 47 | |
| 18F: | | | | |
| Matewan | chestnut oak | 45 | 30 | chestnut oak, scarlet oak |
| | scarlet oak | 45 | 30 | |
| | Virginia pine | 45 | 55 | |
| Gilpin | American beech | --- | --- | black oak, hickory |
| | black oak | 65 | 47 | |
| | chestnut oak | 65 | 47 | |
| | hickory | 65 | 41 | |
| | scarlet oak | 65 | 47 | |
| Rock outcrop. | | | | |
| 19D: | | | | |
| Oriskany | northern red oak | 75 | 57 | northern red oak, eastern white pine, white ash, white oak, yellow-poplar |
| | red maple | 70 | --- | |
| | sugar maple | 65 | 41 | |
| | white ash | 70 | --- | |
| | white oak | 75 | 57 | |
| | yellow-poplar | 95 | 98 | |
| 19E: | | | | |
| Oriskany | northern red oak | 75 | 57 | northern red oak, eastern white pine, white ash, white oak, yellow-poplar |
| | red maple | 70 | --- | |
| | sugar maple | 65 | 41 | |
| | white ash | 70 | --- | |
| | white oak | 75 | 57 | |
| | yellow-poplar | 95 | 98 | |
| 20A: | | | | |
| Philo | yellow-poplar | 90 | 90 | walnut, yellow-poplar |
| | black walnut | 75 | 53 | |
| | red maple | 75 | --- | |

Table 7.—Forestland Productivity—Continued

| Map symbol and soil name | Potential productivity: Common trees | Site index | Volume of wood fiber | Trees to manage |
|---|---|---|---|---|
| | | | cu ft/ac | |
| 21F: | | | | |
| Sewell | American sycamore | 90 | 100 | American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar |
| | eastern white pine | 94 | 172 | |
| | northern red oak | 80 | 62 | |
| | red maple | 75 | --- | |
| | yellow-poplar | 105 | 114 | |
| Kaymine | American sycamore | 90 | 100 | American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar |
| | black locust | 100 | --- | |
| | eastern white pine | 94 | 172 | |
| | northern red oak | 80 | 62 | |
| | red maple | 75 | --- | |
| | yellow-poplar | 105 | 114 | |
| Rock outcrop. | | | | |
| 22E: | | | | |
| Shelocta | hickory | 80 | 62 | northern red oak, white oak, yellow-poplar |
| | northern red oak | 85 | 65 | |
| | red maple | 80 | 62 | |
| | white oak | 85 | 65 | |
| | yellow-poplar | 90 | 90 | |
| Cedarcreek | American sycamore | 90 | 100 | American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar |
| | black locust | 100 | --- | |
| | eastern white pine | 94 | 172 | |
| | northern red oak | 80 | 62 | |
| | red maple | 75 | --- | |
| | yellow-poplar | 105 | 114 | |
| 23E: | | | | |
| Shelocta | chestnut oak | 85 | 65 | northern red oak, white oak, yellow-poplar |
| | hickory | 85 | 65 | |
| | northern red oak | 90 | 70 | |
| | red maple | 85 | 65 | |
| | white oak | 90 | 70 | |
| | yellow-poplar | 95 | 98 | |
| Cloverlick | chestnut oak | 85 | 65 | northern red oak, white oak, yellow-poplar |
| | hickory | 85 | 65 | |
| | northern red oak | 90 | 70 | |
| | red maple | 85 | 65 | |
| | white oak | 90 | 70 | |
| | yellow-poplar | 95 | 98 | |
| 24E: | | | | |
| Shelocta | chestnut oak | 80 | 62 | northern red oak, white oak, yellow-poplar |
| | hickory | 80 | 62 | |
| | northern red oak | 85 | 65 | |
| | red maple | 80 | 62 | |
| | white oak | 85 | 65 | |
| | yellow-poplar | 90 | 90 | |
| Highsplint | chestnut oak | 80 | 62 | northern red oak, white oak, yellow-poplar |
| | hickory | 80 | 62 | |
| | northern red oak | 85 | 65 | |
| | red maple | 80 | 62 | |
| | white oak | 85 | 65 | |
| | yellow-poplar | 90 | 90 | |

Table 7.—Forestland Productivity—Continued

| Map symbol and soil name | Potential productivity: Common trees | Site index | Volume of wood fiber | Trees to manage |
|---|---|---|---|---|
| | | | cu ft/ac | |
| 25F: | | | | |
| Shelocta | hickory | 80 | 62 | northern red oak, white oak, yellow-poplar |
| | northern red oak | 85 | 65 | |
| | red maple | 80 | 62 | |
| | white oak | 85 | 65 | |
| | yellow-poplar | 90 | 90 | |
| Kaymine | American sycamore | 90 | 100 | American sycamore, black locust, eastern white pine, northern red oak, yellow-poplar |
| | black locust | 100 | --- | |
| | eastern white pine | 94 | 172 | |
| | northern red oak | 80 | 62 | |
| | red maple | 75 | --- | |
| | yellow-poplar | 105 | 114 | |
| 26F. Stonecoal | | | | |
| 27. Udorthents-Urban land | | | | |
| 28. Udorthents-Urban land | | | | |
| 29D: | | | | |
| Wallen | chestnut oak | 50 | --- | chestnut oak, scarlet oak |
| | pitch pine | 50 | --- | |
| | scarlet oak | 50 | 35 | |
| | shortleaf pine | 50 | --- | |
| | Virginia pine | 50 | --- | |
| 29F: | | | | |
| Wallen | chestnut oak | 50 | --- | chestnut oak, scarlet oak |
| | pitch pine | 50 | --- | |
| | scarlet oak | 50 | 35 | |
| | shortleaf pine | 50 | --- | |
| | Virginia pine | 50 | --- | |
| 30F: | | | | |
| Wallen | chestnut oak | 50 | --- | chestnut oak, scarlet oak |
| | pitch pine | 50 | --- | |
| | scarlet oak | 50 | 35 | |
| | shortleaf pine | 50 | --- | |
| | Virginia pine | 50 | --- | |
| Rock outcrop. | | | | |
| 31D: | | | | |
| Wharton | northern red oak | 76 | 57 | northern red oak, yellow-poplar |
| | yellow-poplar | 90 | 86 | |
| Gilpin | black oak | 65 | 47 | black oak, hickory |
| | chestnut oak | 65 | 47 | |
| | hickory | 65 | 41 | |
| | scarlet oak | 65 | 47 | |
| Berks | black oak | 60 | 43 | black oak, hickory |
| | chestnut oak | 60 | 43 | |
| | hickory | 60 | 38 | |
| | scarlet oak | 60 | 43 | |

Table 7.—Forestland Productivity—Continued

| Map symbol and soil name | Potential productivity: Common trees | Site index | Volume of wood fiber | Trees to manage |
|---|---|---|---|---|
| | | | cu ft/ac | |
| 32C: | | | | |
| Wharton | northern red oak | 76 | 57 | northern red oak, yellow-poplar |
| | yellow-poplar | 90 | 86 | |
| Gilpin | black oak | 65 | 47 | black oak, hickory |
| | chestnut oak | 65 | 47 | |
| | hickory | 65 | 41 | |
| | scarlet oak | 65 | 47 | |
| Marrowbone | chestnut oak | 50 | 35 | hickory |
| | hickory | 50 | 33 | |
| | scarlet oak | 50 | 35 | |
| | Virginia pine | 50 | --- | |
| W. | | | | |
| Water | | | | |

Table 8.—Forestland Management, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

| Map symbol and soil name | Pct. of map unit | Limitations affecting construction of haul roads and log landings | | Suitability for log landings | | Soil rutting hazard | |
|---|---|---|---|---|---|---|---|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| 1D: | | | | | | | |
| Calvin | 85 | Moderate | | Poorly suited | | Severe | |
| | | Slope | 0.50 | Slope | 1.00 | Low strength | 1.00 |
| | | Restrictive layer | 0.50 | Low strength | 0.50 | | |
| 2F: | | | | | | | |
| Calvin | 70 | Severe | | Poorly suited | | Severe | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 1.00 |
| | | | | Low strength | 0.50 | | |
| Rough | 20 | Severe | | Poorly suited | | Severe | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 1.00 |
| 3F: | | | | | | | |
| Cedarcreek | 35 | Severe | | Poorly suited | | Moderate | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 0.50 |
| | | Stoniness | 0.50 | Rock fragments | 0.50 | | |
| | | Landslides | 0.10 | Landslides | 0.10 | | |
| Fiveblock | 30 | Severe | | Poorly suited | | Moderate | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 0.50 |
| | | Stoniness | 0.50 | Rock fragments | 0.50 | | |
| | | Landslides | 0.10 | Sandiness | 0.50 | | |
| Kaymine | 25 | Severe | | Poorly suited | | Moderate | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 0.50 |
| | | Stoniness | 0.50 | Rock fragments | 0.50 | | |
| | | Landslides | 0.10 | Landslides | 0.10 | | |
| 4C: | | | | | | | |
| Cedarcreek | 35 | Severe | | Moderately suited | | Moderate | |
| | | Stoniness | 1.00 | Slope | 0.50 | Low strength | 0.50 |
| | | Landslides | 0.10 | Landslides | 0.10 | | |
| Sewell | 30 | Severe | | Moderately suited | | Moderate | |
| | | Stoniness | 1.00 | Slope | 0.50 | Low strength | 0.50 |
| | | Landslides | 0.10 | Landslides | 0.10 | | |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 5F: | | | | | | | |
| Cloverlick | 45 | Severe | | Poorly suited | | Severe | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 1.00 |
| | | Landslides | 1.00 | Landslides | 1.00 | | |
| | | | | Sandiness | 0.50 | | |
| Shelocta | 40 | Severe | | Poorly suited | | Moderate | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 0.50 |
| | | Landslides | 1.00 | Landslides | 1.00 | | |

Table 8.—Forestland Management, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Limitations affecting construction of haul roads and log landings: Rating class and limiting features | Value | Suitability for log landings: Rating class and limiting features | Value | Soil rutting hazard: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 6C: | | | | | | | |
| Cotaco | 90 | Moderate | | Moderately suited | | Severe | |
| | | Low strength | 0.50 | Slope | 0.50 | Low strength | 1.00 |
| | | | | Low strength | 0.50 | | |
| 7: | | | | | | | |
| Dumps, mine | 60 | Not rated | | Not rated | | Not rated | |
| Urban land | 30 | Not rated | | Not rated | | Not rated | |
| 8C: | | | | | | | |
| Fiveblock | 80 | Severe | | Moderately suited | | Moderate | |
| | | Stoniness | 1.00 | Slope | 0.50 | Low strength | 0.50 |
| | | Sandiness | 0.50 | Rock fragments | 0.50 | | |
| | | Landslides | 0.10 | Sandiness | 0.50 | | |
| Sewell | 20 | Severe | | Moderately suited | | Moderate | |
| | | Stoniness | 1.00 | Slope | 0.50 | Low strength | 0.50 |
| | | Landslides | 0.10 | Rock fragments | 0.50 | | |
| | | | | Landslides | 0.10 | | |
| 9E: | | | | | | | |
| Gilpin | 55 | Moderate | | Poorly suited | | Severe | |
| | | Slope | 0.50 | Slope | 1.00 | Low strength | 1.00 |
| | | Restrictive layer | 0.50 | Low strength | 0.50 | | |
| | | Landslides | 0.50 | Landslides | 0.50 | | |
| Berks | 30 | Moderate | | Poorly suited | | Severe | |
| | | Slope | 0.50 | Slope | 1.00 | Low strength | 1.00 |
| | | Restrictive layer | 0.50 | Low strength | 0.50 | | |
| | | Landslides | 0.10 | Landslides | 0.10 | | |
| 9F: | | | | | | | |
| Gilpin | 55 | Severe | | Poorly suited | | Severe | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 1.00 |
| | | Landslides | 0.50 | Low strength | 0.50 | | |
| | | Low strength | 0.50 | Landslides | 0.50 | | |
| Berks | 35 | Severe | | Poorly suited | | Severe | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 1.00 |
| | | Landslides | 0.10 | Low strength | 0.50 | | |
| | | | | Landslides | 0.10 | | |
| 10A: | | | | | | | |
| Grigsby | 81 | Severe | | Poorly suited | | Moderate | |
| | | Flooding | 1.00 | Flooding | 1.00 | Low strength | 0.50 |
| | | Sandiness | 0.50 | Sandiness | 0.50 | | |
| | | Landslides | 0.10 | Landslides | 0.10 | | |
| 11F: | | | | | | | |
| Highsplint | 55 | Severe | | Poorly suited | | Severe | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 1.00 |
| | | Landslides | 1.00 | Landslides | 1.00 | | |
| | | | | Low strength | 0.50 | | |
| Shelocta | 40 | Severe | | Poorly suited | | Moderate | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 0.50 |
| | | Landslides | 1.00 | Landslides | 1.00 | | |

Table 8.—Forestland Management, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Limitations affecting construction of haul roads and log landings: Rating class and limiting features | Value | Suitability for log landings: Rating class and limiting features | Value | Soil rutting hazard: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 12F: | | | | | | | |
| Itmann | 95 | Severe | | Poorly suited | | Moderate | |
| | | Landslides | 1.00 | Landslides | 1.00 | Low strength | 0.50 |
| | | Slope | 1.00 | Slope | 1.00 | | |
| 13D: | | | | | | | |
| Kaymine | 90 | Moderate | | Poorly suited | | Moderate | |
| | | Slope | 0.50 | Slope | 1.00 | Low strength | 0.50 |
| | | Stoniness | 0.50 | Rock fragments | 0.50 | | |
| | | Landslides | 0.10 | Landslides | 0.10 | | |
| 14E: | | | | | | | |
| Kaymine | 85 | Severe | | Poorly suited | | Moderate | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 0.50 |
| | | Stoniness | 0.50 | Rock fragments | 0.50 | | |
| | | Landslides | 0.10 | Landslides | 0.10 | | |
| Cedarcreek | 15 | Severe | | Poorly suited | | Moderate | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 0.50 |
| | | Stoniness | 0.50 | Rock fragments | 0.50 | | |
| | | Landslides | 0.10 | Landslides | 0.10 | | |
| 15C: | | | | | | | |
| Kaymine | 55 | Severe | | Moderately suited | | Moderate | |
| | | Stoniness | 1.00 | Slope | 0.50 | Low strength | 0.50 |
| | | Landslides | 0.10 | Rock fragments | 0.50 | | |
| | | | | Landslides | 0.10 | | |
| Fiveblock | 25 | Severe | | Moderately suited | | Moderate | |
| | | Stoniness | 1.00 | Slope | 0.50 | Low strength | 0.50 |
| | | Sandiness | 0.50 | Rock fragments | 0.50 | | |
| | | Landslides | 0.10 | Sandiness | 0.50 | | |
| Cedarcreek | 20 | Severe | | Moderately suited | | Moderate | |
| | | Stoniness | 1.00 | Slope | 0.50 | Low strength | 0.50 |
| | | Landslides | 0.10 | Rock fragments | 0.50 | | |
| | | | | Landslides | 0.10 | | |
| 16C: | | | | | | | |
| Lily | 85 | Moderate | | Moderately suited | | Severe | |
| | | Restrictive layer | 0.50 | Slope | 0.50 | Low strength | 1.00 |
| | | | | Low strength | 0.50 | | |
| 16D: | | | | | | | |
| Lily | 95 | Severe | | Poorly suited | | Severe | |
| | | Restrictive layer | 1.00 | Slope | 1.00 | Low strength | 1.00 |
| | | Slope | 0.50 | Low strength | 0.50 | | |
| 16E: | | | | | | | |
| Lily | 80 | Severe | | Poorly suited | | Severe | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 1.00 |
| | | Low strength | 0.50 | Low strength | 0.50 | | |
| 17D: | | | | | | | |
| Marrowbone | 50 | Moderate | | Poorly suited | | Moderate | |
| | | Restrictive layer | 0.50 | Slope | 1.00 | Low strength | 0.50 |
| | | Slope | 0.50 | Landslides | 0.50 | | |
| | | Landslides | 0.50 | | | | |

Table 8.—Forestland Management, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Limitations affecting construction of haul roads and log landings | | Suitability for log landings | | Soil rutting hazard | |
|---|---|---|---|---|---|---|---|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| 17D: | | | | | | | |
| Gilpin | 45 | Moderate | | Poorly suited | | Severe | |
| | | Restrictive layer | 0.50 | Slope | 1.00 | Low strength | 1.00 |
| | | Slope | 0.50 | Low strength | 0.50 | | |
| | | Landslides | 0.50 | Landslides | 0.50 | | |
| 17E: | | | | | | | |
| Marrowbone | 60 | Moderate | | Poorly suited | | Moderate | |
| | | Slope | 0.50 | Slope | 1.00 | Low strength | 0.50 |
| | | Restrictive layer | 0.50 | Landslides | 0.50 | | |
| | | Landslides | 0.50 | | | | |
| Gilpin | 35 | Moderate | | Poorly suited | | Severe | |
| | | Slope | 0.50 | Slope | 1.00 | Low strength | 1.00 |
| | | Restrictive layer | 0.50 | Low strength | 0.50 | | |
| | | Landslides | 0.50 | Landslides | 0.50 | | |
| 17F: | | | | | | | |
| Marrowbone | 75 | Severe | | Poorly suited | | Moderate | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 0.50 |
| | | Landslides | 0.50 | Landslides | 0.50 | | |
| Gilpin | 15 | Severe | | Poorly suited | | Severe | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 1.00 |
| | | Landslides | 0.50 | Low strength | 0.50 | | |
| | | Low strength | 0.50 | Landslides | 0.50 | | |
| 18F: | | | | | | | |
| Matewan | 55 | Severe | | Poorly suited | | Moderate | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 0.50 |
| | | Landslides | 1.00 | Landslides | 1.00 | | |
| | | Stoniness | 0.50 | Rock fragments | 0.50 | | |
| Gilpin | 30 | Severe | | Poorly suited | | Severe | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 1.00 |
| | | Landslides | 0.50 | Rock fragments | 0.50 | | |
| | | Stoniness | 0.50 | Low strength | 0.50 | | |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 19D: | | | | | | | |
| Oriskany | 95 | Moderate | | Poorly suited | | Slight | |
| | | Slope | 0.50 | Slope | 1.00 | Strength | 0.10 |
| | | Stoniness | 0.50 | Rock fragments | 0.50 | | |
| 19E: | | | | | | | |
| Oriskany | 95 | Severe | | Poorly suited | | Slight | |
| | | Slope | 1.00 | Slope | 1.00 | Strength | 0.10 |
| | | Stoniness | 0.50 | Rock fragments | 0.50 | | |
| 20A: | | | | | | | |
| Philo | 95 | Severe | | Poorly suited | | Moderate | |
| | | Flooding | 1.00 | Flooding | 1.00 | Low strength | 0.50 |
| 21F: | | | | | | | |
| Sewell | 55 | Severe | | Poorly suited | | Moderate | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 0.50 |
| | | Stoniness | 0.50 | Rock fragments | 0.50 | | |
| | | Landslides | 0.10 | Landslides | 0.10 | | |

Table 8.—Forestland Management, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Limitations affecting construction of haul roads and log landings: Rating class and limiting features | Value | Suitability for log landings: Rating class and limiting features | Value | Soil rutting hazard: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 21F: | | | | | | | |
| Kaymine | 30 | Severe | | Poorly suited | | Moderate | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 0.50 |
| | | Stoniness | 0.50 | Rock fragments | 0.50 | | |
| | | Landslides | 0.10 | Landslides | 0.10 | | |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 22E: | | | | | | | |
| Shelocta | 70 | Severe | | Poorly suited | | Moderate | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 0.50 |
| | | Landslides | 1.00 | Landslides | 1.00 | | |
| | | | | Rock fragments | 0.50 | | |
| Cedarcreek | 25 | Severe | | Poorly suited | | Moderate | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 0.50 |
| | | Landslides | 0.10 | Rock fragments | 0.50 | | |
| | | | | Landslides | 0.10 | | |
| 23E: | | | | | | | |
| Shelocta | 55 | Severe | | Poorly suited | | Moderate | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 0.50 |
| | | Landslides | 1.00 | Landslides | 1.00 | | |
| Cloverlick | 35 | Severe | | Poorly suited | | Severe | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 1.00 |
| | | Landslides | 1.00 | Landslides | 1.00 | | |
| | | | | Sandiness | 0.50 | | |
| 24E: | | | | | | | |
| Shelocta | 50 | Severe | | Poorly suited | | Moderate | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 0.50 |
| | | Landslides | 1.00 | Landslides | 1.00 | | |
| Highsplint | 40 | Severe | | Poorly suited | | Severe | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 1.00 |
| | | Landslides | 1.00 | Landslides | 1.00 | | |
| | | | | Low strength | 0.50 | | |
| 25F: | | | | | | | |
| Shelocta | 55 | Severe | | Poorly suited | | Moderate | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 0.50 |
| | | Landslides | 1.00 | Landslides | 1.00 | | |
| | | | | Rock fragments | 0.50 | | |
| Kaymine | 40 | Severe | | Poorly suited | | Moderate | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 0.50 |
| | | Landslides | 0.10 | Rock fragments | 0.50 | | |
| | | | | Landslides | 0.10 | | |
| 26F: | | | | | | | |
| Stonecoal | 85 | Severe | | Poorly suited | | Slight | |
| | | Slope | 1.00 | Slope | 1.00 | Strength | 0.10 |
| | | | | Sandiness | 0.50 | | |
| 27: | | | | | | | |
| Udorthents | 45 | Not rated | | Not rated | | Not rated | |
| Urban land | 30 | Not rated | | Not rated | | Not rated | |

Table 8.—Forestland Management, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Limitations affecting construction of haul roads and log landings: Rating class and limiting features | Value | Suitability for log landings: Rating class and limiting features | Value | Soil rutting hazard: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 28: | | | | | | | |
| Udorthents | 45 | Not rated | | Not rated | | Not rated | |
| Urban land | 35 | Not rated | | Not rated | | Not rated | |
| 29D: | | | | | | | |
| Wallen | 90 | Severe | | Poorly suited | | Moderate | |
| | | Restrictive layer | 1.00 | Slope | 1.00 | Low strength | 0.50 |
| | | Slope | 0.50 | | | | |
| 29F: | | | | | | | |
| Wallen | 75 | Severe | | Poorly suited | | Moderate | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 0.50 |
| 30F: | | | | | | | |
| Wallen | 85 | Severe | | Poorly suited | | Moderate | |
| | | Slope | 1.00 | Slope | 1.00 | Low strength | 0.50 |
| | | Stoniness | 0.50 | Rock fragments | 0.50 | | |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 31D: | | | | | | | |
| Wharton | 45 | Moderate | | Poorly suited | | Severe | |
| | | Slope | 0.50 | Slope | 1.00 | Low strength | 1.00 |
| | | Landslides | 0.50 | Low strength | 0.50 | | |
| | | | | Landslides | 0.50 | | |
| Gilpin | 40 | Moderate | | Poorly suited | | Severe | |
| | | Restrictive layer | 0.50 | Slope | 1.00 | Low strength | 1.00 |
| | | Slope | 0.50 | Low strength | 0.50 | | |
| | | Landslides | 0.50 | Landslides | 0.50 | | |
| Berks | 15 | Moderate | | Poorly suited | | Severe | |
| | | Restrictive layer | 0.50 | Slope | 1.00 | Low strength | 1.00 |
| | | Slope | 0.50 | Low strength | 0.50 | | |
| | | Landslides | 0.10 | Landslides | 0.10 | | |
| 32C: | | | | | | | |
| Wharton | 45 | Moderate | | Moderately suited | | Severe | |
| | | Landslides | 0.50 | Slope | 0.50 | Low strength | 1.00 |
| | | Low strength | 0.50 | Low strength | 0.50 | | |
| | | | | Landslides | 0.50 | | |
| Gilpin | 35 | Moderate | | Moderately suited | | Severe | |
| | | Restrictive layer | 0.50 | Slope | 0.50 | Low strength | 1.00 |
| | | Landslides | 0.50 | Low strength | 0.50 | | |
| | | Low strength | 0.50 | Landslides | 0.50 | | |
| Marrowbone | 20 | Moderate | | Moderately suited | | Moderate | |
| | | Landslides | 0.50 | Slope | 0.50 | Low strength | 0.50 |
| | | | | Landslides | 0.50 | | |
| W: | | | | | | | |
| Water | 100 | Not rated | | Not rated | | Not rated | |

Table 8.—Forestland Management, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

| Map symbol and soil name | Pct. of map unit | Hazard of off-road or off-trail erosion: Rating class and limiting features | Value | Hazard of erosion on roads and trails: Rating class and limiting features | Value | Suitability for roads (natural surface): Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 1D: | | | | | | | |
| Calvin | 85 | Moderate | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.50 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Low strength | 0.50 |
| 2F: | | | | | | | |
| Calvin | 70 | Very severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.95 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Low strength | 0.50 |
| Rough | 20 | Very severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.95 | Slope/erodibility | 0.95 | Slope | 1.00 |
| 3F: | | | | | | | |
| Cedarcreek | 35 | Very severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.95 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Rock fragments | 0.50 |
| | | | | | | Landslides | 0.10 |
| Fiveblock | 30 | Very severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.95 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Rock fragments | 0.50 |
| | | | | | | Sandiness | 0.50 |
| Kaymine | 25 | Very severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.95 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Rock fragments | 0.50 |
| | | | | | | Landslides | 0.10 |
| 4C: | | | | | | | |
| Cedarcreek | 35 | Slight | | Moderate | | Moderately suited | |
| | | | | Slope/erodibility | 0.50 | Slope | 0.50 |
| | | | | | | Landslides | 0.10 |
| Sewell | 30 | Slight | | Moderate | | Moderately suited | |
| | | | | Slope/erodibility | 0.50 | Slope | 0.50 |
| | | | | | | Landslides | 0.10 |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 5F: | | | | | | | |
| Cloverlick | 45 | Very severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.95 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Landslides | 1.00 |
| | | | | | | Sandiness | 0.50 |
| Shelocta | 40 | Very severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.95 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Landslides | 1.00 |
| 6C: | | | | | | | |
| Cotaco | 90 | Slight | | Severe | | Moderately suited | |
| | | | | Slope/erodibility | 0.95 | Slope | 0.50 |
| | | | | | | Low strength | 0.50 |

Table 8.—Forestland Management, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Hazard of off-road or off-trail erosion: Rating class and limiting features | Value | Hazard of erosion on roads and trails: Rating class and limiting features | Value | Suitability for roads (natural surface): Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 7: | | | | | | | |
| Dumps, mine | 60 | Not rated | | Not rated | | Not rated | |
| Urban land | 30 | Not rated | | Not rated | | Not rated | |
| 8C: | | | | | | | |
| Fiveblock | 80 | Slight | | Slight | | Moderately suited | |
| | | | | | | Slope | 0.50 |
| | | | | | | Rock fragments | 0.50 |
| | | | | | | Sandiness | 0.50 |
| Sewell | 20 | Slight | | Moderate | | Moderately suited | |
| | | | | Slope/erodibility | 0.50 | Slope | 0.50 |
| | | | | | | Rock fragments | 0.50 |
| | | | | | | Landslides | 0.10 |
| 9E: | | | | | | | |
| Gilpin | 55 | Severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.75 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Low strength | 0.50 |
| | | | | | | Landslides | 0.50 |
| Berks | 30 | Severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.75 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Low strength | 0.50 |
| | | | | | | Landslides | 0.10 |
| 9F: | | | | | | | |
| Gilpin | 55 | Very severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.95 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Low strength | 0.50 |
| | | | | | | Landslides | 0.50 |
| Berks | 35 | Very severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.95 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Low strength | 0.50 |
| | | | | | | Landslides | 0.10 |
| 10A: | | | | | | | |
| Grigsby | 81 | Slight | | Slight | | Poorly suited | |
| | | | | | | Flooding | 1.00 |
| | | | | | | Sandiness | 0.50 |
| | | | | | | Landslides | 0.10 |
| 11F: | | | | | | | |
| Highsplint | 55 | Very severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.95 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Landslides | 1.00 |
| | | | | | | Low strength | 0.50 |
| Shelocta | 40 | Very severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.95 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Landslides | 1.00 |
| 12F: | | | | | | | |
| Itmann | 95 | Very severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.95 | Slope/erodibility | 0.95 | Landslides | 1.00 |
| | | | | | | Slope | 1.00 |

Table 8.—Forestland Management, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Hazard of off-road or off-trail erosion: Rating class and limiting features | Value | Hazard of erosion on roads and trails: Rating class and limiting features | Value | Suitability for roads (natural surface): Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 13D: | | | | | | | |
| Kaymine | 90 | Moderate | | Moderate | | Poorly suited | |
| | | Slope/erodibility | 0.50 | Slope/erodibility | 0.50 | Slope | 1.00 |
| | | | | | | Rock fragments | 0.50 |
| | | | | | | Landslides | 0.10 |
| 14E: | | | | | | | |
| Kaymine | 85 | Severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.75 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Rock fragments | 0.50 |
| | | | | | | Landslides | 0.10 |
| Cedarcreek | 15 | Severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.75 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Rock fragments | 0.50 |
| | | | | | | Landslides | 0.10 |
| 15C: | | | | | | | |
| Kaymine | 55 | Slight | | Slight | | Moderately suited | |
| | | | | | | Slope | 0.50 |
| | | | | | | Rock fragments | 0.50 |
| | | | | | | Landslides | 0.10 |
| Fiveblock | 25 | Slight | | Slight | | Moderately suited | |
| | | | | | | Slope | 0.50 |
| | | | | | | Rock fragments | 0.50 |
| | | | | | | Sandiness | 0.50 |
| Cedarcreek | 20 | Slight | | Moderate | | Moderately suited | |
| | | | | Slope/erodibility | 0.50 | Slope | 0.50 |
| | | | | | | Rock fragments | 0.50 |
| | | | | | | Landslides | 0.10 |
| 16C: | | | | | | | |
| Lily | 85 | Slight | | Moderate | | Moderately suited | |
| | | | | Slope/erodibility | 0.50 | Slope | 0.50 |
| | | | | | | Low strength | 0.50 |
| 16D: | | | | | | | |
| Lily | 95 | Moderate | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.50 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Low strength | 0.50 |
| 16E: | | | | | | | |
| Lily | 80 | Severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.75 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Low strength | 0.50 |
| 17D: | | | | | | | |
| Marrowbone | 50 | Moderate | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.50 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Landslides | 0.50 |
| Gilpin | 45 | Moderate | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.50 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Low strength | 0.50 |
| | | | | | | Landslides | 0.50 |

Table 8.—Forestland Management, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Hazard of off-road or off-trail erosion: Rating class and limiting features | Value | Hazard of erosion on roads and trails: Rating class and limiting features | Value | Suitability for roads (natural surface): Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 17E: | | | | | | | |
| Marrowbone | 60 | Moderate | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.50 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Landslides | 0.50 |
| Gilpin | 35 | Severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.75 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Low strength | 0.50 |
| | | | | | | Landslides | 0.50 |
| 17F: | | | | | | | |
| Marrowbone | 75 | Severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.75 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Landslides | 0.50 |
| Gilpin | 15 | Very severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.95 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Low strength | 0.50 |
| | | | | | | Landslides | 0.50 |
| 18F: | | | | | | | |
| Matewan | 55 | Very severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.95 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Landslides | 1.00 |
| | | | | | | Rock fragments | 0.50 |
| Gilpin | 30 | Very severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.95 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Rock fragments | 0.50 |
| | | | | | | Low strength | 0.50 |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 19D: | | | | | | | |
| Oriskany | 95 | Moderate | | Moderate | | Poorly suited | |
| | | Slope/erodibility | 0.50 | Slope/erodibility | 0.50 | Slope | 1.00 |
| | | | | | | Rock fragments | 0.50 |
| 19E: | | | | | | | |
| Oriskany | 95 | Severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.75 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Rock fragments | 0.50 |
| 20A: | | | | | | | |
| Philo | 95 | Slight | | Slight | | Poorly suited | |
| | | | | | | Flooding | 1.00 |
| 21F: | | | | | | | |
| Sewell | 55 | Severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.75 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Rock fragments | 0.50 |
| | | | | | | Landslides | 0.10 |
| Kaymine | 30 | Severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.75 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Rock fragments | 0.50 |
| | | | | | | Landslides | 0.10 |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |

Table 8.—Forestland Management, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Hazard of off-road or off-trail erosion | | Hazard of erosion on roads and trails | | Suitability for roads (natural surface) | |
|---|---|---|---|---|---|---|---|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| 22E: | | | | | | | |
| Shelocta------------ | 70 | Severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.75 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Landslides | 1.00 |
| | | | | | | Rock fragments | 0.50 |
| Cedarcreek---------- | 25 | Severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.75 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Rock fragments | 0.50 |
| | | | | | | Landslides | 0.10 |
| 23E: | | | | | | | |
| Shelocta------------ | 55 | Severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.75 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Landslides | 1.00 |
| Cloverlick---------- | 35 | Severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.75 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Landslides | 1.00 |
| | | | | | | Sandiness | 0.50 |
| 24E: | | | | | | | |
| Shelocta------------ | 50 | Severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.75 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Landslides | 1.00 |
| Highsplint---------- | 40 | Severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.75 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Landslides | 1.00 |
| | | | | | | Low strength | 0.50 |
| 25F: | | | | | | | |
| Shelocta------------ | 55 | Very severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.95 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Landslides | 1.00 |
| | | | | | | Rock fragments | 0.50 |
| Kaymine------------- | 40 | Very severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.95 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Rock fragments | 0.50 |
| | | | | | | Landslides | 0.10 |
| 26F: | | | | | | | |
| Stonecoal----------- | 85 | Severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.75 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Sandiness | 0.50 |
| 27: | | | | | | | |
| Udorthents---------- | 45 | Not rated | | Not rated | | Not rated | |
| Urban land---------- | 30 | Not rated | | Not rated | | Not rated | |
| 28: | | | | | | | |
| Udorthents---------- | 45 | Not rated | | Not rated | | Not rated | |
| Urban land---------- | 35 | Not rated | | Not rated | | Not rated | |
| 29D: | | | | | | | |
| Wallen-------------- | 90 | Moderate | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.50 | Slope/erodibility | 0.95 | Slope | 1.00 |

Table 8.—Forestland Management, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Hazard of off-road or off-trail erosion: Rating class and limiting features | Value | Hazard of erosion on roads and trails: Rating class and limiting features | Value | Suitability for roads (natural surface): Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 29F: | | | | | | | |
| Wallen | 75 | Severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.75 | Slope/erodibility | 0.95 | Slope | 1.00 |
| 30F: | | | | | | | |
| Wallen | 85 | Very severe | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.95 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Rock fragments | 0.50 |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 31D: | | | | | | | |
| Wharton | 45 | Moderate | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.50 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Low strength | 0.50 |
| | | | | | | Landslides | 0.50 |
| Gilpin | 40 | Moderate | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.50 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Low strength | 0.50 |
| | | | | | | Landslides | 0.50 |
| Berks | 15 | Moderate | | Severe | | Poorly suited | |
| | | Slope/erodibility | 0.50 | Slope/erodibility | 0.95 | Slope | 1.00 |
| | | | | | | Low strength | 0.50 |
| | | | | | | Landslides | 0.10 |
| 32C: | | | | | | | |
| Wharton | 45 | Moderate | | Severe | | Moderately suited | |
| | | Slope/erodibility | 0.50 | Slope/erodibility | 0.95 | Slope | 0.50 |
| | | | | | | Low strength | 0.50 |
| | | | | | | Landslides | 0.50 |
| Gilpin | 35 | Moderate | | Severe | | Moderately suited | |
| | | Slope/erodibility | 0.50 | Slope/erodibility | 0.95 | Slope | 0.50 |
| | | | | | | Low strength | 0.50 |
| | | | | | | Landslides | 0.50 |
| Marrowbone | 20 | Slight | | Severe | | Moderately suited | |
| | | | | Slope/erodibility | 0.95 | Slope | 0.50 |
| | | | | | | Landslides | 0.50 |
| W: | | | | | | | |
| Water | 100 | Not rated | | Not rated | | Not rated | |

Table 8.—Forestland Management, Part III

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

| Map symbol and soil name | Pct. of map unit | Suitability for hand planting: Rating class and limiting features | Value | Suitability for mechanical planting: Rating class and limiting features | Value | Suitability for use of harvesting equipment: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 1D: | | | | | | | |
| Calvin | 85 | Moderately suited | | Poorly suited | | Moderately suited | |
| | | Rock fragments | 0.50 | Slope | 0.75 | Low strength | 0.50 |
| | | | | Rock fragments | 0.75 | Slope | 0.50 |
| 2F: | | | | | | | |
| Calvin | 70 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.75 | Low strength | 0.50 |
| Rough | 20 | Unsuited | | Unsuited | | Poorly suited | |
| | | Restrictive layer | 1.00 | Restrictive layer | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Slope | 1.00 | | |
| | | Slope | 0.50 | Rock fragments | 1.00 | | |
| 3F: | | | | | | | |
| Cedarcreek | 35 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.75 | Rock fragments | 0.50 |
| Fiveblock | 30 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | Sandiness | 0.50 | Rock fragments | 0.75 | Rock fragments | 0.50 |
| | | Rock fragments | 0.50 | Sandiness | 0.50 | Sandiness | 0.50 |
| Kaymine | 25 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.75 | Rock fragments | 0.50 |
| 4C: | | | | | | | |
| Cedarcreek | 35 | Well suited | | Moderately suited | | Well suited | |
| | | | | Rock fragments | 0.50 | | |
| | | | | Slope | 0.50 | | |
| Sewell | 30 | Moderately suited | | Poorly suited | | Well suited | |
| | | Rock fragments | 0.50 | Rock fragments | 0.75 | | |
| | | | | Slope | 0.50 | | |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 5F: | | | | | | | |
| Cloverlick | 45 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | Sandiness | 0.50 | Sandiness | 0.50 | Low strength | 0.50 |
| | | | | Rock fragments | 0.50 | Sandiness | 0.50 |
| Shelocta | 40 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | | | Rock fragments | 0.50 | | |
| 6C: | | | | | | | |
| Cotaco | 90 | Well suited | | Moderately suited | | Moderately suited | |
| | | | | Slope | 0.50 | Low strength | 0.50 |

Table 8.—Forestland Management, Part III—Continued

| Map symbol and soil name | Pct. of map unit | Suitability for hand planting: Rating class and limiting features | Value | Suitability for mechanical planting: Rating class and limiting features | Value | Suitability for use of harvesting equipment: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 7: | | | | | | | |
| Dumps, mine | 60 | Not rated | | Not rated | | Not rated | |
| Urban land | 30 | Not rated | | Not rated | | Not rated | |
| 8C: | | | | | | | |
| Fiveblock | 80 | Moderately suited | | Poorly suited | | Moderately suited | |
| | | Sandiness | 0.50 | Rock fragments | 0.75 | Rock fragments | 0.50 |
| | | Rock fragments | 0.50 | Sandiness | 0.50 | Sandiness | 0.50 |
| | | | | Slope | 0.50 | | |
| Sewell | 20 | Moderately suited | | Poorly suited | | Moderately suited | |
| | | Rock fragments | 0.50 | Rock fragments | 0.75 | Rock fragments | 0.50 |
| | | | | Slope | 0.50 | | |
| 9E: | | | | | | | |
| Gilpin | 55 | Well suited | | Unsuited | | Moderately suited | |
| | | | | Slope | 1.00 | Low strength | 0.50 |
| | | | | Rock fragments | 0.50 | Slope | 0.50 |
| Berks | 30 | Moderately suited | | Unsuited | | Moderately suited | |
| | | Rock fragments | 0.50 | Slope | 1.00 | Low strength | 0.50 |
| | | | | Rock fragments | 0.75 | Slope | 0.50 |
| 9F: | | | | | | | |
| Gilpin | 55 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | | | Rock fragments | 0.50 | Low strength | 0.50 |
| Berks | 35 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.75 | Low strength | 0.50 |
| 10A: | | | | | | | |
| Grigsby | 81 | Moderately suited | | Moderately suited | | Moderately suited | |
| | | Sandiness | 0.50 | Sandiness | 0.50 | Sandiness | 0.50 |
| 11F: | | | | | | | |
| Highsplint | 55 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | | | Rock fragments | 0.50 | Low strength | 0.50 |
| Shelocta | 40 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | | | Rock fragments | 0.50 | | |
| 12F: | | | | | | | |
| Itmann | 95 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | | | Rock fragments | 0.50 | | |
| 13D: | | | | | | | |
| Kaymine | 90 | Moderately suited | | Poorly suited | | Moderately suited | |
| | | Rock fragments | 0.50 | Slope | 0.75 | Rock fragments | 0.50 |
| | | | | Rock fragments | 0.75 | Slope | 0.50 |
| 14E: | | | | | | | |
| Kaymine | 85 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.75 | Rock fragments | 0.50 |

Table 8.—Forestland Management, Part III—Continued

| Map symbol and soil name | Pct. of map unit | Suitability for hand planting: Rating class and limiting features | Value | Suitability for mechanical planting: Rating class and limiting features | Value | Suitability for use of harvesting equipment: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 14E: | | | | | | | |
| Cedarcreek---------- | 15 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.75 | Rock fragments | 0.50 |
| 15C: | | | | | | | |
| Kaymine------------- | 55 | Moderately suited | | Poorly suited | | Moderately suited | |
| | | Rock fragments | 0.50 | Rock fragments | 0.75 | Rock fragments | 0.50 |
| | | | | Slope | 0.50 | | |
| Fiveblock----------- | 25 | Moderately suited | | Poorly suited | | Moderately suited | |
| | | Sandiness | 0.50 | Rock fragments | 0.75 | Rock fragments | 0.50 |
| | | Rock fragments | 0.50 | Sandiness | 0.50 | Sandiness | 0.50 |
| | | | | Slope | 0.50 | | |
| Cedarcreek---------- | 20 | Moderately suited | | Poorly suited | | Moderately suited | |
| | | Rock fragments | 0.50 | Rock fragments | 0.75 | Rock fragments | 0.50 |
| | | | | Slope | 0.50 | | |
| 16C: | | | | | | | |
| Lily---------------- | 85 | Well suited | | Moderately suited | | Moderately suited | |
| | | | | Slope | 0.50 | Low strength | 0.50 |
| | | | | Rock fragments | 0.50 | | |
| 16D: | | | | | | | |
| Lily---------------- | 95 | Well suited | | Poorly suited | | Moderately suited | |
| | | | | Slope | 0.75 | Low strength | 0.50 |
| | | | | Rock fragments | 0.50 | Slope | 0.50 |
| 16E: | | | | | | | |
| Lily---------------- | 80 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | | | Rock fragments | 0.50 | Low strength | 0.50 |
| 17D: | | | | | | | |
| Marrowbone---------- | 50 | Well suited | | Poorly suited | | Moderately suited | |
| | | | | Slope | 0.75 | Slope | 0.50 |
| | | | | Rock fragments | 0.50 | | |
| Gilpin-------------- | 45 | Well suited | | Poorly suited | | Moderately suited | |
| | | | | Slope | 0.75 | Low strength | 0.50 |
| | | | | Rock fragments | 0.50 | Slope | 0.50 |
| 17E: | | | | | | | |
| Marrowbone---------- | 60 | Well suited | | Unsuited | | Moderately suited | |
| | | | | Slope | 1.00 | Slope | 0.50 |
| | | | | Rock fragments | 0.50 | | |
| Gilpin-------------- | 35 | Well suited | | Unsuited | | Moderately suited | |
| | | | | Slope | 1.00 | Low strength | 0.50 |
| | | | | Rock fragments | 0.50 | Slope | 0.50 |
| 17F: | | | | | | | |
| Marrowbone---------- | 75 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | | | Rock fragments | 0.50 | | |
| Gilpin-------------- | 15 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | | | Rock fragments | 0.50 | Low strength | 0.50 |

Table 8.—Forestland Management, Part III—Continued

| Map symbol and soil name | Pct. of map unit | Suitability for hand planting: Rating class and limiting features | Value | Suitability for mechanical planting: Rating class and limiting features | Value | Suitability for use of harvesting equipment: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 18F: | | | | | | | |
| Matewan | 55 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.75 | Rock fragments | 0.50 |
| Gilpin | 30 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.75 | Rock fragments | 0.50 |
| | | | | | | Low strength | 0.50 |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 19D: | | | | | | | |
| Oriskany | 95 | Moderately suited | | Poorly suited | | Moderately suited | |
| | | Rock fragments | 0.50 | Slope | 0.75 | Rock fragments | 0.50 |
| | | | | Rock fragments | 0.75 | Slope | 0.50 |
| 19E: | | | | | | | |
| Oriskany | 95 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.75 | Rock fragments | 0.50 |
| 20A: | | | | | | | |
| Philo | 95 | Well suited | | Well suited | | Well suited | |
| 21F: | | | | | | | |
| Sewell | 55 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Rock fragments | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | Slope | 0.50 | Rock fragments | 0.75 | Rock fragments | 0.50 |
| Kaymine | 30 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Rock fragments | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | Slope | 0.50 | Rock fragments | 0.75 | Rock fragments | 0.50 |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 22E: | | | | | | | |
| Shelocta | 70 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | | | Rock fragments | 0.50 | Rock fragments | 0.50 |
| Cedarcreek | 25 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | | | Rock fragments | 0.50 | Rock fragments | 0.50 |
| 23E: | | | | | | | |
| Shelocta | 55 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | | | Rock fragments | 0.50 | | |
| Cloverlick | 35 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | Sandiness | 0.50 | Sandiness | 0.50 | Low strength | 0.50 |
| | | | | Rock fragments | 0.50 | Sandiness | 0.50 |
| 24E: | | | | | | | |
| Shelocta | 50 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | | | Rock fragments | 0.50 | | |

Table 8.—Forestland Management, Part III—Continued

| Map symbol and soil name | Pct. of map unit | Suitability for hand planting: Rating class and limiting features | Value | Suitability for mechanical planting: Rating class and limiting features | Value | Suitability for use of harvesting equipment: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 24E: | | | | | | | |
| Highsplint---------- | 40 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | | | Rock fragments | 0.50 | Low strength | 0.50 |
| 25F: | | | | | | | |
| Shelocta------------ | 55 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | | | Rock fragments | 0.50 | Rock fragments | 0.50 |
| Kaymine------------- | 40 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.75 | Rock fragments | 0.50 |
| 26F: | | | | | | | |
| Stonecoal----------- | 85 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Sandiness | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | Slope | 0.50 | Sandiness | 0.50 | Sandiness | 0.50 |
| | | Rock fragments | 0.50 | Rock fragments | 0.50 | | |
| 27: | | | | | | | |
| Udorthents---------- | 45 | Not rated | | Not rated | | Not rated | |
| Urban land---------- | 30 | Not rated | | Not rated | | Not rated | |
| 28: | | | | | | | |
| Udorthents---------- | 45 | Not rated | | Not rated | | Not rated | |
| Urban land---------- | 35 | Not rated | | Not rated | | Not rated | |
| 29D: | | | | | | | |
| Wallen-------------- | 90 | Moderately suited | | Poorly suited | | Moderately suited | |
| | | Rock fragments | 0.50 | Slope | 0.75 | Slope | 0.50 |
| | | | | Rock fragments | 0.50 | | |
| 29F: | | | | | | | |
| Wallen-------------- | 75 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.50 | | |
| 30F: | | | | | | | |
| Wallen-------------- | 85 | Moderately suited | | Unsuited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.75 | Rock fragments | 0.50 |
| Rock outcrop-------- | 10 | Not rated | | Not rated | | Not rated | |
| 31D: | | | | | | | |
| Wharton------------- | 45 | Well suited | | Poorly suited | | Moderately suited | |
| | | | | Slope | 0.75 | Low strength | 0.50 |
| Gilpin-------------- | 40 | Well suited | | Poorly suited | | Moderately suited | |
| | | | | Slope | 0.75 | Low strength | 0.50 |
| | | | | Rock fragments | 0.50 | Slope | 0.50 |
| Berks--------------- | 15 | Moderately suited | | Poorly suited | | Moderately suited | |
| | | Rock fragments | 0.50 | Slope | 0.75 | Low strength | 0.50 |
| | | | | Rock fragments | 0.75 | Slope | 0.50 |

Table 8.—Forestland Management, Part III—Continued

| Map symbol and soil name | Pct. of map unit | Suitability for hand planting: Rating class and limiting features | Value | Suitability for mechanical planting: Rating class and limiting features | Value | Suitability for use of harvesting equipment: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 32C: | | | | | | | |
| Wharton | 45 | Well suited | | Moderately suited | | Moderately suited | |
| | | | | Slope | 0.50 | Low strength | 0.50 |
| Gilpin | 35 | Well suited | | Moderately suited | | Moderately suited | |
| | | | | Slope | 0.50 | Low strength | 0.50 |
| | | | | Rock fragments | 0.50 | | |
| Marrowbone | 20 | Well suited | | Moderately suited | | Well suited | |
| | | | | Slope | 0.50 | | |
| | | | | Rock fragments | 0.50 | | |
| W: | | | | | | | |
| Water | 100 | Not rated | | Not rated | | Not rated | |

Table 8.—Forestland Management, Part IV

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

| Map symbol and soil name | Pct. of map unit | Suitability for mechanical site preparation (surface) | | Suitability for mechanical site preparation (deep) | |
|---|---|---|---|---|---|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| 1D: | | | | | |
| Calvin | 85 | Poorly suited | | Unsuited | |
| | | Slope | 0.50 | Restrictive layer | 1.00 |
| | | Rock fragments | 0.50 | Slope | 0.50 |
| 2F: | | | | | |
| Calvin | 70 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Restrictive layer | 1.00 |
| | | Rock fragments | 0.50 | Slope | 1.00 |
| Rough | 20 | Unsuited | | Unsuited | |
| | | Restrictive layer | 1.00 | Restrictive layer | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | | |
| 3F: | | | | | |
| Cedarcreek | 35 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.50 |
| Fiveblock | 30 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.50 |
| Kaymine | 25 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.50 |
| 4C: | | | | | |
| Cedarcreek | 35 | Well suited | | Well suited | |
| Sewell | 30 | Poorly suited | | Well suited | |
| | | Rock fragments | 0.50 | | |
| Rock outcrop | 10 | Not rated | | Not rated | |
| 5F: | | | | | |
| Cloverlick | 45 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| Shelocta | 40 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| 6C: | | | | | |
| Cotaco | 90 | Well suited | | Well suited | |
| 7: | | | | | |
| Dumps, mine | 60 | Not rated | | Not rated | |
| Urban land | 30 | Not rated | | Not rated | |

Table 8.—Forestland Management, Part IV—Continued

| Map symbol and soil name | Pct. of map unit | Suitability for mechanical site preparation (surface) | | Suitability for mechanical site preparation (deep) | |
|---|---|---|---|---|---|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| 8C: | | | | | |
| Fiveblock----------- | 80 | Poorly suited | | Poorly suited | |
| | | Rock fragments | 0.50 | Rock fragments | 0.50 |
| Sewell-------------- | 20 | Poorly suited | | Poorly suited | |
| | | Rock fragments | 0.50 | Rock fragments | 0.50 |
| 9E: | | | | | |
| Gilpin-------------- | 55 | Poorly suited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 0.50 |
| Berks--------------- | 30 | Poorly suited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 0.50 |
| | | Rock fragments | 0.50 | | |
| 9F: | | | | | |
| Gilpin-------------- | 55 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| Berks--------------- | 35 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | | |
| 10A: | | | | | |
| Grigsby------------- | 81 | Well suited | | Well suited | |
| 11F: | | | | | |
| Highsplint---------- | 55 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| Shelocta------------ | 40 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| 12F: | | | | | |
| Itmann-------------- | 95 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| 13D: | | | | | |
| Kaymine------------- | 90 | Poorly suited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 0.50 |
| | | Rock fragments | 0.50 | Rock fragments | 0.50 |
| 14E: | | | | | |
| Kaymine------------- | 85 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.50 |
| Cedarcreek---------- | 15 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.50 |
| 15C: | | | | | |
| Kaymine------------- | 55 | Poorly suited | | Poorly suited | |
| | | Rock fragments | 0.50 | Rock fragments | 0.50 |
| Fiveblock----------- | 25 | Poorly suited | | Poorly suited | |
| | | Rock fragments | 0.50 | Rock fragments | 0.50 |
| Cedarcreek---------- | 20 | Poorly suited | | Poorly suited | |
| | | Rock fragments | 0.50 | Rock fragments | 0.50 |

Table 8.—Forestland Management, Part IV—Continued

| Map symbol and soil name | Pct. of map unit | Suitability for mechanical site preparation (surface): Rating class and limiting features | Value | Suitability for mechanical site preparation (deep): Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 16C: | | | | | |
| Lily | 85 | Well suited | | Poorly suited | |
| | | | | Restrictive layer | 0.50 |
| 16D: | | | | | |
| Lily | 95 | Poorly suited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 0.50 |
| | | | | Restrictive layer | 0.50 |
| 16E: | | | | | |
| Lily | 80 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | | | Restrictive layer | 0.50 |
| 17D: | | | | | |
| Marrowbone | 50 | Poorly suited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 0.50 |
| Gilpin | 45 | Poorly suited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 0.50 |
| 17E: | | | | | |
| Marrowbone | 60 | Poorly suited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 0.50 |
| Gilpin | 35 | Poorly suited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 0.50 |
| 17F: | | | | | |
| Marrowbone | 75 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| Gilpin | 15 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| 18F: | | | | | |
| Matewan | 55 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.50 |
| Gilpin | 30 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.50 |
| Rock outcrop | 10 | Not rated | | Not rated | |
| 19D: | | | | | |
| Oriskany | 95 | Poorly suited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 0.50 |
| | | Rock fragments | 0.50 | Rock fragments | 0.50 |
| 19E: | | | | | |
| Oriskany | 95 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.50 |
| 20A: | | | | | |
| Philo | 95 | Well suited | | Well suited | |

Table 8.—Forestland Management, Part IV—Continued

| Map symbol and soil name | Pct. of map unit | Suitability for mechanical site preparation (surface): Rating class and limiting features | Value | Suitability for mechanical site preparation (deep): Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 21F: | | | | | |
| Sewell-------------- | 55 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.50 |
| Kaymine------------- | 30 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.50 |
| Rock outcrop-------- | 10 | Not rated | | Not rated | |
| 22E: | | | | | |
| Shelocta------------ | 70 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | | |
| Cedarcreek---------- | 25 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | | |
| 23E: | | | | | |
| Shelocta------------ | 55 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| Cloverlick---------- | 35 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| 24E: | | | | | |
| Shelocta------------ | 50 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| Highsplint---------- | 40 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| 25F: | | | | | |
| Shelocta------------ | 55 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | | |
| Kaymine------------- | 40 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | | |
| 26F: | | | | | |
| Stonecoal----------- | 85 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | | |
| 27: | | | | | |
| Udorthents---------- | 45 | Not rated | | Not rated | |
| Urban land---------- | 30 | Not rated | | Not rated | |
| 28: | | | | | |
| Udorthents---------- | 45 | Not rated | | Not rated | |
| Urban land---------- | 35 | Not rated | | Not rated | |

Table 8.—Forestland Management, Part IV—Continued

| Map symbol and soil name | Pct. of map unit | Suitability for mechanical site preparation (surface): Rating class and limiting features | Value | Suitability for mechanical site preparation (deep): Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 29D: | | | | | |
| Wallen | 90 | Poorly suited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 0.50 |
| | | Rock fragments | 0.50 | Restrictive layer | 0.50 |
| 29F: | | | | | |
| Wallen | 75 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Restrictive layer | 0.50 |
| 30F: | | | | | |
| Wallen | 85 | Unsuited | | Unsuited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Rock fragments | 0.50 | Rock fragments | 0.50 |
| | | | | Restrictive layer | 0.50 |
| Rock outcrop | 10 | Not rated | | Not rated | |
| 31D: | | | | | |
| Wharton | 45 | Poorly suited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 0.50 |
| Gilpin | 40 | Poorly suited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 0.50 |
| Berks | 15 | Poorly suited | | Poorly suited | |
| | | Slope | 0.50 | Slope | 0.50 |
| | | Rock fragments | 0.50 | | |
| 32C: | | | | | |
| Wharton | 45 | Well suited | | Well suited | |
| Gilpin | 35 | Well suited | | Well suited | |
| Marrowbone | 20 | Well suited | | Well suited | |
| W: | | | | | |
| Water | 100 | Not rated | | Not rated | |

Table 8.—Forestland Management, Part V

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

| Map symbol and soil name | Pct. of map unit | Potential for damage to soil by fire: Rating class and limiting features | Value | Potential for seedling mortality: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 1D: | | | | | |
| Calvin | 85 | Moderate | | Moderate | |
| | | Texture/rock fragments | 0.50 | Available water | 0.50 |
| 2F: | | | | | |
| Calvin | 70 | Moderate | | Moderate | |
| | | Texture/rock fragments | 0.50 | Available water | 0.50 |
| Rough | 20 | High | | High | |
| | | Texture/slope/ surface depth/ rock fragments | 1.00 | Available water | 1.00 |
| | | | | Soil reaction | 0.50 |
| 3F: | | | | | |
| Cedarcreek | 35 | High | | Low | |
| | | Texture/slope/ surface depth/ rock fragments | 1.00 | | |
| Fiveblock | 30 | High | | Moderate | |
| | | Texture/slope/ rock fragments | 1.00 | Available water | 0.50 |
| Kaymine | 25 | High | | Moderate | |
| | | Texture/slope/ surface depth/ rock fragments | 1.00 | Available water | 0.50 |
| 4C: | | | | | |
| Cedarcreek | 35 | High | | Low | |
| | | Texture/surface depth/rock fragments | 1.00 | | |
| Sewell | 30 | High | | Low | |
| | | Texture/surface depth/rock fragments | 1.00 | | |
| Rock outcrop | 10 | Not rated | | Not rated | |
| 5F: | | | | | |
| Cloverlick | 45 | Low | | Low | |
| | | Texture/slope/ rock fragments | 0.10 | | |
| Shelocta | 40 | Moderate | | Low | |
| | | Texture/slope/ surface depth/ rock fragments | 0.50 | | |

Table 8.—Forestland Management, Part V—Continued

| Map symbol and soil name | Pct. of map unit | Potential for damage to soil by fire: Rating class and limiting features | Value | Potential for seedling mortality: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 6C: | | | | | |
| Cotaco | 90 | Low | | Low | |
| | | Texture/rock fragments | 0.10 | | |
| 7: | | | | | |
| Dumps, mine | 60 | Not rated | | Not rated | |
| Urban land | 30 | Not rated | | Not rated | |
| 8C: | | | | | |
| Fiveblock | 80 | High | | Low | |
| | | Texture/rock fragments | 1.00 | | |
| Sewell | 20 | High | | Low | |
| | | Texture/surface depth/rock fragments | 1.00 | | |
| 9E: | | | | | |
| Gilpin | 55 | Moderate | | Moderate | |
| | | Texture/slope/surface depth/rock fragments | 0.50 | Available water | 0.50 |
| Berks | 30 | Moderate | | Moderate | |
| | | Texture/slope/surface depth/rock fragments | 0.50 | Available water | 0.50 |
| 9F: | | | | | |
| Gilpin | 55 | Moderate | | Moderate | |
| | | Texture/slope/surface depth/rock fragments | 0.50 | Available water | 0.50 |
| Berks | 35 | Moderate | | Moderate | |
| | | Texture/slope/surface depth/rock fragments | 0.50 | Available water | 0.50 |
| 10A: | | | | | |
| Grigsby | 81 | Low | | Low | |
| | | Texture/rock fragments | 0.10 | | |
| 11F: | | | | | |
| Highsplint | 55 | High | | Moderate | |
| | | Texture/slope/surface depth/rock fragments | 1.00 | Available water | 0.50 |
| Shelocta | 40 | High | | Moderate | |
| | | Texture/slope/surface depth/rock fragments | 1.00 | Available water | 0.50 |

Table 8.—Forestland Management, Part V—Continued

| Map symbol and soil name | Pct. of map unit | Potential for damage to soil by fire: Rating class and limiting features | Value | Potential for seedling mortality: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 12F: | | | | | |
| Itmann-------------- | 95 | High | | Moderate | |
| | | Texture/slope/ surface depth/ rock fragments | 1.00 | Available water | 0.50 |
| | | | | Soil reaction | 0.50 |
| 13D: | | | | | |
| Kaymine------------- | 90 | High | | Moderate | |
| | | Texture/surface depth/rock fragments | 1.00 | Available water | 0.50 |
| 14E: | | | | | |
| Kaymine------------- | 85 | High | | Moderate | |
| | | Texture/slope/ surface depth/ rock fragments | 1.00 | Available water | 0.50 |
| Cedarcreek---------- | 15 | High | | Low | |
| | | Texture/slope/ surface depth/ rock fragments | 1.00 | | |
| 15C: | | | | | |
| Kaymine------------- | 55 | High | | Low | |
| | | Texture/surface depth/rock fragments | 1.00 | | |
| Fiveblock----------- | 25 | High | | Low | |
| | | Texture/rock fragments | 1.00 | | |
| Cedarcreek---------- | 20 | High | | Low | |
| | | Texture/surface depth/rock fragments | 1.00 | | |
| 16C: | | | | | |
| Lily---------------- | 85 | High | | Low | |
| | | Texture/surface depth/rock fragments | 1.00 | | |
| 16D: | | | | | |
| Lily---------------- | 95 | High | | Moderate | |
| | | Texture/surface depth/rock fragments | 1.00 | Available water | 0.50 |
| 16E: | | | | | |
| Lily---------------- | 80 | High | | Moderate | |
| | | Texture/slope/ surface depth/ rock fragments | 1.00 | Available water | 0.50 |

Table 8.—Forestland Management, Part V—Continued

| Map symbol and soil name | Pct. of map unit | Potential for damage to soil by fire: Rating class and limiting features | Value | Potential for seedling mortality: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 17D: | | | | | |
| Marrowbone---------- | 50 | Moderate | | Moderate | |
| | | Texture/rock fragments | 0.50 | Available water | 0.50 |
| Gilpin-------------- | 45 | Moderate | | Moderate | |
| | | Texture/surface depth/rock fragments | 0.50 | Available water | 0.50 |
| 17E: | | | | | |
| Marrowbone---------- | 60 | Moderate | | Moderate | |
| | | Texture/slope/ rock fragments | 0.50 | Available water | 0.50 |
| Gilpin-------------- | 35 | Moderate | | Moderate | |
| | | Texture/slope/ surface depth/ rock fragments | 0.50 | Available water | 0.50 |
| 17F: | | | | | |
| Marrowbone---------- | 75 | Moderate | | Moderate | |
| | | Texture/slope/ rock fragments | 0.50 | Available water | 0.50 |
| Gilpin-------------- | 15 | Moderate | | Moderate | |
| | | Texture/slope/ surface depth/ rock fragments | 0.50 | Available water | 0.50 |
| 18F: | | | | | |
| Matewan------------- | 55 | High | | Moderate | |
| | | Texture/slope/ surface depth/ rock fragments | 1.00 | Available water | 0.50 |
| Gilpin-------------- | 30 | Moderate | | Moderate | |
| | | Texture/slope/ surface depth/ rock fragments | 0.50 | Available water | 0.50 |
| Rock outcrop-------- | 10 | Not rated | | Not rated | |
| 19D: | | | | | |
| Oriskany------------ | 95 | High | | Moderate | |
| | | Texture/rock fragments | 1.00 | Available water | 0.50 |
| 19E: | | | | | |
| Oriskany------------ | 95 | High | | Moderate | |
| | | Texture/slope/ rock fragments | 1.00 | Available water | 0.50 |
| 20A: | | | | | |
| Philo--------------- | 95 | Low | | Low | |
| | | Texture/rock fragments | 0.10 | | |

Table 8.—Forestland Management, Part V—Continued

| Map symbol and soil name | Pct. of map unit | Potential for damage to soil by fire: Rating class and limiting features | Value | Potential for seedling mortality: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 21F: | | | | | |
| Sewell | 55 | High | | Low | |
| | | Texture/slope/ surface depth/ rock fragments | 1.00 | | |
| Kaymine | 30 | High | | Moderate | |
| | | Texture/slope/ surface depth/ rock fragments | 1.00 | Available water | 0.50 |
| Rock outcrop | 10 | Not rated | | Not rated | |
| 22E: | | | | | |
| Shelocta | 70 | High | | Moderate | |
| | | Texture/slope/ surface depth/ rock fragments | 1.00 | Available water | 0.50 |
| Cedarcreek | 25 | High | | Low | |
| | | Texture/slope/ surface depth/ rock fragments | 1.00 | | |
| 23E: | | | | | |
| Shelocta | 55 | Moderate | | Low | |
| | | Texture/slope/ surface depth/ rock fragments | 0.50 | | |
| Cloverlick | 35 | Low | | Low | |
| | | Texture/slope/ rock fragments | 0.10 | | |
| 24E: | | | | | |
| Shelocta | 50 | High | | Moderate | |
| | | Texture/slope/ surface depth/ rock fragments | 1.00 | Available water | 0.50 |
| Highsplint | 40 | High | | Moderate | |
| | | Texture/slope/ surface depth/ rock fragments | 1.00 | Available water | 0.50 |
| 25F: | | | | | |
| Shelocta | 55 | High | | Moderate | |
| | | Texture/slope/ surface depth/ rock fragments | 1.00 | Available water | 0.50 |
| Kaymine | 40 | High | | Moderate | |
| | | Texture/slope/ surface depth/ rock fragments | 1.00 | Available water | 0.50 |
| 26F: | | | | | |
| Stonecoal | 85 | High | | Low | |
| | | Texture/rock fragments | 1.00 | | |

Table 8.—Forestland Management, Part V—Continued

| Map symbol and soil name | Pct. of map unit | Potential for damage to soil by fire: Rating class and limiting features | Value | Potential for seedling mortality: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 27: | | | | | |
| Udorthents---------- | 45 | Not rated | | Not rated | |
| Urban land---------- | 30 | Not rated | | Not rated | |
| 28: | | | | | |
| Udorthents---------- | 45 | Not rated | | Not rated | |
| Urban land---------- | 35 | Not rated | | Not rated | |
| 29D: | | | | | |
| Wallen-------------- | 90 | High | | Moderate | |
| | | Texture/surface depth/rock fragments | 1.00 | Available water | 0.50 |
| 29F: | | | | | |
| Wallen-------------- | 75 | High | | Moderate | |
| | | Texture/slope/ surface depth/ rock fragments | 1.00 | Available water | 0.50 |
| 30F: | | | | | |
| Wallen-------------- | 85 | High | | Moderate | |
| | | Texture/slope/ surface depth/ rock fragments | 1.00 | Available water | 0.50 |
| Rock outcrop-------- | 10 | Not rated | | Not rated | |
| 31D: | | | | | |
| Wharton------------- | 45 | Moderate | | Moderate | |
| | | Texture/surface depth/rock fragments | 0.50 | Available water | 0.50 |
| Gilpin-------------- | 40 | Moderate | | Moderate | |
| | | Texture/surface depth/rock fragments | 0.50 | Available water | 0.50 |
| Berks--------------- | 15 | Moderate | | Moderate | |
| | | Texture/surface depth/rock fragments | 0.50 | Available water | 0.50 |
| 32C: | | | | | |
| Wharton------------- | 45 | Moderate | | Low | |
| | | Texture/surface depth/rock fragments | 0.50 | | |
| Gilpin-------------- | 35 | Moderate | | Low | |
| | | Texture/surface depth/rock fragments | 0.50 | | |

Table 8.—Forestland Management, Part V—Continued

| Map symbol and soil name | Pct. of map unit | Potential for damage to soil by fire: Rating class and limiting features | Potential for damage to soil by fire: Value | Potential for seedling mortality: Rating class and limiting features | Potential for seedling mortality: Value |
|---|---|---|---|---|---|
| 32C: | | | | | |
| Marrowbone---------- | 20 | Moderate | | Low | |
| | | Texture/rock fragments | 0.50 | | |
| W: | | | | | |
| Water--------------- | 100 | Not rated | | Not rated | |

Table 9.—Recreational Development, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

| Map symbol and soil name | Pct. of map unit | Camp areas: Rating class and limiting features | Camp areas: Value | Picnic areas: Rating class and limiting features | Picnic areas: Value | Playgrounds: Rating class and limiting features | Playgrounds: Value |
|---|---|---|---|---|---|---|---|
| 1D: | | | | | | | |
| Calvin | 85 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Depth to bedrock | 0.46 |
| | | | | | | Gravel content | 0.01 |
| 2F: | | | | | | | |
| Calvin | 70 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.53 | Large stones content | 0.53 | Large stones content | 0.53 |
| | | | | | | Depth to bedrock | 0.46 |
| Rough | 20 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 |
| | | Large stones content | 0.53 | Large stones content | 0.53 | Gravel content | 1.00 |
| 3F: | | | | | | | |
| Cedarcreek | 35 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Large stones content | 1.00 | Large stones content | 1.00 |
| | | Large stones content | 1.00 | Slope | 1.00 | Gravel content | 1.00 |
| | | Gravel content | 0.97 | Gravel content | 0.97 | Slope | 1.00 |
| Fiveblock | 30 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Large stones content | 1.00 | Large stones content | 1.00 |
| | | Large stones content | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Gravel content | 0.94 | Gravel content | 0.94 | Gravel content | 1.00 |
| Kaymine | 25 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Large stones | 1.00 | Large stones | 1.00 |
| | | Large stones | 1.00 | content | | content | |
| | | content | 1.00 | Slope | 1.00 | Gravel content | 1.00 |
| | | Gravel content | 0.99 | Gravel content | 0.99 | Slope | 1.00 |
| 4C: | | | | | | | |
| Cedarcreek | 35 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Gravel content | 0.97 | Gravel content | 0.97 | Gravel content | 1.00 |
| | | Large stones content | 0.53 | Large stones content | 0.53 | Slope | 1.00 |
| | | Slope | 0.01 | Slope | 0.01 | Large stones content | 0.53 |
| Sewell | 30 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Large stones content | 0.76 | Large stones content | 0.76 | Gravel content | 1.00 |
| | | Gravel content | 0.08 | Gravel content | 0.08 | Slope | 1.00 |
| | | Slope | 0.01 | Slope | 0.01 | Large stones content | 0.76 |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |

Table 9.—Recreational Development, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Camp areas: Rating class and limiting features | Camp areas: Value | Picnic areas: Rating class and limiting features | Picnic areas: Value | Playgrounds: Rating class and limiting features | Playgrounds: Value |
|---|---|---|---|---|---|---|---|
| 5F: | | | | | | | |
| Cloverlick | 45 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Gravel content | 1.00 |
| | | Large stones content | 0.19 | Large stones content | 0.19 | Slope | 1.00 |
| | | Gravel content | 0.08 | Gravel content | 0.08 | Large stones content | 0.19 |
| Shelocta | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Gravel content | 1.00 |
| | | Gravel content | 0.32 | Gravel content | 0.32 | Slope | 1.00 |
| | | Large stones content | 0.31 | Large stones content | 0.31 | Large stones content | 0.31 |
| 6C: | | | | | | | |
| Cotaco | 90 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Depth to saturated zone | 0.39 | Slope | 0.37 | Slope | 1.00 |
| | | Slope | 0.37 | Depth to saturated zone | 0.19 | Depth to saturated zone | 0.39 |
| 7: | | | | | | | |
| Dumps, mine | 60 | Not rated | | Not rated | | Not rated | |
| Urban land | 30 | Not rated | | Not rated | | Not rated | |
| 8C: | | | | | | | |
| Fiveblock | 80 | Very limited | | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Large stones content | 1.00 |
| | | Gravel content | 0.94 | Gravel content | 0.94 | Gravel content | 1.00 |
| | | Slope | 0.01 | Slope | 0.01 | Slope | 1.00 |
| Sewell | 20 | Very limited | | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Large stones content | 1.00 |
| | | Gravel content | 0.08 | Gravel content | 0.08 | Gravel content | 1.00 |
| | | Slope | 0.01 | Slope | 0.01 | Slope | 1.00 |
| 9E: | | | | | | | |
| Gilpin | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Depth to bedrock | 0.10 |
| Berks | 30 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Depth to bedrock | 0.16 |
| 9F: | | | | | | | |
| Gilpin | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Depth to bedrock | 0.10 |
| Berks | 35 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Depth to bedrock | 0.16 |
| 10A: | | | | | | | |
| Grigsby | 81 | Very limited | | Not limited | | Somewhat limited | |
| | | Flooding | 1.00 | | | Flooding | 0.60 |

Table 9.—Recreational Development, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Camp areas: Rating class and limiting features | Value | Picnic areas: Rating class and limiting features | Value | Playgrounds: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 11F: | | | | | | | |
| Highsplint---------- | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.31 | Large stones content | 0.31 | Gravel content | 0.68 |
| | | | | | | Large stones content | 0.31 |
| Shelocta------------ | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Gravel content | 1.00 |
| | | Gravel content | 0.32 | Gravel content | 0.32 | Slope | 1.00 |
| | | Large stones content | 0.31 | Large stones content | 0.31 | Large stones content | 0.31 |
| 12F: | | | | | | | |
| Itmann-------------- | 95 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Gravel content | 1.00 |
| | | Gravel content | 0.01 | Gravel content | 0.01 | Slope | 1.00 |
| 13D: | | | | | | | |
| Kaymine------------- | 90 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Large stones content | 1.00 | Large stones content | 1.00 |
| | | Large stones content | 1.00 | Slope | 1.00 | Gravel content | 1.00 |
| | | Gravel content | 0.99 | Gravel content | 0.99 | Slope | 1.00 |
| 14E: | | | | | | | |
| Kaymine------------- | 85 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Large stones content | 1.00 | Large stones content | 1.00 |
| | | Large stones content | 1.00 | Slope | 1.00 | Gravel content | 1.00 |
| | | Gravel content | 0.99 | Gravel content | 0.99 | Slope | 1.00 |
| Cedarcreek---------- | 15 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Large stones content | 1.00 | Large stones content | 1.00 |
| | | Large stones content | 1.00 | Slope | 1.00 | Gravel content | 1.00 |
| | | Gravel content | 0.97 | Gravel content | 0.97 | Slope | 1.00 |
| 15C: | | | | | | | |
| Kaymine------------- | 55 | Very limited | | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Large stones content | 1.00 |
| | | Gravel content | 0.99 | Gravel content | 0.99 | Gravel content | 1.00 |
| | | Slope | 0.01 | Slope | 0.01 | Slope | 1.00 |
| Fiveblock----------- | 25 | Very limited | | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Large stones content | 1.00 |
| | | Gravel content | 0.94 | Gravel content | 0.94 | Gravel content | 1.00 |
| | | Slope | 0.01 | Slope | 0.01 | Slope | 1.00 |
| Cedarcreek---------- | 20 | Very limited | | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Large stones content | 1.00 |
| | | Gravel content | 0.97 | Gravel content | 0.97 | Gravel content | 1.00 |
| | | Slope | 0.01 | Slope | 0.01 | Slope | 1.00 |
| 16C: | | | | | | | |
| Lily---------------- | 85 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Slope | 0.63 | Slope | 0.63 | Slope | 1.00 |
| | | | | | | Depth to bedrock | 0.65 |

Table 9.—Recreational Development, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Camp areas: Rating class and limiting features | Value | Picnic areas: Rating class and limiting features | Value | Playgrounds: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 16D: | | | | | | | |
| Lily | 95 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Depth to bedrock | 0.65 |
| 16E: | | | | | | | |
| Lily | 80 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Depth to bedrock | 0.65 |
| 17D: | | | | | | | |
| Marrowbone | 50 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Depth to bedrock | 0.20 |
| Gilpin | 45 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Depth to bedrock | 0.10 |
| 17E: | | | | | | | |
| Marrowbone | 60 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Depth to bedrock | 0.20 |
| Gilpin | 35 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Depth to bedrock | 0.10 |
| 17F: | | | | | | | |
| Marrowbone | 75 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Depth to bedrock | 0.20 |
| Gilpin | 15 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Depth to bedrock | 0.10 |
| 18F: | | | | | | | |
| Matewan | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Large stones content | 1.00 | Large stones content | 1.00 |
| | | Large stones content | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 0.20 |
| Gilpin | 30 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Large stones content | 1.00 | Large stones content | 1.00 |
| | | Large stones content | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Depth to bedrock | 0.10 |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 19D: | | | | | | | |
| Oriskany | 95 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Large stones content | 1.00 | Large stones content | 1.00 |
| | | Large stones content | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Gravel content | 0.11 | Gravel content | 0.11 | Gravel content | 1.00 |

Table 9.—Recreational Development, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Camp areas: Rating class and limiting features | Value | Picnic areas: Rating class and limiting features | Value | Playgrounds: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 19E: | | | | | | | |
| Oriskany------------ | 95 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Large stones content | 1.00 | Large stones content | 1.00 |
| | | Large stones content | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Gravel content | 0.11 | Gravel content | 0.11 | Gravel content | 1.00 |
| 20A: | | | | | | | |
| Philo--------------- | 95 | Very limited | | Somewhat limited | | Somewhat limited | |
| | | Flooding | 1.00 | Depth to saturated zone | 0.60 | Depth to saturated zone | 0.90 |
| | | Depth to saturated zone | 0.90 | Too sandy | 0.01 | Flooding | 0.60 |
| | | Too sandy | 0.01 | | | Too sandy | 0.01 |
| 21F: | | | | | | | |
| Sewell-------------- | 55 | Very limited | | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Large stones content | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 | Gravel content | 1.00 |
| | | Gravel content | 0.08 | Gravel content | 0.08 | Slope | 1.00 |
| Kaymine------------- | 30 | Very limited | | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Large stones content | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 | Gravel content | 1.00 |
| | | Gravel content | 0.99 | Gravel content | 0.99 | Slope | 1.00 |
| Rock outcrop-------- | 10 | Not rated | | Not rated | | Not rated | |
| 22E: | | | | | | | |
| Shelocta------------ | 70 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Gravel content | 1.00 |
| | | Gravel content | 0.32 | Gravel content | 0.32 | Slope | 1.00 |
| | | Large stones content | 0.31 | Large stones content | 0.31 | Large stones content | 0.31 |
| Cedarcreek---------- | 25 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Gravel content | 1.00 |
| | | Gravel content | 0.97 | Gravel content | 0.97 | Slope | 1.00 |
| | | Large stones content | 0.31 | Large stones content | 0.31 | Large stones content | 0.31 |
| 23E: | | | | | | | |
| Shelocta------------ | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Gravel content | 1.00 |
| | | Gravel content | 0.32 | Gravel content | 0.32 | Slope | 1.00 |
| | | Large stones content | 0.31 | Large stones content | 0.31 | Large stones content | 0.31 |
| Cloverlick---------- | 35 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Gravel content | 1.00 |
| | | Large stones content | 0.19 | Large stones content | 0.19 | Slope | 1.00 |
| | | Gravel content | 0.08 | Gravel content | 0.08 | Large stones content | 0.19 |
| 24E: | | | | | | | |
| Shelocta------------ | 50 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Gravel content | 1.00 |
| | | Gravel content | 0.32 | Gravel content | 0.32 | Slope | 1.00 |
| | | Large stones content | 0.31 | Large stones content | 0.31 | Large stones content | 0.31 |

Table 9.—Recreational Development, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Camp areas: Rating class and limiting features | Camp areas: Value | Picnic areas: Rating class and limiting features | Picnic areas: Value | Playgrounds: Rating class and limiting features | Playgrounds: Value |
|---|---|---|---|---|---|---|---|
| 24E: | | | | | | | |
| Highsplint | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.31 | Large stones content | 0.31 | Gravel content | 0.68 |
| | | | | | | Large stones content | 0.31 |
| 25F: | | | | | | | |
| Shelocta | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Gravel content | 1.00 |
| | | Gravel content | 0.32 | Gravel content | 0.32 | Slope | 1.00 |
| | | Large stones content | 0.31 | Large stones content | 0.31 | Large stones content | 0.31 |
| Kaymine | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Gravel content | 1.00 |
| | | Gravel content | 0.99 | Gravel content | 0.99 | Slope | 1.00 |
| | | Large stones content | 0.31 | Large stones content | 0.31 | Large stones content | 0.31 |
| 26F: | | | | | | | |
| Stonecoal | 85 | Very limited | | Very limited | | Very limited | |
| | | Gravel content | 1.00 | Gravel content | 1.00 | Gravel content | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.02 | Large stones content | 0.02 | Large stones content | 0.02 |
| 27: | | | | | | | |
| Udorthents | 45 | Not rated | | Not rated | | Not rated | |
| Urban land | 30 | Not rated | | Not rated | | Not rated | |
| 28: | | | | | | | |
| Udorthents | 45 | Not rated | | Not rated | | Not rated | |
| Urban land | 35 | Not rated | | Not rated | | Not rated | |
| 29D: | | | | | | | |
| Wallen | 90 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.47 | Large stones content | 0.47 | Gravel content | 1.00 |
| | | | | | | Depth to bedrock | 0.90 |
| | | Gravel content | 0.04 | Gravel content | 0.04 | | |
| 29F: | | | | | | | |
| Wallen | 75 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.47 | Large stones content | 0.47 | Gravel content | 1.00 |
| | | | | | | Depth to bedrock | 0.90 |
| | | Gravel content | 0.04 | Gravel content | 0.04 | | |
| 30F: | | | | | | | |
| Wallen | 85 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Large stones content | 1.00 | Large stones content | 1.00 |
| | | Large stones content | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Gravel content | 0.04 | Gravel content | 0.04 | Gravel content | 1.00 |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |

Table 9.—Recreational Development, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Camp areas: Rating class and limiting features | Camp areas: Value | Picnic areas: Rating class and limiting features | Picnic areas: Value | Playgrounds: Rating class and limiting features | Playgrounds: Value |
|---|---|---|---|---|---|---|---|
| 31D: | | | | | | | |
| Wharton | 45 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Depth to saturated zone | 0.93 | Depth to saturated zone | 0.64 | Depth to saturated zone | 0.93 |
| | | Slow water movement | 0.55 | Slow water movement | 0.55 | Slow water movement | 0.55 |
| Gilpin | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Depth to bedrock | 0.10 |
| Berks | 15 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Depth to bedrock | 0.16 |
| 32C: | | | | | | | |
| Wharton | 45 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Depth to saturated zone | 0.93 | Depth to saturated zone | 0.64 | Slope | 1.00 |
| | | Slow water movement | 0.55 | Slow water movement | 0.55 | Depth to saturated zone | 0.93 |
| | | Slope | 0.16 | Slope | 0.16 | Slow water movement | 0.55 |
| Gilpin | 35 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Slope | 0.16 | Slope | 0.16 | Slope | 1.00 |
| | | | | | | Depth to bedrock | 0.10 |
| Marrowbone | 20 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Slope | 0.16 | Slope | 0.16 | Slope | 1.00 |
| | | | | | | Depth to bedrock | 0.20 |
| W: | | | | | | | |
| Water | 100 | Not rated | | Not rated | | Not rated | |

Table 9.—Recreational Development, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

| Map symbol and soil name | Pct. of map unit | Paths and trails | | Off-road motorcycle trails | | Golf fairways | |
|---|---|---|---|---|---|---|---|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| 1D: | | | | | | | |
| Calvin---------------- | 85 | Very limited | | Not limited | | Very limited | |
| | | Slope | 1.00 | | | Slope | 1.00 |
| | | | | | | Depth to bedrock | 0.46 |
| | | | | | | Droughty | 0.02 |
| 2F: | | | | | | | |
| Calvin---------------- | 70 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.53 | Large stones content | 0.53 | Depth to bedrock | 0.46 |
| | | | | | | Droughty | 0.02 |
| Rough----------------- | 20 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Large stones content | 0.53 | Large stones content | 0.53 | Slope | 1.00 |
| | | | | | | Droughty | 1.00 |
| 3F: | | | | | | | |
| Cedarcreek------------ | 35 | Very limited | | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 0.97 |
| | | Slope | 1.00 | Slope | 1.00 | Droughty | 0.88 |
| Fiveblock------------- | 30 | Very limited | | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Slope | 1.00 |
| | | | | | | Droughty | 0.99 |
| | | Slope | 1.00 | Slope | 1.00 | Gravel content | 0.94 |
| Kaymine--------------- | 25 | Very limited | | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 0.99 |
| | | Slope | 1.00 | Slope | 1.00 | Droughty | 0.01 |
| 4C: | | | | | | | |
| Cedarcreek------------ | 35 | Somewhat limited | | Somewhat limited | | Somewhat limited | |
| | | Large stones content | 0.53 | Large stones content | 0.53 | Gravel content | 0.97 |
| | | | | | | Droughty | 0.88 |
| | | | | | | Large stones content | 0.38 |
| Sewell---------------- | 30 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Large stones content | 0.76 | Large stones content | 0.76 | Droughty | 1.00 |
| | | | | | | Large stones content | 0.26 |
| | | | | | | Gravel content | 0.08 |
| Rock outcrop---------- | 10 | Not rated | | Not rated | | Not rated | |
| 5F: | | | | | | | |
| Cloverlick------------ | 45 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.19 | Large stones content | 0.19 | Gravel content | 0.08 |

Table 9.—Recreational Development, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Paths and trails: Rating class and limiting features | Value | Off-road motorcycle trails: Rating class and limiting features | Value | Golf fairways: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 5F: | | | | | | | |
| Shelocta------------ | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.31 | Large stones content | 0.31 | Gravel content | 0.32 |
| 6C: | | | | | | | |
| Cotaco-------------- | 90 | Not limited | | Not limited | | Somewhat limited | |
| | | | | | | Slope | 0.37 |
| | | | | | | Depth to saturated zone | 0.19 |
| 7: | | | | | | | |
| Dumps, mine--------- | 60 | Not rated | | Not rated | | Not rated | |
| Urban land---------- | 30 | Not rated | | Not rated | | Not rated | |
| 8C: | | | | | | | |
| Fiveblock----------- | 80 | Very limited | | Very limited | | Somewhat limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Droughty | 0.99 |
| | | | | | | Gravel content | 0.94 |
| | | | | | | Large stones content | 0.46 |
| Sewell-------------- | 20 | Very limited | | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Droughty | 1.00 |
| | | | | | | Large stones content | 0.26 |
| | | | | | | Gravel content | 0.08 |
| 9E: | | | | | | | |
| Gilpin-------------- | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Water erosion | 1.00 | Slope | 1.00 |
| | | Water erosion | 1.00 | Slope | 0.22 | Depth to bedrock | 0.10 |
| Berks--------------- | 30 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Water erosion | 1.00 | Slope | 1.00 |
| | | Water erosion | 1.00 | Slope | 0.22 | Depth to bedrock | 0.16 |
| | | | | | | Droughty | 0.09 |
| 9F: | | | | | | | |
| Gilpin-------------- | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Water erosion | 1.00 | Slope | 1.00 |
| | | Water erosion | 1.00 | Slope | 1.00 | Depth to bedrock | 0.10 |
| Berks--------------- | 35 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Water erosion | 1.00 | Slope | 1.00 |
| | | Water erosion | 1.00 | Slope | 1.00 | Depth to bedrock | 0.16 |
| | | | | | | Droughty | 0.09 |
| 10A: | | | | | | | |
| Grigsby------------- | 81 | Not limited | | Not limited | | Somewhat limited | |
| | | | | | | Flooding | 0.60 |
| 11F: | | | | | | | |
| Highsplint---------- | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.31 | Large stones content | 0.31 | Large stones content | 0.01 |

Table 9.—Recreational Development, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Paths and trails: Rating class and limiting features | Value | Off-road motorcycle trails: Rating class and limiting features | Value | Golf fairways: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 11F: | | | | | | | |
| Shelocta | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.31 | Large stones content | 0.31 | Gravel content | 0.32 |
| 12F: | | | | | | | |
| Itmann | 95 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Droughty | 0.99 |
| | | | | | | Gravel content | 0.01 |
| 13D: | | | | | | | |
| Kaymine | 90 | Very limited | | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 0.99 |
| | | Slope | 1.00 | | | Droughty | 0.01 |
| 14E: | | | | | | | |
| Kaymine | 85 | Very limited | | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 0.99 |
| | | Slope | 1.00 | Slope | 1.00 | Droughty | 0.01 |
| Cedarcreek | 15 | Very limited | | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 0.97 |
| | | Slope | 1.00 | Slope | 1.00 | Droughty | 0.88 |
| 15C: | | | | | | | |
| Kaymine | 55 | Very limited | | Very limited | | Somewhat limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Gravel content | 0.99 |
| | | | | | | Droughty | 0.01 |
| | | | | | | Slope | 0.01 |
| Fiveblock | 25 | Very limited | | Very limited | | Somewhat limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Droughty | 0.99 |
| | | | | | | Gravel content | 0.94 |
| | | | | | | Large stones content | 0.46 |
| Cedarcreek | 20 | Very limited | | Very limited | | Somewhat limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Gravel content | 0.97 |
| | | | | | | Droughty | 0.88 |
| | | | | | | Large stones content | 0.38 |
| 16C: | | | | | | | |
| Lily | 85 | Not limited | | Not limited | | Somewhat limited | |
| | | | | | | Depth to bedrock | 0.65 |
| | | | | | | Slope | 0.63 |
| 16D: | | | | | | | |
| Lily | 95 | Very limited | | Not limited | | Very limited | |
| | | Slope | 1.00 | | | Slope | 1.00 |
| | | | | | | Depth to bedrock | 0.65 |

Table 9.—Recreational Development, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Paths and trails: Rating class and limiting features | Value | Off-road motorcycle trails: Rating class and limiting features | Value | Golf fairways: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 16E: | | | | | | | |
| Lily---------------- | 80 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Depth to bedrock | 0.65 |
| 17D: | | | | | | | |
| Marrowbone---------- | 50 | Somewhat limited | | Not limited | | Very limited | |
| | | Slope | 0.50 | | | Slope | 1.00 |
| | | | | | | Droughty | 0.75 |
| | | | | | | Depth to bedrock | 0.20 |
| Gilpin-------------- | 45 | Very limited | | Very limited | | Very limited | |
| | | Water erosion | 1.00 | Water erosion | 1.00 | Slope | 1.00 |
| | | Slope | 0.50 | | | Depth to bedrock | 0.10 |
| 17E: | | | | | | | |
| Marrowbone---------- | 60 | Very limited | | Somewhat limited | | Very limited | |
| | | Slope | 1.00 | Slope | 0.22 | Slope | 1.00 |
| | | | | | | Droughty | 0.75 |
| | | | | | | Depth to bedrock | 0.20 |
| Gilpin-------------- | 35 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Water erosion | 1.00 | Slope | 1.00 |
| | | Water erosion | 1.00 | Slope | 0.22 | Depth to bedrock | 0.10 |
| 17F: | | | | | | | |
| Marrowbone---------- | 75 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Droughty | 0.75 |
| | | | | | | Depth to bedrock | 0.20 |
| Gilpin-------------- | 15 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Water erosion | 1.00 | Slope | 1.00 |
| | | Water erosion | 1.00 | Slope | 1.00 | Depth to bedrock | 0.10 |
| 18F: | | | | | | | |
| Matewan------------- | 55 | Very limited | | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Slope | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 | Large stones content | 0.54 |
| | | | | | | Droughty | 0.41 |
| Gilpin-------------- | 30 | Very limited | | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Slope | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 0.10 |
| | | Water erosion | 1.00 | Water erosion | 1.00 | | |
| Rock outcrop-------- | 10 | Not rated | | Not rated | | Not rated | |
| 19D: | | | | | | | |
| Oriskany------------ | 95 | Very limited | | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Slope | 1.00 |
| | | Slope | 1.00 | | | Large stones content | 0.92 |
| | | | | | | Gravel content | 0.11 |

Table 9.—Recreational Development, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Paths and trails: Rating class and limiting features | Value | Off-road motorcycle trails: Rating class and limiting features | Value | Golf fairways: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 19E: | | | | | | | |
| Oriskany------------ | 95 | Very limited | | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Slope | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 | Large stones content | 0.92 |
| | | | | | | Gravel content | 0.11 |
| 20A: | | | | | | | |
| Philo--------------- | 95 | Somewhat limited | | Somewhat limited | | Somewhat limited | |
| | | Depth to saturated zone | 0.22 | Depth to saturated zone | 0.22 | Depth to saturated zone | 0.60 |
| | | Too sandy | 0.01 | Too sandy | 0.01 | Flooding | 0.60 |
| 21F: | | | | | | | |
| Sewell-------------- | 55 | Very limited | | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Slope | 1.00 |
| | | | | | | Droughty | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 | Large stones content | 0.26 |
| Kaymine------------- | 30 | Very limited | | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 0.99 |
| | | Slope | 1.00 | Slope | 1.00 | Droughty | 0.01 |
| Rock outcrop-------- | 10 | Not rated | | Not rated | | Not rated | |
| 22E: | | | | | | | |
| Shelocta------------ | 70 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.31 | Large stones content | 0.31 | Gravel content | 0.32 |
| Cedarcreek---------- | 25 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.31 | Large stones content | 0.31 | Gravel content | 0.97 |
| | | | | | | Droughty | 0.88 |
| 23E: | | | | | | | |
| Shelocta------------ | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.31 | Large stones content | 0.31 | Gravel content | 0.32 |
| Cloverlick---------- | 35 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.19 | Large stones content | 0.19 | Gravel content | 0.08 |
| 24E: | | | | | | | |
| Shelocta------------ | 50 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.31 | Large stones content | 0.31 | Gravel content | 0.32 |
| Highsplint---------- | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.31 | Large stones content | 0.31 | Large stones content | 0.01 |

Table 9.—Recreational Development, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Paths and trails: Rating class and limiting features | Value | Off-road motorcycle trails: Rating class and limiting features | Value | Golf fairways: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 25F: | | | | | | | |
| Shelocta | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.31 | Large stones content | 0.31 | Gravel content | 0.32 |
| Kaymine | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.31 | Large stones content | 0.31 | Gravel content | 0.99 |
| | | | | | | Droughty | 0.01 |
| 26F: | | | | | | | |
| Stonecoal | 85 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Droughty | 1.00 |
| | | Large stones content | 0.02 | Large stones content | 0.02 | Gravel content | 1.00 |
| | | | | | | Slope | 1.00 |
| 27: | | | | | | | |
| Udorthents | 45 | Not rated | | Not rated | | Not rated | |
| Urban land | 30 | Not rated | | Not rated | | Not rated | |
| 28: | | | | | | | |
| Udorthents | 45 | Not rated | | Not rated | | Not rated | |
| Urban land | 35 | Not rated | | Not rated | | Not rated | |
| 29D: | | | | | | | |
| Wallen | 90 | Very limited | | Somewhat limited | | Very limited | |
| | | Slope | 1.00 | Large stones content | 0.47 | Slope | 1.00 |
| | | Large stones content | 0.47 | | | Droughty | 0.99 |
| | | | | | | Depth to bedrock | 0.90 |
| 29F: | | | | | | | |
| Wallen | 75 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.47 | Large stones content | 0.47 | Droughty | 0.99 |
| | | | | | | Depth to bedrock | 0.90 |
| 30F: | | | | | | | |
| Wallen | 85 | Very limited | | Very limited | | Very limited | |
| | | Large stones content | 1.00 | Large stones content | 1.00 | Slope | 1.00 |
| | | | | | | Droughty | 0.99 |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 0.90 |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 31D: | | | | | | | |
| Wharton | 45 | Very limited | | Very limited | | Very limited | |
| | | Water erosion | 1.00 | Water erosion | 1.00 | Slope | 1.00 |
| | | Slope | 0.32 | Depth to saturated zone | 0.27 | Depth to saturated zone | 0.64 |
| | | Depth to saturated zone | 0.27 | | | | |
| Gilpin | 40 | Very limited | | Very limited | | Very limited | |
| | | Water erosion | 1.00 | Water erosion | 1.00 | Slope | 1.00 |
| | | Slope | 0.50 | | | Depth to bedrock | 0.10 |

Table 9.—Recreational Development, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Paths and trails: Rating class and limiting features | Value | Off-road motorcycle trails: Rating class and limiting features | Value | Golf fairways: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 31D: | | | | | | | |
| Berks | 15 | Very limited | | Very limited | | Very limited | |
| | | Water erosion | 1.00 | Water erosion | 1.00 | Slope | 1.00 |
| | | Slope | 0.50 | | | Depth to bedrock | 0.16 |
| | | | | | | Droughty | 0.09 |
| 32C: | | | | | | | |
| Wharton | 45 | Very limited | | Very limited | | Somewhat limited | |
| | | Water erosion | 1.00 | Water erosion | 1.00 | Depth to saturated zone | 0.64 |
| | | Depth to saturated zone | 0.27 | Depth to saturated zone | 0.27 | Slope | 0.16 |
| Gilpin | 35 | Very limited | | Very limited | | Somewhat limited | |
| | | Water erosion | 1.00 | Water erosion | 1.00 | Slope | 0.16 |
| | | | | | | Depth to bedrock | 0.10 |
| Marrowbone | 20 | Not limited | | Not limited | | Somewhat limited | |
| | | | | | | Droughty | 0.75 |
| | | | | | | Depth to bedrock | 0.20 |
| | | | | | | Slope | 0.16 |
| W: | | | | | | | |
| Water | 100 | Not rated | | Not rated | | Not rated | |

Table 10.—Building Site Development, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

| Map symbol and soil name | Pct. of map unit | Dwellings without basements | | Dwellings with basements | | Small commercial buildings | |
|---|---|---|---|---|---|---|---|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| 1D: | | | | | | | |
| Calvin | 85 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.46 | Depth to hard bedrock | 1.00 | Depth to hard bedrock | 0.46 |
| 2F: | | | | | | | |
| Calvin | 70 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.46 | Depth to hard bedrock | 1.00 | Depth to hard bedrock | 0.46 |
| Rough | 20 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 1.00 | Depth to hard bedrock | 1.00 | Depth to hard bedrock | 1.00 |
| 3F: | | | | | | | |
| Cedarcreek | 35 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Unstable fill | 1.00 | Unstable fill | 1.00 |
| Fiveblock | 30 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Unstable fill | 1.00 | Unstable fill | 1.00 |
| | | Large stones content | 0.05 | Large stones content | 0.05 | Large stones content | 0.05 |
| Kaymine | 25 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Unstable fill | 1.00 | Unstable fill | 1.00 |
| | | Large stones content | 0.03 | Large stones content | 0.03 | Large stones content | 0.03 |
| 4C: | | | | | | | |
| Cedarcreek | 35 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Slope | 0.01 | Slope | 0.01 | Slope | 1.00 |
| Sewell | 30 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Large stones content | 0.10 | Large stones content | 0.10 | Slope | 1.00 |
| | | Slope | 0.01 | Slope | 0.01 | Large stones content | 0.10 |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 5F: | | | | | | | |
| Cloverlick | 45 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| Shelocta | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |

Table 10.—Building Site Development, Part I--Continued

| Map symbol and soil name | Pct. of map unit | Dwellings without basements: Rating class and limiting features | Value | Dwellings with basements: Rating class and limiting features | Value | Small commercial buildings: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 6C: | | | | | | | |
| Cotaco | 90 | Somewhat limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 0.39 | Depth to saturated zone | 1.00 | Slope | 1.00 |
| | | Slope | 0.37 | Slope | 0.37 | Depth to saturated zone | 0.39 |
| 7: | | | | | | | |
| Dumps, mine | 60 | Not rated | | Not rated | | Not rated | |
| Urban land | 30 | Not rated | | Not rated | | Not rated | |
| 8C: | | | | | | | |
| Fiveblock | 80 | Very limited | | Very limited | | Very limited | |
| | | Unstable fill | 1.00 | Unstable fill | 1.00 | Unstable fill | 1.00 |
| | | Large stones content | 0.05 | Large stones content | 0.05 | Slope | 1.00 |
| | | Slope | 0.01 | Slope | 0.01 | Large stones content | 0.05 |
| Sewell | 20 | Very limited | | Very limited | | Very limited | |
| | | Unstable fill | 1.00 | Unstable fill | 1.00 | Unstable fill | 1.00 |
| | | Large stones content | 0.10 | Large stones content | 0.10 | Slope | 1.00 |
| | | Slope | 0.01 | Slope | 0.01 | Large stones content | 0.10 |
| 9E: | | | | | | | |
| Gilpin | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.01 | Depth to hard bedrock | 1.00 | Depth to hard bedrock | 0.01 |
| | | | | Depth to soft bedrock | 0.10 | | |
| Berks | 30 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.06 | Depth to hard bedrock | 1.00 | Depth to hard bedrock | 0.06 |
| | | | | Depth to soft bedrock | 0.15 | | |
| 9F: | | | | | | | |
| Gilpin | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.01 | Depth to hard bedrock | 1.00 | Depth to hard bedrock | 0.01 |
| | | | | Depth to soft bedrock | 0.10 | | |
| Berks | 35 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.06 | Depth to hard bedrock | 1.00 | Depth to hard bedrock | 0.06 |
| | | | | Depth to soft bedrock | 0.15 | | |
| 10A: | | | | | | | |
| Grigsby | 81 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | | | Depth to saturated zone | 0.18 | | |

Table 10.—Building Site Development, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Dwellings without basements: Rating class and limiting features | Value | Dwellings with basements: Rating class and limiting features | Value | Small commercial buildings: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 11F: | | | | | | | |
| Highsplint---------- | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.01 | Large stones content | 0.01 | Large stones content | 0.01 |
| Shelocta------------ | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| 12F: | | | | | | | |
| Itmann-------------- | 95 | Very limited | | Very limited | | Very limited | |
| | | Unstable fill | 1.00 | Unstable fill | 1.00 | Unstable fill | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| 13D: | | | | | | | |
| Kaymine------------- | 90 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Unstable fill | 1.00 | Unstable fill | 1.00 |
| | | Large stones content | 0.03 | Large stones content | 0.03 | Large stones content | 0.03 |
| 14E: | | | | | | | |
| Kaymine------------- | 85 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Unstable fill | 1.00 | Unstable fill | 1.00 |
| | | Large stones content | 0.03 | Large stones content | 0.03 | Large stones content | 0.03 |
| Cedarcreek---------- | 15 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Unstable fill | 1.00 | Unstable fill | 1.00 |
| 15C: | | | | | | | |
| Kaymine------------- | 55 | Very limited | | Very limited | | Very limited | |
| | | Unstable fill | 1.00 | Unstable fill | 1.00 | Unstable fill | 1.00 |
| | | Large stones content | 0.03 | Large stones content | 0.03 | Slope | 1.00 |
| | | Slope | 0.01 | Slope | 0.01 | Large stones content | 0.03 |
| Fiveblock----------- | 25 | Very limited | | Very limited | | Very limited | |
| | | Unstable fill | 1.00 | Unstable fill | 1.00 | Unstable fill | 1.00 |
| | | Large stones content | 0.05 | Large stones content | 0.05 | Slope | 1.00 |
| | | Slope | 0.01 | Slope | 0.01 | Large stones content | 0.05 |
| Cedarcreek---------- | 20 | Very limited | | Very limited | | Very limited | |
| | | Unstable fill | 1.00 | Unstable fill | 1.00 | Unstable fill | 1.00 |
| | | Slope | 0.01 | Slope | 0.01 | Slope | 1.00 |
| 16C: | | | | | | | |
| Lily---------------- | 85 | Somewhat limited | | Very limited | | Very limited | |
| | | Depth to hard bedrock | 0.64 | Depth to hard bedrock | 1.00 | Slope | 1.00 |
| | | Slope | 0.63 | Slope | 0.63 | Depth to hard bedrock | 0.64 |
| 16D: | | | | | | | |
| Lily---------------- | 95 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.64 | Depth to hard bedrock | 1.00 | Depth to hard bedrock | 0.64 |

Table 10.—Building Site Development, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Dwellings without basements: Rating class and limiting features | Value | Dwellings with basements: Rating class and limiting features | Value | Small commercial buildings: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 16E: | | | | | | | |
| Lily | 80 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.64 | Depth to hard bedrock | 1.00 | Depth to hard bedrock | 0.64 |
| 17D: | | | | | | | |
| Marrowbone | 50 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | Depth to hard bedrock | 0.84 | | |
| | | | | Depth to soft bedrock | 0.20 | | |
| Gilpin | 45 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.01 | Depth to hard bedrock | 1.00 | Depth to hard bedrock | 0.01 |
| | | | | Depth to soft bedrock | 0.10 | | |
| 17E: | | | | | | | |
| Marrowbone | 60 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | Depth to hard bedrock | 0.84 | | |
| | | | | Depth to soft bedrock | 0.20 | | |
| Gilpin | 35 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.01 | Depth to hard bedrock | 1.00 | Depth to hard bedrock | 0.01 |
| | | | | Depth to soft bedrock | 0.10 | | |
| 17F: | | | | | | | |
| Marrowbone | 75 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | Depth to hard bedrock | 0.84 | | |
| | | | | Depth to soft bedrock | 0.20 | | |
| Gilpin | 15 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.01 | Depth to hard bedrock | 1.00 | Depth to hard bedrock | 0.01 |
| | | | | Depth to soft bedrock | 0.10 | | |
| 18F: | | | | | | | |
| Matewan | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.01 | Depth to hard bedrock | 1.00 | Depth to hard bedrock | 0.01 |

Table 10.—Building Site Development, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Dwellings without basements: Rating class and limiting features | Value | Dwellings with basements: Rating class and limiting features | Value | Small commercial buildings: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 18F: | | | | | | | |
| Gilpin | 30 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.01 | Depth to hard bedrock | 1.00 | Depth to hard bedrock | 0.01 |
| | | | | Depth to soft bedrock | 0.10 | | |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 19D: | | | | | | | |
| Oriskany | 95 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.01 | Large stones content | 0.01 | Large stones content | 0.01 |
| 19E: | | | | | | | |
| Oriskany | 95 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.01 | Large stones content | 0.01 | Large stones content | 0.01 |
| 20A: | | | | | | | |
| Philo | 95 | Very limited | | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 0.90 | Depth to saturated zone | 1.00 | Depth to saturated zone | 0.90 |
| 21F: | | | | | | | |
| Sewell | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.10 | Large stones content | 0.10 | Large stones content | 0.10 |
| Kaymine | 30 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.03 | Large stones content | 0.03 | Large stones content | 0.03 |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 22E: | | | | | | | |
| Shelocta | 70 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| Cedarcreek | 25 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Unstable fill | 1.00 | Unstable fill | 1.00 |
| 23E: | | | | | | | |
| Shelocta | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| Cloverlick | 35 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| 24E: | | | | | | | |
| Shelocta | 50 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |

Table 10.—Building Site Development, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Dwellings without basements: Rating class and limiting features | Value | Dwellings with basements: Rating class and limiting features | Value | Small commercial buildings: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 24E: | | | | | | | |
| Highsplint---------- | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.01 | Large stones content | 0.01 | Large stones content | 0.01 |
| 25F: | | | | | | | |
| Shelocta------------ | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| Kaymine------------- | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Unstable fill | 1.00 | Unstable fill | 1.00 |
| | | Large stones content | 0.03 | Large stones content | 0.03 | Large stones content | 0.03 |
| 26F: | | | | | | | |
| Stonecoal----------- | 85 | Very limited | | Very limited | | Very limited | |
| | | Unstable fill | 1.00 | Unstable fill | 1.00 | Unstable fill | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.08 | Large stones content | 0.08 | Large stones content | 0.08 |
| 27: | | | | | | | |
| Udorthents---------- | 45 | Not rated | | Not rated | | Not rated | |
| Urban land---------- | 30 | Not rated | | Not rated | | Not rated | |
| 28: | | | | | | | |
| Udorthents---------- | 45 | Not rated | | Not rated | | Not rated | |
| Urban land---------- | 35 | Not rated | | Not rated | | Not rated | |
| 29D: | | | | | | | |
| Wallen-------------- | 90 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.90 | Depth to hard bedrock | 1.00 | Depth to hard bedrock | 0.90 |
| 29F: | | | | | | | |
| Wallen-------------- | 75 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.90 | Depth to hard bedrock | 1.00 | Depth to hard bedrock | 0.90 |
| 30F: | | | | | | | |
| Wallen-------------- | 85 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.90 | Depth to hard bedrock | 1.00 | Depth to hard bedrock | 0.90 |
| Rock outcrop-------- | 10 | Not rated | | Not rated | | Not rated | |
| 31D: | | | | | | | |
| Wharton------------- | 45 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Depth to saturated zone | 0.93 | Depth to saturated zone | 1.00 | Depth to saturated zone | 0.93 |

Table 10.—Building Site Development, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Dwellings without basements: Rating class and limiting features | Value | Dwellings with basements: Rating class and limiting features | Value | Small commercial buildings: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 31D: | | | | | | | |
| Gilpin | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.01 | Depth to hard bedrock | 1.00 | Depth to hard bedrock | 0.01 |
| | | | | Depth to soft bedrock | 0.10 | | |
| Berks | 15 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.06 | Depth to hard bedrock | 1.00 | Depth to hard bedrock | 0.06 |
| | | | | Depth to soft bedrock | 0.15 | | |
| 32C: | | | | | | | |
| Wharton | 45 | Somewhat limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 0.93 | Depth to saturated zone | 1.00 | Slope | 1.00 |
| | | Slope | 0.16 | Slope | 0.16 | Depth to saturated zone | 0.93 |
| Gilpin | 35 | Somewhat limited | | Very limited | | Very limited | |
| | | Slope | 0.16 | Depth to hard bedrock | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.01 | Slope | 0.16 | Depth to hard bedrock | 0.01 |
| | | | | Depth to soft bedrock | 0.10 | | |
| Marrowbone | 20 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Slope | 0.16 | Depth to hard bedrock | 0.84 | Slope | 1.00 |
| | | | | Depth to soft bedrock | 0.20 | | |
| | | | | Slope | 0.16 | | |
| W: | | | | | | | |
| Water | 100 | Not rated | | Not rated | | Not rated | |

Table 10.—Building Site Development, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

| Map symbol and soil name | Pct. of map unit | Local roads and streets | | Shallow excavations | | Lawns and landscaping | |
|---|---|---|---|---|---|---|---|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| 1D: | | | | | | | |
| Calvin--------------- | 85 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to hard bedrock | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Slope | 1.00 | Depth to bedrock | 0.46 |
| | | Depth to hard bedrock | 0.46 | Cutbanks cave | 0.10 | Droughty | 0.02 |
| 2F: | | | | | | | |
| Calvin--------------- | 70 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to hard bedrock | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Slope | 1.00 | Depth to bedrock | 0.46 |
| | | Depth to hard bedrock | 0.46 | Cutbanks cave | 0.10 | Droughty | 0.02 |
| Rough---------------- | 20 | Very limited | | Very limited | | Very limited | |
| | | Depth to hard bedrock | 1.00 | Depth to hard bedrock | 1.00 | Depth to bedrock | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Cutbanks cave | 0.10 | Droughty | 1.00 |
| 3F: | | | | | | | |
| Cedarcreek----------- | 35 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Cutbanks cave | 0.10 | Gravel content | 0.97 |
| | | Frost action | 0.50 | | | Droughty | 0.88 |
| Fiveblock------------ | 30 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Cutbanks cave | 0.10 | Droughty | 0.99 |
| | | Frost action | 0.50 | Large stones content | 0.05 | Gravel content | 0.94 |
| Kaymine-------------- | 25 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Cutbanks cave | 0.10 | Gravel content | 0.99 |
| | | Frost action | 0.50 | Large stones content | 0.03 | Droughty | 0.01 |
| 4C: | | | | | | | |
| Cedarcreek----------- | 35 | Somewhat limited | | Somewhat limited | | Somewhat limited | |
| | | Frost action | 0.50 | Cutbanks cave | 0.10 | Gravel content | 0.97 |
| | | Slope | 0.01 | Slope | 0.01 | Droughty | 0.88 |
| | | | | | | Large stones content | 0.38 |
| Sewell--------------- | 30 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Frost action | 0.50 | Cutbanks cave | 0.10 | Droughty | 1.00 |
| | | Large stones content | 0.10 | Large stones content | 0.10 | Large stones content | 0.26 |
| | | Slope | 0.01 | Slope | 0.01 | Gravel content | 0.08 |
| Rock outcrop--------- | 10 | Not rated | | Not rated | | Not rated | |

Table 10.—Building Site Development, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Local roads and streets: Rating class and limiting features | Value | Shallow excavations: Rating class and limiting features | Value | Lawns and landscaping: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 5F: | | | | | | | |
| Cloverlick---------- | 45 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Cutbanks cave | 1.00 | Gravel content | 0.08 |
| Shelocta------------ | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Cutbanks cave | 1.00 | Gravel content | 0.32 |
| 6C: | | | | | | | |
| Cotaco-------------- | 90 | Very limited | | Very limited | | Somewhat limited | |
| | | Frost action | 1.00 | Depth to saturated zone | 1.00 | Slope | 0.37 |
| | | Low strength | 1.00 | Slope | 0.37 | Depth to saturated zone | 0.19 |
| | | Slope | 0.37 | Cutbanks cave | 0.10 | | |
| 7: | | | | | | | |
| Dumps, mine--------- | 60 | Not rated | | Not rated | | Not rated | |
| Urban land---------- | 30 | Not rated | | Not rated | | Not rated | |
| 8C: | | | | | | | |
| Fiveblock----------- | 80 | Very limited | | Somewhat limited | | Somewhat limited | |
| | | Unstable fill | 1.00 | Cutbanks cave | 0.10 | Droughty | 0.99 |
| | | Frost action | 0.50 | Large stones content | 0.05 | Gravel content | 0.94 |
| | | Large stones content | 0.05 | Slope | 0.01 | Large stones content | 0.46 |
| Sewell-------------- | 20 | Very limited | | Somewhat limited | | Very limited | |
| | | Unstable fill | 1.00 | Cutbanks cave | 0.10 | Droughty | 1.00 |
| | | Frost action | 0.50 | Large stones content | 0.10 | Large stones content | 0.26 |
| | | Large stones content | 0.10 | Slope | 0.01 | Gravel content | 0.08 |
| 9E: | | | | | | | |
| Gilpin-------------- | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to hard bedrock | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Slope | 1.00 | Depth to bedrock | 0.10 |
| | | Depth to hard bedrock | 0.01 | Cutbanks cave | 1.00 | | |
| Berks--------------- | 30 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to hard bedrock | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Slope | 1.00 | Depth to bedrock | 0.16 |
| | | Depth to hard bedrock | 0.06 | Depth to soft bedrock | 0.15 | Droughty | 0.09 |
| 9F: | | | | | | | |
| Gilpin-------------- | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to hard bedrock | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Slope | 1.00 | Depth to bedrock | 0.10 |
| | | Depth to hard bedrock | 0.01 | Cutbanks cave | 1.00 | | |
| Berks--------------- | 35 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to hard bedrock | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Slope | 1.00 | Depth to bedrock | 0.16 |
| | | Depth to hard bedrock | 0.06 | Depth to soft bedrock | 0.15 | Droughty | 0.09 |

Table 10.—Building Site Development, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Local roads and streets: Rating class and limiting features | Value | Shallow excavations: Rating class and limiting features | Value | Lawns and landscaping: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 10A: | | | | | | | |
| Grigsby------------- | 81 | Very limited | | Very limited | | Somewhat limited | |
| | | Flooding | 1.00 | Cutbanks cave | 1.00 | Flooding | 0.60 |
| | | | | Flooding | 0.60 | | |
| | | | | Depth to saturated zone | 0.18 | | |
| 11F: | | | | | | | |
| Highsplint---------- | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Cutbanks cave | 0.10 | Large stones content | 0.01 |
| | | Large stones content | 0.01 | Large stones content | 0.01 | | |
| Shelocta------------ | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Cutbanks cave | 1.00 | Gravel content | 0.32 |
| 12F: | | | | | | | |
| Itmann-------------- | 95 | Very limited | | Very limited | | Very limited | |
| | | Unstable fill | 1.00 | Cutbanks cave | 1.00 | Slope | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 | Droughty | 0.99 |
| | | Frost action | 0.50 | | | Gravel content | 0.01 |
| 13D: | | | | | | | |
| Kaymine------------- | 90 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Cutbanks cave | 0.10 | Gravel content | 0.99 |
| | | Frost action | 0.50 | Large stones content | 0.03 | Droughty | 0.01 |
| 14E: | | | | | | | |
| Kaymine------------- | 85 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Cutbanks cave | 0.10 | Gravel content | 0.99 |
| | | Frost action | 0.50 | Large stones content | 0.03 | Droughty | 0.01 |
| Cedarcreek---------- | 15 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Cutbanks cave | 0.10 | Gravel content | 0.97 |
| | | Frost action | 0.50 | | | Droughty | 0.88 |
| 15C: | | | | | | | |
| Kaymine------------- | 55 | Very limited | | Somewhat limited | | Somewhat limited | |
| | | Unstable fill | 1.00 | Cutbanks cave | 0.10 | Gravel content | 0.99 |
| | | Frost action | 0.50 | Large stones content | 0.03 | Droughty | 0.01 |
| | | Large stones content | 0.03 | Slope | 0.01 | Slope | 0.01 |
| Fiveblock----------- | 25 | Very limited | | Somewhat limited | | Somewhat limited | |
| | | Unstable fill | 1.00 | Cutbanks cave | 0.10 | Droughty | 0.99 |
| | | Frost action | 0.50 | Large stones content | 0.05 | Gravel content | 0.94 |
| | | Large stones content | 0.05 | Slope | 0.01 | Large stones content | 0.46 |
| Cedarcreek---------- | 20 | Very limited | | Somewhat limited | | Somewhat limited | |
| | | Unstable fill | 1.00 | Cutbanks cave | 0.10 | Gravel content | 0.97 |
| | | Frost action | 0.50 | Slope | 0.01 | Droughty | 0.88 |
| | | Slope | 0.01 | | | Large stones content | 0.38 |

Table 10.—Building Site Development, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Local roads and streets: Rating class and limiting features | Value | Shallow excavations: Rating class and limiting features | Value | Lawns and landscaping: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 16C: | | | | | | | |
| Lily---------------- | 85 | Somewhat limited | | Very limited | | Somewhat limited | |
| | | Depth to hard bedrock | 0.64 | Depth to hard bedrock | 1.00 | Depth to bedrock | 0.65 |
| | | Slope | 0.63 | Slope | 0.63 | Slope | 0.63 |
| | | Frost action | 0.50 | Cutbanks cave | 0.10 | | |
| 16D: | | | | | | | |
| Lily---------------- | 95 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to hard bedrock | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.64 | Slope | 1.00 | Depth to bedrock | 0.65 |
| | | Frost action | 0.50 | Cutbanks cave | 0.10 | | |
| 16E: | | | | | | | |
| Lily---------------- | 80 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to hard bedrock | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.64 | Slope | 1.00 | Depth to bedrock | 0.65 |
| | | Frost action | 0.50 | Cutbanks cave | 0.10 | | |
| 17D: | | | | | | | |
| Marrowbone---------- | 50 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | Cutbanks cave | 1.00 | Droughty | 0.75 |
| | | | | Depth to hard bedrock | 0.84 | Depth to bedrock | 0.20 |
| Gilpin-------------- | 45 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to hard bedrock | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Slope | 1.00 | Depth to bedrock | 0.10 |
| | | Depth to hard bedrock | 0.01 | Cutbanks cave | 1.00 | | |
| 17E: | | | | | | | |
| Marrowbone---------- | 60 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | Cutbanks cave | 1.00 | Droughty | 0.75 |
| | | | | Depth to hard bedrock | 0.84 | Depth to bedrock | 0.20 |
| Gilpin-------------- | 35 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to hard bedrock | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Slope | 1.00 | Depth to bedrock | 0.10 |
| | | Depth to hard bedrock | 0.01 | Cutbanks cave | 1.00 | | |
| 17F: | | | | | | | |
| Marrowbone---------- | 75 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | Cutbanks cave | 1.00 | Droughty | 0.75 |
| | | | | Depth to hard bedrock | 0.84 | Depth to bedrock | 0.20 |
| Gilpin-------------- | 15 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to hard bedrock | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Slope | 1.00 | Depth to bedrock | 0.10 |
| | | Depth to hard bedrock | 0.01 | Cutbanks cave | 1.00 | | |

Table 10.—Building Site Development, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Local roads and streets: Rating class and limiting features | Value | Shallow excavations: Rating class and limiting features | Value | Lawns and landscaping: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 18F: | | | | | | | |
| Matewan | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to hard bedrock | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.01 | Slope | 1.00 | Large stones content | 0.54 |
| | | | | Cutbanks cave | 1.00 | Droughty | 0.41 |
| Gilpin | 30 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to hard bedrock | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Slope | 1.00 | Depth to bedrock | 0.10 |
| | | Depth to hard bedrock | 0.01 | Cutbanks cave | 1.00 | | |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 19D: | | | | | | | |
| Oriskany | 95 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Cutbanks cave | 0.10 | Large stones content | 0.92 |
| | | Large stones content | 0.01 | Large stones content | 0.01 | Gravel content | 0.11 |
| 19E: | | | | | | | |
| Oriskany | 95 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Cutbanks cave | 0.10 | Large stones content | 0.92 |
| | | Large stones content | 0.01 | Large stones content | 0.01 | Gravel content | 0.11 |
| 20A: | | | | | | | |
| Philo | 95 | Very limited | | Very limited | | Somewhat limited | |
| | | Frost action | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 0.60 |
| | | Flooding | 1.00 | Flooding | 0.60 | Flooding | 0.60 |
| | | Depth to saturated zone | 0.60 | Cutbanks cave | 0.10 | | |
| 21F: | | | | | | | |
| Sewell | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Cutbanks cave | 0.10 | Droughty | 1.00 |
| | | Large stones content | 0.10 | Large stones content | 0.10 | Large stones content | 0.26 |
| Kaymine | 30 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Cutbanks cave | 0.10 | Gravel content | 0.99 |
| | | Large stones content | 0.03 | Large stones content | 0.03 | Droughty | 0.01 |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 22E: | | | | | | | |
| Shelocta | 70 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Cutbanks cave | 1.00 | Gravel content | 0.32 |
| Cedarcreek | 25 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Cutbanks cave | 0.10 | Gravel content | 0.97 |
| | | Frost action | 0.50 | | | Droughty | 0.88 |

Table 10.—Building Site Development, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Local roads and streets: Rating class and limiting features | Value | Shallow excavations: Rating class and limiting features | Value | Lawns and landscaping: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 23E: | | | | | | | |
| Shelocta | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Cutbanks cave | 1.00 | Gravel content | 0.32 |
| Cloverlick | 35 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Cutbanks cave | 1.00 | Gravel content | 0.08 |
| 24E: | | | | | | | |
| Shelocta | 50 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Cutbanks cave | 1.00 | Gravel content | 0.32 |
| Highsplint | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Cutbanks cave | 0.10 | Large stones content | 0.01 |
| | | Large stones content | 0.01 | Large stones content | 0.01 | | |
| 25F: | | | | | | | |
| Shelocta | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | Cutbanks cave | 1.00 | Gravel content | 0.32 |
| Kaymine | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Cutbanks cave | 0.10 | Gravel content | 0.99 |
| | | Frost action | 0.50 | Large stones content | 0.03 | Droughty | 0.01 |
| 26F: | | | | | | | |
| Stonecoal | 85 | Very limited | | Very limited | | Very limited | |
| | | Unstable fill | 1.00 | Cutbanks cave | 1.00 | Droughty | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 | Gravel content | 1.00 |
| | | Frost action | 0.50 | Large stones content | 0.08 | Slope | 1.00 |
| 27: | | | | | | | |
| Udorthents | 45 | Not rated | | Not rated | | Not rated | |
| Urban land | 30 | Not rated | | Not rated | | Not rated | |
| 28: | | | | | | | |
| Udorthents | 45 | Not rated | | Not rated | | Not rated | |
| Urban land | 35 | Not rated | | Not rated | | Not rated | |
| 29D: | | | | | | | |
| Wallen | 90 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to hard bedrock | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.90 | Slope | 1.00 | Droughty | 0.99 |
| | | | | Cutbanks cave | 0.10 | Depth to bedrock | 0.90 |
| 29F: | | | | | | | |
| Wallen | 75 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to hard bedrock | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.90 | Slope | 1.00 | Droughty | 0.99 |
| | | | | Cutbanks cave | 0.10 | Depth to bedrock | 0.90 |

Table 10.—Building Site Development, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Local roads and streets: Rating class and limiting features | Value | Shallow excavations: Rating class and limiting features | Value | Lawns and landscaping: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 30F: | | | | | | | |
| Wallen | 85 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to hard bedrock | 1.00 | Slope | 1.00 |
| | | Depth to hard bedrock | 0.90 | | | Droughty | 0.99 |
| | | | | Slope | 1.00 | Depth to bedrock | 0.90 |
| | | | | Cutbanks cave | 0.10 | | |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 31D: | | | | | | | |
| Wharton | 45 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Frost action | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 0.64 |
| | | Low strength | 1.00 | | | | |
| | | | | Cutbanks cave | 0.10 | | |
| Gilpin | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to hard bedrock | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | | | Depth to bedrock | 0.10 |
| | | Depth to hard bedrock | 0.01 | Slope | 1.00 | | |
| | | | | Cutbanks cave | 1.00 | | |
| Berks | 15 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Depth to hard bedrock | 1.00 | Slope | 1.00 |
| | | Frost action | 0.50 | | | Depth to bedrock | 0.16 |
| | | Depth to hard bedrock | 0.06 | Slope | 1.00 | Droughty | 0.09 |
| | | | | Depth to soft bedrock | 0.15 | | |
| 32C: | | | | | | | |
| Wharton | 45 | Very limited | | Very limited | | Somewhat limited | |
| | | Frost action | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 0.64 |
| | | Low strength | 1.00 | | | | |
| | | Depth to saturated zone | 0.64 | Slope | 0.16 | Slope | 0.16 |
| | | | | Cutbanks cave | 0.10 | | |
| Gilpin | 35 | Somewhat limited | | Very limited | | Somewhat limited | |
| | | Frost action | 0.50 | Depth to hard bedrock | 1.00 | Slope | 0.16 |
| | | Slope | 0.16 | | | Depth to bedrock | 0.10 |
| | | Depth to hard bedrock | 0.01 | Cutbanks cave | 1.00 | | |
| | | | | Slope | 0.16 | | |
| Marrowbone | 20 | Somewhat limited | | Very limited | | Somewhat limited | |
| | | Slope | 0.16 | Cutbanks cave | 1.00 | Droughty | 0.75 |
| | | | | Depth to hard bedrock | 0.84 | Depth to bedrock | 0.20 |
| | | | | | | Slope | 0.16 |
| | | | | Depth to soft bedrock | 0.20 | | |
| W: | | | | | | | |
| Water | 100 | Not rated | | Not rated | | Not rated | |

Table 11.—Sanitary Facilities, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields: Rating class and limiting features | Value | Sewage lagoons: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 1D: | | | | | |
| Calvin | 85 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to hard bedrock | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| 2F: | | | | | |
| Calvin | 70 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to hard bedrock | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| Rough | 20 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to hard bedrock | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | | |
| 3F: | | | | | |
| Cedarcreek | 35 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Seepage | 0.32 |
| | | Slow water movement | 0.68 | | |
| Fiveblock | 30 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Large stones content | 0.26 |
| Kaymine | 25 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Seepage | 0.32 |
| | | Slow water movement | 0.68 | | |
| 4C: | | | | | |
| Cedarcreek | 35 | Somewhat limited | | Very limited | |
| | | Slow water movement | 0.68 | Slope | 1.00 |
| | | Slope | 0.01 | Seepage | 0.32 |
| Sewell | 30 | Very limited | | Very limited | |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Large stones content | 0.10 | Slope | 1.00 |
| | | Slope | 0.01 | Large stones content | 0.58 |
| Rock outcrop | 10 | Not rated | | Not rated | |

Table 11.—Sanitary Facilities, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields: Rating class and limiting features | Value | Sewage lagoons: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 5F: | | | | | |
| Cloverlick---------- | 45 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| Shelocta------------ | 40 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Slow water movement | 0.50 | Seepage | 0.54 |
| 6C: | | | | | |
| Cotaco-------------- | 90 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Slope | 1.00 |
| | | Slow water movement | 0.50 | Depth to saturated zone | 1.00 |
| | | Slope | 0.37 | Seepage | 0.50 |
| 7: | | | | | |
| Dumps, mine--------- | 60 | Not rated | | Not rated | |
| Urban land---------- | 30 | Not rated | | Not rated | |
| 8C: | | | | | |
| Fiveblock----------- | 80 | Very limited | | Very limited | |
| | | Unstable fill | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.05 | Large stones content | 0.26 |
| Sewell-------------- | 20 | Very limited | | Very limited | |
| | | Unstable fill | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.10 | Large stones content | 0.58 |
| 9E: | | | | | |
| Gilpin-------------- | 55 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to hard bedrock | 1.00 |
| | | Slope | 1.00 | Depth to soft bedrock | 1.00 |
| | | Slow water movement | 0.50 | Slope | 1.00 |
| Berks--------------- | 30 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to hard bedrock | 1.00 |
| | | Slope | 1.00 | Depth to soft bedrock | 1.00 |
| | | Seepage, bottom layer | 1.00 | Slope | 1.00 |
| 9F: | | | | | |
| Gilpin-------------- | 55 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to hard bedrock | 1.00 |
| | | Slope | 1.00 | Depth to soft bedrock | 1.00 |
| | | Slow water movement | 0.50 | Slope | 1.00 |

Table 11.—Sanitary Facilities, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields: Rating class and limiting features | Value | Sewage lagoons: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 9F: | | | | | |
| Berks | 35 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to hard bedrock | 1.00 |
| | | Slope | 1.00 | Depth to soft bedrock | 1.00 |
| | | Seepage, bottom layer | 1.00 | Slope | 1.00 |
| 10A: | | | | | |
| Grigsby | 81 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Depth to saturated zone | 0.50 | | |
| 11F: | | | | | |
| Highsplint | 55 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Large stones content | 0.01 | Large stones content | 0.17 |
| Shelocta | 40 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Slow water movement | 0.50 | Seepage | 0.54 |
| 12F: | | | | | |
| Itmann | 95 | Very limited | | Very limited | |
| | | Filtering capacity | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | | |
| 13D: | | | | | |
| Kaymine | 90 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Seepage | 0.32 |
| | | Slow water movement | 0.68 | | |
| 14E: | | | | | |
| Kaymine | 85 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Seepage | 0.32 |
| | | Slow water movement | 0.68 | | |
| Cedarcreek | 15 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Seepage | 0.32 |
| | | Slow water movement | 0.68 | | |

Table 11.—Sanitary Facilities, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields: Rating class and limiting features | Value | Sewage lagoons: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 15C: | | | | | |
| Kaymine------------- | 55 | Very limited | | Very limited | |
| | | Unstable fill | 1.00 | Slope | 1.00 |
| | | Slow water movement | 0.68 | Seepage | 0.32 |
| | | Large stones content | 0.03 | | |
| Fiveblock----------- | 25 | Very limited | | Very limited | |
| | | Unstable fill | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.05 | Large stones content | 0.26 |
| Cedarcreek---------- | 20 | Very limited | | Very limited | |
| | | Unstable fill | 1.00 | Slope | 1.00 |
| | | Slow water movement | 0.68 | Seepage | 0.32 |
| | | Slope | 0.01 | | |
| 16C: | | | | | |
| Lily---------------- | 85 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to hard bedrock | 1.00 |
| | | Seepage, bottom layer | 1.00 | Slope | 1.00 |
| | | Slope | 0.63 | Seepage | 1.00 |
| 16D: | | | | | |
| Lily---------------- | 95 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to hard bedrock | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| 16E: | | | | | |
| Lily---------------- | 80 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to hard bedrock | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| 17D: | | | | | |
| Marrowbone---------- | 50 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to soft bedrock | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| Gilpin-------------- | 45 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to hard bedrock | 1.00 |
| | | Slope | 1.00 | Depth to soft bedrock | 1.00 |
| | | Slow water movement | 0.50 | Slope | 1.00 |

Table 11.—Sanitary Facilities, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields: Rating class and limiting features | Value | Sewage lagoons: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 17E: | | | | | |
| Marrowbone---------- | 60 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to soft bedrock | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| Gilpin-------------- | 35 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to hard bedrock | 1.00 |
| | | Slope | 1.00 | Depth to soft bedrock | 1.00 |
| | | Slow water movement | 0.50 | Slope | 1.00 |
| 17F: | | | | | |
| Marrowbone---------- | 75 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to soft bedrock | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| Gilpin-------------- | 15 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to hard bedrock | 1.00 |
| | | Slope | 1.00 | Depth to soft bedrock | 1.00 |
| | | Slow water movement | 0.50 | Slope | 1.00 |
| 18F: | | | | | |
| Matewan------------- | 55 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to hard bedrock | 1.00 |
| | | Filtering capacity | 1.00 | Slope | 1.00 |
| | | Slope | 1.00 | Seepage | 1.00 |
| Gilpin-------------- | 30 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to hard bedrock | 1.00 |
| | | Slope | 1.00 | Depth to soft bedrock | 1.00 |
| | | Slow water movement | 0.50 | Slope | 1.00 |
| Rock outcrop-------- | 10 | Not rated | | Not rated | |
| 19D: | | | | | |
| Oriskany------------ | 95 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Large stones content | 0.01 | Large stones content | 0.41 |
| 19E: | | | | | |
| Oriskany------------ | 95 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Large stones content | 0.01 | Large stones content | 0.41 |

Table 11.—Sanitary Facilities, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields | | Sewage lagoons | |
|---|---|---|---|---|---|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| 20A: | | | | | |
| Philo | 95 | Very limited | | Very limited | |
| | | Flooding | 1.00 | Flooding | 1.00 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| 21F: | | | | | |
| Sewell | 55 | Very limited | | Very limited | |
| | | Slope | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.10 | Large stones content | 0.58 |
| Kaymine | 30 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Slow water movement | 0.68 | Seepage | 0.32 |
| | | Large stones content | 0.03 | | |
| Rock outcrop | 10 | Not rated | | Not rated | |
| 22E: | | | | | |
| Shelocta | 70 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Slow water movement | 0.50 | Seepage | 0.54 |
| Cedarcreek | 25 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Seepage | 0.32 |
| | | Slow water movement | 0.68 | | |
| 23E: | | | | | |
| Shelocta | 55 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Slow water movement | 0.50 | Seepage | 0.54 |
| Cloverlick | 35 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| 24E: | | | | | |
| Shelocta | 50 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Slow water movement | 0.50 | Seepage | 0.54 |
| Highsplint | 40 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Large stones content | 0.01 | Large stones content | 0.17 |

Table 11.—Sanitary Facilities, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields: Rating class and limiting features | Value | Sewage lagoons: Rating class and limiting features | Value |
|---|---|---|---|---|---|
| 25F: | | | | | |
| Shelocta------------ | 55 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Slow water movement | 0.50 | Seepage | 0.54 |
| Kaymine------------- | 40 | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Unstable fill | 1.00 | Seepage | 0.32 |
| | | Slow water movement | 0.68 | | |
| 26F: | | | | | |
| Stonecoal----------- | 85 | Very limited | | Very limited | |
| | | Unstable fill | 1.00 | Seepage | 1.00 |
| | | Filtering capacity | 1.00 | Slope | 1.00 |
| | | Slope | 1.00 | Large stones content | 0.78 |
| 27: | | | | | |
| Udorthents---------- | 45 | Not rated | | Not rated | |
| Urban land---------- | 30 | Not rated | | Not rated | |
| 28: | | | | | |
| Udorthents---------- | 45 | Not rated | | Not rated | |
| Urban land---------- | 35 | Not rated | | Not rated | |
| 29D: | | | | | |
| Wallen-------------- | 90 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to hard bedrock | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| 29F: | | | | | |
| Wallen-------------- | 75 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to hard bedrock | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| 30F: | | | | | |
| Wallen-------------- | 85 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to hard bedrock | 1.00 |
| | | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| Rock outcrop-------- | 10 | Not rated | | Not rated | |
| 31D: | | | | | |
| Wharton------------- | 45 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Slope | 1.00 |
| | | Slope | 1.00 | Depth to saturated zone | 0.98 |
| | | Slow water movement | 1.00 | | |

Table 11.—Sanitary Facilities, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields | | Sewage lagoons | |
|---|---|---|---|---|---|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| 31D: | | | | | |
| Gilpin | 40 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to hard bedrock | 1.00 |
| | | Slope | 1.00 | Depth to soft bedrock | 1.00 |
| | | Slow water movement | 0.50 | Slope | 1.00 |
| Berks | 15 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to hard bedrock | 1.00 |
| | | Slope | 1.00 | Depth to soft bedrock | 1.00 |
| | | Seepage, bottom layer | 1.00 | Slope | 1.00 |
| 32C: | | | | | |
| Wharton | 45 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Slope | 1.00 |
| | | Slow water movement | 1.00 | Depth to saturated zone | 0.98 |
| | | Slope | 0.16 | | |
| Gilpin | 35 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to hard bedrock | 1.00 |
| | | Slow water movement | 0.50 | Depth to soft bedrock | 1.00 |
| | | Slope | 0.16 | Slope | 1.00 |
| Marrowbone | 20 | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to soft bedrock | 1.00 |
| | | Seepage, bottom layer | 1.00 | Slope | 1.00 |
| | | Slope | 0.16 | Seepage | 1.00 |
| W: | | | | | |
| Water | 100 | Not rated | | Not rated | |

Table 11.—Sanitary Facilities, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

| Map symbol and soil name | Pct. of map unit | Trench sanitary landfill: Rating class and limiting features | Value | Area sanitary landfill: Rating class and limiting features | Value | Daily cover for landfill: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 1D: | | | | | | | |
| Calvin | 85 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Seepage | 0.50 |
| 2F: | | | | | | | |
| Calvin | 70 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Seepage | 0.50 |
| Rough | 20 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | | | Seepage | 1.00 |
| 3F: | | | | | | | |
| Cedarcreek | 35 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 1.00 |
| Fiveblock | 30 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Gravel content | 0.89 |
| | | Large stones content | 0.11 | | | Large stones content | 0.11 |
| Kaymine | 25 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.39 | | | Large stones content | 0.39 |
| | | | | | | Gravel content | 0.16 |
| 4C: | | | | | | | |
| Cedarcreek | 35 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Slope | 0.01 | Slope | 0.01 | Gravel content | 1.00 |
| | | | | | | Slope | 0.01 |
| Sewell | 30 | Very limited | | Very limited | | Somewhat limited | |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Gravel content | 0.92 |
| | | Large stones content | 0.14 | Slope | 0.01 | Large stones content | 0.14 |
| | | Slope | 0.01 | | | Seepage | 0.09 |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |

Table 11.—Sanitary Facilities, Part II--Continued

| Map symbol and soil name | Pct. of map unit | Trench sanitary landfill | | Area sanitary landfill | | Daily cover for landfill | |
|---|---|---|---|---|---|---|---|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| 5F: | | | | | | | |
| Cloverlick---------- | 45 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Gravel content | 0.87 |
| | | | | | | Seepage | 0.51 |
| Shelocta------------ | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 0.40 |
| 6C: | | | | | | | |
| Cotaco-------------- | 90 | Very limited | | Very limited | | Somewhat limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Depth to saturated zone | 0.86 |
| | | Too clayey | 0.50 | Slope | 0.37 | Too clayey | 0.50 |
| | | Slope | 0.37 | | | Slope | 0.37 |
| 7: | | | | | | | |
| Dumps, mine--------- | 60 | Not rated | | Not rated | | Not rated | |
| Urban land---------- | 30 | Not rated | | Not rated | | Not rated | |
| 8C: | | | | | | | |
| Fiveblock----------- | 80 | Very limited | | Very limited | | Somewhat limited | |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Gravel content | 0.89 |
| | | Large stones content | 0.11 | Slope | 0.01 | Large stones content | 0.11 |
| | | Slope | 0.01 | | | Seepage | 0.09 |
| Sewell-------------- | 20 | Very limited | | Very limited | | Somewhat limited | |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Gravel content | 0.92 |
| | | Large stones content | 0.14 | Slope | 0.01 | Large stones content | 0.14 |
| | | Slope | 0.01 | | | Seepage | 0.09 |
| 9E: | | | | | | | |
| Gilpin-------------- | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 0.39 |
| Berks--------------- | 30 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Gravel content | 0.93 |
| 9F: | | | | | | | |
| Gilpin-------------- | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 0.39 |
| Berks--------------- | 35 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Gravel content | 0.93 |

Table 11.—Sanitary Facilities, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Trench sanitary landfill | | Area sanitary landfill | | Daily cover for landfill | |
|---|---|---|---|---|---|---|---|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| 10A: | | | | | | | |
| Grigsby | 81 | Very limited | | Very limited | | Somewhat limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Seepage | 0.88 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Too sandy | 0.50 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | | |
| 11F: | | | | | | | |
| Highsplint | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Seepage | 0.51 |
| | | | | | | Gravel content | 0.27 |
| | | Large stones content | 0.01 | | | | |
| Shelocta | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 0.40 |
| 12F: | | | | | | | |
| Itmann | 95 | Very limited | | Very limited | | Very limited | |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Seepage | 1.00 |
| | | | | Slope | 1.00 | Gravel content | 1.00 |
| | | Slope | 1.00 | | | Slope | 1.00 |
| 13D: | | | | | | | |
| Kaymine | 90 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.39 | | | Large stones content | 0.39 |
| | | | | | | Gravel content | 0.16 |
| 14E: | | | | | | | |
| Kaymine | 85 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.39 | | | Large stones content | 0.39 |
| | | | | | | Gravel content | 0.16 |
| Cedarcreek | 15 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 1.00 |
| 15C: | | | | | | | |
| Kaymine | 55 | Somewhat limited | | Somewhat limited | | Somewhat limited | |
| | | Large stones content | 0.39 | Slope | 0.01 | Large stones content | 0.39 |
| | | Slope | 0.01 | | | Gravel content | 0.16 |
| | | | | | | Slope | 0.01 |
| Fiveblock | 25 | Very limited | | Very limited | | Somewhat limited | |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Gravel content | 0.89 |
| | | | | Slope | 0.01 | Large stones content | 0.11 |
| | | Large stones content | 0.11 | | | Seepage | 0.09 |
| | | Slope | 0.01 | | | | |
| Cedarcreek | 20 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Slope | 0.01 | Slope | 0.01 | Gravel content | 1.00 |
| | | | | | | Slope | 0.01 |

Table 11.—Sanitary Facilities, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Trench sanitary landfill | | Area sanitary landfill | | Daily cover for landfill | |
|---|---|---|---|---|---|---|---|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| 16C: | | | | | | | |
| Lily | 85 | Very limited | | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Slope | 0.63 |
| | | Slope | 0.63 | Slope | 0.63 | Seepage | 0.50 |
| 16D: | | | | | | | |
| Lily | 95 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Seepage | 0.50 |
| 16E: | | | | | | | |
| Lily | 80 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Seepage | 0.50 |
| 17D: | | | | | | | |
| Marrowbone | 50 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Seepage | 0.51 |
| Gilpin | 45 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 0.39 |
| 17E: | | | | | | | |
| Marrowbone | 60 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Seepage | 0.51 |
| Gilpin | 35 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 0.39 |
| 17F: | | | | | | | |
| Marrowbone | 75 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Seepage | 0.51 |
| Gilpin | 15 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 0.39 |

Table 11.—Sanitary Facilities, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Trench sanitary landfill: Rating class and limiting features | Value | Area sanitary landfill: Rating class and limiting features | Value | Daily cover for landfill: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 18F: | | | | | | | |
| Matewan | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Seepage | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to bedrock | 1.00 | Seepage | 1.00 |
| Gilpin | 30 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 0.39 |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 19D: | | | | | | | |
| Oriskany | 95 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Seepage | 0.50 |
| | | Large stones content | 0.01 | | | Gravel content | 0.13 |
| 19E: | | | | | | | |
| Oriskany | 95 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Seepage | 0.50 |
| | | Large stones content | 0.01 | | | Gravel content | 0.13 |
| 20A: | | | | | | | |
| Philo | 95 | Very limited | | Very limited | | Somewhat limited | |
| | | Flooding | 1.00 | Flooding | 1.00 | Depth to saturated zone | 0.99 |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 1.00 | Seepage | 0.50 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | | |
| 21F: | | | | | | | |
| Sewell | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Gravel content | 0.92 |
| | | Large stones content | 0.14 | | | Large stones content | 0.14 |
| Kaymine | 30 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.39 | | | Large stones content | 0.39 |
| | | | | | | Gravel content | 0.16 |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 22E: | | | | | | | |
| Shelocta | 70 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 0.40 |

Table 11.—Sanitary Facilities, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Trench sanitary landfill | | Area sanitary landfill | | Daily cover for landfill | |
|---|---|---|---|---|---|---|---|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| 22E: | | | | | | | |
| Cedarcreek---------- | 25 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 1.00 |
| 23E: | | | | | | | |
| Shelocta------------ | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 0.40 |
| Cloverlick---------- | 35 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Gravel content | 0.87 |
| | | | | | | Seepage | 0.51 |
| 24E: | | | | | | | |
| Shelocta------------ | 50 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 0.40 |
| Highsplint---------- | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Seepage | 0.51 |
| | | | | | | Gravel content | 0.27 |
| | | Large stones content | 0.01 | | | | |
| 25F: | | | | | | | |
| Shelocta------------ | 55 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 0.40 |
| Kaymine------------- | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Large stones content | 0.39 | | | Large stones content | 0.39 |
| | | | | | | Gravel content | 0.16 |
| 26F: | | | | | | | |
| Stonecoal----------- | 85 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Gravel content | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Slope | 1.00 |
| | | | | | | Seepage | 1.00 |
| | | Too sandy | 0.50 | | | | |
| 27: | | | | | | | |
| Udorthents---------- | 45 | Not rated | | Not rated | | Not rated | |
| Urban land---------- | 30 | Not rated | | Not rated | | Not rated | |
| 28: | | | | | | | |
| Udorthents---------- | 45 | Not rated | | Not rated | | Not rated | |
| Urban land---------- | 35 | Not rated | | Not rated | | Not rated | |
| 29D: | | | | | | | |
| Wallen-------------- | 90 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Seepage | 0.50 |

Table 11.—Sanitary Facilities, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Trench sanitary landfill | | Area sanitary landfill | | Daily cover for landfill | |
|---|---|---|---|---|---|---|---|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| 29F: | | | | | | | |
| Wallen | 75 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Seepage | 0.50 |
| 30F: | | | | | | | |
| Wallen | 85 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Seepage | 0.50 |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 31D: | | | | | | | |
| Wharton | 45 | Very limited | | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Slope | 1.00 | Slope | 1.00 |
| | | Slope | 1.00 | Depth to saturated zone | 0.98 | Depth to saturated zone | 0.99 |
| | | Depth to bedrock | 1.00 | | | Too clayey | 0.50 |
| Gilpin | 40 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Slope | 1.00 |
| | | | | | | Gravel content | 0.39 |
| Berks | 15 | Very limited | | Very limited | | Very limited | |
| | | Slope | 1.00 | Slope | 1.00 | Depth to bedrock | 1.00 |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Slope | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Gravel content | 0.93 |
| 32C: | | | | | | | |
| Wharton | 45 | Very limited | | Somewhat limited | | Somewhat limited | |
| | | Depth to saturated zone | 1.00 | Depth to saturated zone | 0.98 | Depth to saturated zone | 0.99 |
| | | Depth to bedrock | 1.00 | Slope | 0.16 | Too clayey | 0.50 |
| | | Too clayey | 0.50 | | | Slope | 0.16 |
| Gilpin | 35 | Very limited | | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 |
| | | Slope | 0.16 | Slope | 0.16 | Gravel content | 0.39 |
| | | | | | | Slope | 0.16 |
| Marrowbone | 20 | Very limited | | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 | Depth to bedrock | 1.00 |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 | Seepage | 0.51 |
| | | Slope | 0.16 | Slope | 0.16 | Gravel content | 0.41 |
| W: | | | | | | | |
| Water | 100 | Not rated | | Not rated | | Not rated | |

Table 12.—Construction Materials, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table)

| Map symbol and soil name | Pct. of map unit | Potential source of gravel: Rating class | Value | Potential source of sand: Rating class | Value |
|---|---|---|---|---|---|
| 1D: | | | | | |
| Calvin | 85 | Poor | | Poor | |
| | | Thickest layer | 0.00 | Bottom layer | 0.00 |
| | | Bottom layer | 0.00 | Thickest layer | 0.00 |
| 2F: | | | | | |
| Calvin | 70 | Poor | | Poor | |
| | | Thickest layer | 0.00 | Bottom layer | 0.00 |
| | | Bottom layer | 0.00 | Thickest layer | 0.00 |
| Rough | 20 | Fair | | Poor | |
| | | Thickest layer | 0.00 | Bottom layer | 0.00 |
| | | Bottom layer | 0.25 | Thickest layer | 0.00 |
| 3F: | | | | | |
| Cedarcreek | 35 | Fair | | Poor | |
| | | Thickest layer | 0.00 | Bottom layer | 0.00 |
| | | Bottom layer | 0.12 | Thickest layer | 0.00 |
| Fiveblock | 30 | Fair | | Fair | |
| | | Thickest layer | 0.00 | Bottom layer | 0.04 |
| | | Bottom layer | 0.12 | Thickest layer | 0.04 |
| Kaymine | 25 | Poor | | Poor | |
| | | Bottom layer | 0.00 | Bottom layer | 0.00 |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |
| 4C: | | | | | |
| Cedarcreek | 35 | Fair | | Poor | |
| | | Thickest layer | 0.00 | Bottom layer | 0.00 |
| | | Bottom layer | 0.12 | Thickest layer | 0.00 |
| Sewell | 30 | Fair | | Fair | |
| | | Thickest layer | 0.00 | Bottom layer | 0.04 |
| | | Bottom layer | 0.12 | Thickest layer | 0.04 |
| Rock outcrop | 10 | Not rated | | Not rated | |
| 5F: | | | | | |
| Cloverlick | 45 | Poor | | Fair | |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |
| | | Bottom layer | 0.00 | Bottom layer | 0.03 |
| Shelocta | 40 | Poor | | Poor | |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |
| | | Bottom layer | 0.00 | Bottom layer | 0.00 |
| 6C: | | | | | |
| Cotaco | 90 | Poor | | Poor | |
| | | Bottom layer | 0.00 | Bottom layer | 0.00 |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |

Table 12.—Construction Materials, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Potential source of gravel | | Potential source of sand | |
|---|---|---|---|---|---|
| | | Rating class | Value | Rating class | Value |
| 7: | | | | | |
| Dumps, mine | 60 | Not rated | | Not rated | |
| Urban land | 30 | Not rated | | Not rated | |
| 8C: | | | | | |
| Fiveblock | 80 | Fair | | Fair | |
| | | Thickest layer | 0.00 | Bottom layer | 0.04 |
| | | Bottom layer | 0.12 | Thickest layer | 0.04 |
| Sewell | 20 | Fair | | Fair | |
| | | Thickest layer | 0.00 | Bottom layer | 0.04 |
| | | Bottom layer | 0.12 | Thickest layer | 0.04 |
| 9E: | | | | | |
| Gilpin | 55 | Poor | | Poor | |
| | | Thickest layer | 0.00 | Bottom layer | 0.00 |
| | | Bottom layer | 0.00 | Thickest layer | 0.00 |
| Berks | 30 | Fair | | Poor | |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |
| | | Bottom layer | 0.25 | Bottom layer | 0.00 |
| 9F: | | | | | |
| Gilpin | 55 | Poor | | Poor | |
| | | Bottom layer | 0.00 | Thickest layer | 0.00 |
| | | Thickest layer | 0.00 | Bottom layer | 0.00 |
| Berks | 35 | Fair | | Poor | |
| | | Thickest layer | 0.00 | Bottom layer | 0.00 |
| | | Bottom layer | 0.25 | Thickest layer | 0.00 |
| 10A: | | | | | |
| Grigsby | 81 | Poor | | Fair | |
| | | Thickest layer | 0.00 | Thickest layer | 0.08 |
| | | Bottom layer | 0.00 | Bottom layer | 0.86 |
| 11F: | | | | | |
| Highsplint | 55 | Poor | | Poor | |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |
| | | Bottom layer | 0.00 | Bottom layer | 0.00 |
| Shelocta | 40 | Poor | | Poor | |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |
| | | Bottom layer | 0.00 | Bottom layer | 0.00 |
| 12F: | | | | | |
| Itmann | 95 | Fair | | Fair | |
| | | Thickest layer | 0.00 | Bottom layer | 0.03 |
| | | Bottom layer | 0.12 | Thickest layer | 0.03 |
| 13D: | | | | | |
| Kaymine | 90 | Poor | | Poor | |
| | | Thickest layer | 0.00 | Bottom layer | 0.00 |
| | | Bottom layer | 0.00 | Thickest layer | 0.00 |
| 14E: | | | | | |
| Kaymine | 85 | Poor | | Poor | |
| | | Bottom layer | 0.00 | Bottom layer | 0.00 |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |

Table 12.—Construction Materials, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Potential source of gravel | | Potential source of sand | |
|---|---|---|---|---|---|
| | | Rating class | Value | Rating class | Value |
| 14E: | | | | | |
| Cedarcreek---------- | 15 | Fair | | Poor | |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |
| | | Bottom layer | 0.12 | Bottom layer | 0.00 |
| 15C: | | | | | |
| Kaymine------------ | 55 | Poor | | Poor | |
| | | Thickest layer | 0.00 | Bottom layer | 0.00 |
| | | Bottom layer | 0.00 | Thickest layer | 0.00 |
| Fiveblock----------- | 25 | Fair | | Fair | |
| | | Thickest layer | 0.00 | Bottom layer | 0.04 |
| | | Bottom layer | 0.12 | Thickest layer | 0.04 |
| Cedarcreek---------- | 20 | Fair | | Poor | |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |
| | | Bottom layer | 0.12 | Bottom layer | 0.00 |
| 16C: | | | | | |
| Lily---------------- | 85 | Poor | | Fair | |
| | | Bottom layer | 0.00 | Thickest layer | 0.00 |
| | | Thickest layer | 0.00 | Bottom layer | 0.03 |
| 16D: | | | | | |
| Lily---------------- | 95 | Poor | | Fair | |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |
| | | Bottom layer | 0.00 | Bottom layer | 0.03 |
| 16E: | | | | | |
| Lily---------------- | 80 | Poor | | Fair | |
| | | Bottom layer | 0.00 | Thickest layer | 0.00 |
| | | Thickest layer | 0.00 | Bottom layer | 0.03 |
| 17D: | | | | | |
| Marrowbone---------- | 50 | Poor | | Fair | |
| | | Bottom layer | 0.00 | Thickest layer | 0.04 |
| | | Thickest layer | 0.00 | Bottom layer | 0.07 |
| Gilpin-------------- | 45 | Poor | | Poor | |
| | | Bottom layer | 0.00 | Bottom layer | 0.00 |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |
| 17E: | | | | | |
| Marrowbone---------- | 60 | Poor | | Fair | |
| | | Bottom layer | 0.00 | Thickest layer | 0.04 |
| | | Thickest layer | 0.00 | Bottom layer | 0.07 |
| Gilpin-------------- | 35 | Poor | | Poor | |
| | | Thickest layer | 0.00 | Bottom layer | 0.00 |
| | | Bottom layer | 0.00 | Thickest layer | 0.00 |
| 17F: | | | | | |
| Marrowbone---------- | 75 | Poor | | Fair | |
| | | Bottom layer | 0.00 | Thickest layer | 0.04 |
| | | Thickest layer | 0.00 | Bottom layer | 0.07 |
| Gilpin-------------- | 15 | Poor | | Poor | |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |
| | | Bottom layer | 0.00 | Bottom layer | 0.00 |

Table 12.—Construction Materials, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Potential source of gravel | | Potential source of sand | |
|---|---|---|---|---|---|
| | | Rating class | Value | Rating class | Value |
| 18F: | | | | | |
| Matewan | 55 | Poor | | Fair | |
| | | Thickest layer | 0.00 | Bottom layer | 0.03 |
| | | Bottom layer | 0.00 | Thickest layer | 0.03 |
| Gilpin | 30 | Poor | | Poor | |
| | | Thickest layer | 0.00 | Bottom layer | 0.00 |
| | | Bottom layer | 0.00 | Thickest layer | 0.00 |
| Rock outcrop | 10 | Not rated | | Not rated | |
| 19D: | | | | | |
| Oriskany | 95 | Poor | | Poor | |
| | | Bottom layer | 0.00 | Bottom layer | 0.00 |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |
| 19E: | | | | | |
| Oriskany | 95 | Poor | | Poor | |
| | | Bottom layer | 0.00 | Bottom layer | 0.00 |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |
| 20A: | | | | | |
| Philo | 95 | Poor | | Fair | |
| | | Bottom layer | 0.00 | Bottom layer | 0.02 |
| | | Thickest layer | 0.00 | Thickest layer | 0.02 |
| 21F: | | | | | |
| Sewell | 55 | Fair | | Fair | |
| | | Thickest layer | 0.00 | Bottom layer | 0.04 |
| | | Bottom layer | 0.12 | Thickest layer | 0.04 |
| Kaymine | 30 | Poor | | Poor | |
| | | Bottom layer | 0.00 | Bottom layer | 0.00 |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |
| Rock outcrop | 10 | Not rated | | Not rated | |
| 22E: | | | | | |
| Shelocta | 70 | Poor | | Poor | |
| | | Bottom layer | 0.00 | Bottom layer | 0.00 |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |
| Cedarcreek | 25 | Fair | | Poor | |
| | | Thickest layer | 0.00 | Bottom layer | 0.00 |
| | | Bottom layer | 0.12 | Thickest layer | 0.00 |
| 23E: | | | | | |
| Shelocta | 55 | Poor | | Poor | |
| | | Bottom layer | 0.00 | Bottom layer | 0.00 |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |
| Cloverlick | 35 | Poor | | Fair | |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |
| | | Bottom layer | 0.00 | Bottom layer | 0.03 |
| 24E: | | | | | |
| Shelocta | 50 | Poor | | Poor | |
| | | Bottom layer | 0.00 | Thickest layer | 0.00 |
| | | Thickest layer | 0.00 | Bottom layer | 0.00 |

Table 12.—Construction Materials, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Potential source of gravel: Rating class | Value | Potential source of sand: Rating class | Value |
|---|---|---|---|---|---|
| 24E: | | | | | |
| Highsplint | 40 | Poor | | Poor | |
| | | Bottom layer | 0.00 | Thickest layer | 0.00 |
| | | Thickest layer | 0.00 | Bottom layer | 0.00 |
| 25F: | | | | | |
| Shelocta | 55 | Poor | | Poor | |
| | | Bottom layer | 0.00 | Bottom layer | 0.00 |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |
| Kaymine | 40 | Poor | | Poor | |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |
| | | Bottom layer | 0.00 | Bottom layer | 0.00 |
| 26F: | | | | | |
| Stonecoal | 85 | Fair | | Fair | |
| | | Bottom layer | 0.14 | Thickest layer | 0.04 |
| | | Thickest layer | 0.14 | Bottom layer | 0.10 |
| 27: | | | | | |
| Udorthents | 45 | Not rated | | Not rated | |
| Urban land | 30 | Not rated | | Not rated | |
| 28: | | | | | |
| Udorthents | 45 | Not rated | | Not rated | |
| Urban land | 35 | Not rated | | Not rated | |
| 29D: | | | | | |
| Wallen | 90 | Poor | | Fair | |
| | | Thickest layer | 0.00 | Bottom layer | 0.03 |
| | | Bottom layer | 0.00 | Thickest layer | 0.03 |
| 29F: | | | | | |
| Wallen | 75 | Poor | | Fair | |
| | | Thickest layer | 0.00 | Bottom layer | 0.03 |
| | | Bottom layer | 0.00 | Thickest layer | 0.03 |
| 30F: | | | | | |
| Wallen | 85 | Poor | | Fair | |
| | | Thickest layer | 0.00 | Bottom layer | 0.03 |
| | | Bottom layer | 0.00 | Thickest layer | 0.03 |
| Rock outcrop | 10 | Not rated | | Not rated | |
| 31D: | | | | | |
| Wharton | 45 | Poor | | Poor | |
| | | Bottom layer | 0.00 | Bottom layer | 0.00 |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |
| Gilpin | 40 | Poor | | Poor | |
| | | Thickest layer | 0.00 | Bottom layer | 0.00 |
| | | Bottom layer | 0.00 | Thickest layer | 0.00 |
| Berks | 15 | Fair | | Poor | |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |
| | | Bottom layer | 0.25 | Bottom layer | 0.00 |

Table 12.—Construction Materials, Part I—Continued

| Map symbol and soil name | Pct. of map unit | Potential source of gravel | | Potential source of sand | |
|---|---|---|---|---|---|
| | | Rating class | Value | Rating class | Value |
| 32C: | | | | | |
| Wharton------------- | 45 | Poor | | Poor | |
| | | Bottom layer | 0.00 | Bottom layer | 0.00 |
| | | Thickest layer | 0.00 | Thickest layer | 0.00 |
| Gilpin-------------- | 35 | Poor | | Poor | |
| | | Thickest layer | 0.00 | Bottom layer | 0.00 |
| | | Bottom layer | 0.00 | Thickest layer | 0.00 |
| Marrowbone---------- | 20 | Poor | | Fair | |
| | | Thickest layer | 0.00 | Thickest layer | 0.04 |
| | | Bottom layer | 0.00 | Bottom layer | 0.07 |
| W: | | | | | |
| Water--------------- | 100 | Not rated | | Not rated | |

Table 12.—Construction Materials, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table)

| Map symbol and soil name | Pct. of map unit | Potential source of reclamation material | | Potential source of roadfill | | Potential source of topsoil | |
|---|---|---|---|---|---|---|---|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| 1D: | | | | | | | |
| Calvin-------------- | 85 | Fair | | Poor | | Poor | |
| | | Organic matter content low | 0.12 | Depth to bedrock | 0.00 | Slope | 0.00 |
| | | Droughty | 0.16 | Slope | 0.00 | Rock fragments | 0.00 |
| | | Too acid | 0.50 | | | Depth to bedrock | 0.54 |
| 2F: | | | | | | | |
| Calvin-------------- | 70 | Fair | | Poor | | Poor | |
| | | Organic matter content low | 0.12 | Depth to bedrock | 0.00 | Slope | 0.00 |
| | | Droughty | 0.16 | Slope | 0.00 | Rock fragments | 0.00 |
| | | Too acid | 0.50 | | | Depth to bedrock | 0.54 |
| Rough--------------- | 20 | Poor | | Poor | | Poor | |
| | | Droughty | 0.00 | Depth to bedrock | 0.00 | Slope | 0.00 |
| | | Depth to bedrock | 0.00 | Slope | 0.00 | Rock fragments | 0.00 |
| | | Organic matter content low | 0.50 | | | Depth to bedrock | 0.00 |
| 3F: | | | | | | | |
| Cedarcreek---------- | 35 | Fair | | Poor | | Poor | |
| | | Organic matter content low | 0.01 | Slope | 0.00 | Slope | 0.00 |
| | | Droughty | 0.14 | Stone content | 0.68 | Rock fragments | 0.00 |
| | | Too acid | 0.50 | | | Hard to reclaim (rock fragments) | 0.00 |
| Fiveblock----------- | 30 | Poor | | Poor | | Poor | |
| | | Stone content | 0.00 | Slope | 0.00 | Rock fragments | 0.00 |
| | | Droughty | 0.00 | Stone content | 0.00 | Hard to reclaim (rock fragments) | 0.00 |
| | | Organic matter content low | 0.01 | | | Slope | 0.00 |
| Kaymine------------- | 25 | Fair | | Poor | | Poor | |
| | | Organic matter content low | 0.01 | Slope | 0.00 | Slope | 0.00 |
| | | Stone content | 0.37 | Cobble content | 0.73 | Rock fragments | 0.00 |
| | | | | Stone content | 0.99 | Hard to reclaim (rock fragments) | 0.00 |
| 4C: | | | | | | | |
| Cedarcreek---------- | 35 | Fair | | Fair | | Poor | |
| | | Organic matter content low | 0.01 | Stone content | 0.68 | Rock fragments | 0.00 |
| | | Droughty | 0.14 | | | Hard to reclaim (rock fragments) | 0.00 |
| | | Too acid | 0.50 | | | Too acid | 0.68 |
| Sewell-------------- | 30 | Poor | | Poor | | Poor | |
| | | Stone content | 0.00 | Stone content | 0.00 | Hard to reclaim (rock fragments) | 0.00 |
| | | Droughty | 0.00 | | | Rock fragments | 0.00 |
| | | Organic matter content low | 0.01 | | | Too acid | 0.98 |
| Rock outcrop-------- | 10 | Not rated | | Not rated | | Not rated | |

Table 12.—Construction Materials, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Potential source of reclamation material: Rating class and limiting features | Value | Potential source of roadfill: Rating class and limiting features | Value | Potential source of topsoil: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 5F: | | | | | | | |
| Cloverlick---------- | 45 | Fair | | Poor | | Poor | |
| | | Too acid | 0.12 | Slope | 0.00 | Rock fragments | 0.00 |
| | | Organic matter content low | 0.12 | | | Hard to reclaim (rock fragments) | 0.00 |
| | | Water erosion | 0.99 | | | Slope | 0.00 |
| Shelocta------------ | 40 | Fair | | Poor | | Poor | |
| | | Organic matter content low | 0.02 | Slope | 0.00 | Slope | 0.00 |
| | | Too acid | 0.32 | | | Hard to reclaim (rock fragments) | 0.00 |
| | | | | | | Rock fragments | 0.00 |
| 6C: | | | | | | | |
| Cotaco-------------- | 90 | Fair | | Poor | | Fair | |
| | | Organic matter content low | 0.12 | Low strength | 0.00 | Wetness depth | 0.53 |
| | | | | Wetness depth | 0.53 | Slope | 0.63 |
| | | Too acid | 0.50 | | | Too acid | 0.95 |
| 7: | | | | | | | |
| Dumps, mine--------- | 60 | Not rated | | Not rated | | Not rated | |
| Urban land---------- | 30 | Not rated | | Not rated | | Not rated | |
| 8C: | | | | | | | |
| Fiveblock----------- | 80 | Poor | | Poor | | Poor | |
| | | Stone content | 0.00 | Stone content | 0.00 | Rock fragments | 0.00 |
| | | Droughty | 0.00 | | | Hard to reclaim (rock fragments) | 0.00 |
| | | Organic matter content low | 0.01 | | | | |
| Sewell-------------- | 20 | Poor | | Poor | | Poor | |
| | | Stone content | 0.00 | Stone content | 0.00 | Hard to reclaim (rock fragments) | 0.00 |
| | | Droughty | 0.00 | | | | |
| | | Organic matter content low | 0.01 | | | Rock fragments | 0.00 |
| | | | | | | Too acid | 0.98 |
| 9E: | | | | | | | |
| Gilpin-------------- | 55 | Poor | | Poor | | Poor | |
| | | Wind erosion | 0.00 | Depth to bedrock | 0.00 | Slope | 0.00 |
| | | Organic matter content low | 0.12 | Slope | 0.00 | Rock fragments | 0.00 |
| | | | | | | Depth to bedrock | 0.90 |
| | | Too acid | 0.50 | | | | |
| Berks--------------- | 30 | Fair | | Poor | | Poor | |
| | | Droughty | 0.08 | Depth to bedrock | 0.00 | Slope | 0.00 |
| | | Organic matter content low | 0.12 | Slope | 0.00 | Rock fragments | 0.00 |
| | | | | | | Depth to bedrock | 0.84 |
| | | Too acid | 0.50 | | | | |
| 9F: | | | | | | | |
| Gilpin-------------- | 55 | Poor | | Poor | | Poor | |
| | | Wind erosion | 0.00 | Depth to bedrock | 0.00 | Rock fragments | 0.00 |
| | | Organic matter content low | 0.12 | Slope | 0.00 | Slope | 0.00 |
| | | | | | | Depth to bedrock | 0.90 |
| | | Too acid | 0.50 | | | | |

Table 12.—Construction Materials, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Potential source of reclamation material: Rating class and limiting features | Value | Potential source of roadfill: Rating class and limiting features | Value | Potential source of topsoil: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 9F: | | | | | | | |
| Berks | 35 | Fair | | Poor | | Poor | |
| | | Droughty | 0.08 | Slope | 0.00 | Rock fragments | 0.00 |
| | | Organic matter content low | 0.12 | Depth to bedrock | 0.00 | Slope | 0.00 |
| | | | | | | Depth to bedrock | 0.84 |
| | | Too acid | 0.50 | | | | |
| 10A: | | | | | | | |
| Grigsby | 81 | Fair | | Good | | Good | |
| | | Organic matter content low | 0.02 | | | | |
| | | Too acid | 0.84 | | | | |
| 11F: | | | | | | | |
| Highsplint | 55 | Fair | | Poor | | Poor | |
| | | Too acid | 0.16 | Slope | 0.00 | Slope | 0.00 |
| | | Organic matter content low | 0.50 | Cobble content | 0.79 | Hard to reclaim (rock fragments) | 0.00 |
| | | | | | | Rock fragments | 0.00 |
| Shelocta | 40 | Fair | | Poor | | Poor | |
| | | Organic matter content low | 0.02 | Slope | 0.00 | Rock fragments | 0.00 |
| | | | | | | Slope | 0.00 |
| | | Too acid | 0.32 | | | Hard to reclaim (rock fragments) | 0.00 |
| 12F: | | | | | | | |
| Itmann | 95 | Poor | | Poor | | Poor | |
| | | Droughty | 0.00 | Slope | 0.00 | Hard to reclaim (rock fragments) | 0.00 |
| | | Organic matter content low | 0.00 | | | Rock fragments | 0.00 |
| | | Too acid | 0.50 | | | Slope | 0.00 |
| 13D: | | | | | | | |
| Kaymine | 90 | Fair | | Poor | | Poor | |
| | | Organic matter content low | 0.01 | Slope | 0.00 | Slope | 0.00 |
| | | | | Cobble content | 0.73 | Rock fragments | 0.00 |
| | | Stone content | 0.37 | Stone content | 0.99 | Hard to reclaim (rock fragments) | 0.00 |
| 14E: | | | | | | | |
| Kaymine | 85 | Fair | | Poor | | Poor | |
| | | Organic matter content low | 0.01 | Slope | 0.00 | Slope | 0.00 |
| | | | | Cobble content | 0.73 | Rock fragments | 0.00 |
| | | Stone content | 0.37 | Stone content | 0.99 | Hard to reclaim (rock fragments) | 0.00 |
| Cedarcreek | 15 | Fair | | Poor | | Poor | |
| | | Organic matter content low | 0.01 | Slope | 0.00 | Slope | 0.00 |
| | | | | Stone content | 0.68 | Rock fragments | 0.00 |
| | | Droughty | 0.14 | | | Hard to reclaim (rock fragments) | 0.00 |
| | | Too acid | 0.50 | | | | |
| 15C: | | | | | | | |
| Kaymine | 55 | Fair | | Fair | | Poor | |
| | | Organic matter content low | 0.01 | Cobble content | 0.73 | Rock fragments | 0.00 |
| | | | | Stone content | 0.99 | Hard to reclaim (rock fragments) | 0.00 |
| | | Stone content | 0.37 | | | | |

Table 12.—Construction Materials, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Potential source of reclamation material: Rating class and limiting features | Value | Potential source of roadfill: Rating class and limiting features | Value | Potential source of topsoil: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 15C: | | | | | | | |
| Fiveblock----------- | 25 | Poor | | Poor | | Poor | |
| | | Stone content | 0.00 | Stone content | 0.00 | Rock fragments | 0.00 |
| | | Droughty | 0.00 | | | Hard to reclaim (rock fragments) | 0.00 |
| | | Organic matter content low | 0.01 | | | | |
| Cedarcreek---------- | 20 | Fair | | Fair | | Poor | |
| | | Organic matter content low | 0.01 | Stone content | 0.68 | Hard to reclaim (rock fragments) | 0.00 |
| | | Droughty | 0.14 | | | Rock fragments | 0.00 |
| | | Too acid | 0.50 | | | Too acid | 0.68 |
| 16C: | | | | | | | |
| Lily---------------- | 85 | Fair | | Poor | | Fair | |
| | | Organic matter content low | 0.12 | Depth to bedrock | 0.00 | Depth to bedrock | 0.35 |
| | | | | Low strength | 0.78 | Slope | 0.37 |
| | | Depth to bedrock | 0.35 | | | Too acid | 0.95 |
| | | Too acid | 0.50 | | | | |
| 16D: | | | | | | | |
| Lily---------------- | 95 | Fair | | Poor | | Poor | |
| | | Organic matter content low | 0.12 | Depth to bedrock | 0.00 | Slope | 0.00 |
| | | | | Slope | 0.00 | Depth to bedrock | 0.35 |
| | | Depth to bedrock | 0.35 | Low strength | 0.78 | Too acid | 0.95 |
| | | Too acid | 0.50 | | | | |
| 16E: | | | | | | | |
| Lily---------------- | 80 | Fair | | Poor | | Poor | |
| | | Organic matter content low | 0.12 | Depth to bedrock | 0.00 | Slope | 0.00 |
| | | | | Slope | 0.00 | Depth to bedrock | 0.35 |
| | | Depth to bedrock | 0.35 | Low strength | 0.78 | Too acid | 0.95 |
| | | Too acid | 0.50 | | | | |
| 17D: | | | | | | | |
| Marrowbone---------- | 50 | Poor | | Poor | | Poor | |
| | | Droughty | 0.00 | Depth to bedrock | 0.00 | Slope | 0.00 |
| | | Organic matter content low | 0.12 | Slope | 0.50 | Rock fragments | 0.00 |
| | | | | | | Depth to bedrock | 0.79 |
| | | Too acid | 0.50 | | | | |
| Gilpin-------------- | 45 | Poor | | Poor | | Poor | |
| | | Wind erosion | 0.00 | Depth to bedrock | 0.00 | Slope | 0.00 |
| | | Organic matter content low | 0.12 | Slope | 0.50 | Rock fragments | 0.00 |
| | | | | | | Depth to bedrock | 0.90 |
| | | Too acid | 0.50 | | | | |
| 17E: | | | | | | | |
| Marrowbone---------- | 60 | Poor | | Poor | | Poor | |
| | | Droughty | 0.00 | Slope | 0.00 | Slope | 0.00 |
| | | Organic matter content low | 0.12 | Depth to bedrock | 0.00 | Rock fragments | 0.00 |
| | | | | | | Depth to bedrock | 0.79 |
| | | Too acid | 0.50 | | | | |
| Gilpin-------------- | 35 | Poor | | Poor | | Poor | |
| | | Wind erosion | 0.00 | Depth to bedrock | 0.00 | Slope | 0.00 |
| | | Organic matter content low | 0.12 | Slope | 0.00 | Rock fragments | 0.00 |
| | | | | | | Depth to bedrock | 0.90 |
| | | Too acid | 0.50 | | | | |

Table 12.—Construction Materials, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Potential source of reclamation material: Rating class and limiting features | Value | Potential source of roadfill: Rating class and limiting features | Value | Potential source of topsoil: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 17F: | | | | | | | |
| Marrowbone---------- | 75 | Poor | | Poor | | Poor | |
| | | Droughty | 0.00 | Depth to bedrock | 0.00 | Slope | 0.00 |
| | | Organic matter content low | 0.12 | Slope | 0.00 | Rock fragments | 0.00 |
| | | | | | | Depth to bedrock | 0.79 |
| | | Too acid | 0.50 | | | | |
| Gilpin-------------- | 15 | Poor | | Poor | | Poor | |
| | | Wind erosion | 0.00 | Depth to bedrock | 0.00 | Slope | 0.00 |
| | | Organic matter content low | 0.12 | Slope | 0.00 | Rock fragments | 0.00 |
| | | | | | | Depth to bedrock | 0.90 |
| | | Too acid | 0.50 | | | | |
| 18F: | | | | | | | |
| Matewan------------- | 55 | Poor | | Poor | | Poor | |
| | | Droughty | 0.00 | Slope | 0.00 | Slope | 0.00 |
| | | Organic matter content low | 0.02 | Depth to bedrock | 0.00 | Rock fragments | 0.00 |
| | | | | Stone content | 0.99 | Too acid | 0.95 |
| | | Too acid | 0.50 | | | | |
| Gilpin-------------- | 30 | Poor | | Poor | | Poor | |
| | | Wind erosion | 0.00 | Depth to bedrock | 0.00 | Slope | 0.00 |
| | | Organic matter content low | 0.12 | Slope | 0.00 | Rock fragments | 0.00 |
| | | | | | | Depth to bedrock | 0.90 |
| | | Too acid | 0.50 | | | | |
| Rock outcrop-------- | 10 | Not rated | | Not rated | | Not rated | |
| 19D: | | | | | | | |
| Oriskany------------ | 95 | Fair | | Poor | | Poor | |
| | | Organic matter content low | 0.12 | Slope | 0.00 | Slope | 0.00 |
| | | | | Cobble content | 0.37 | Rock fragments | 0.00 |
| | | Too acid | 0.50 | | | Hard to reclaim (rock fragments) | 0.00 |
| | | Cobble content | 0.99 | | | | |
| 19E: | | | | | | | |
| Oriskany------------ | 95 | Fair | | Poor | | Poor | |
| | | Organic matter content low | 0.12 | Slope | 0.00 | Slope | 0.00 |
| | | | | Cobble content | 0.37 | Rock fragments | 0.00 |
| | | Too acid | 0.50 | | | Hard to reclaim (rock fragments) | 0.00 |
| | | Cobble content | 0.99 | | | | |
| 20A: | | | | | | | |
| Philo--------------- | 95 | Fair | | Fair | | Fair | |
| | | Too acid | 0.50 | Wetness depth | 0.22 | Wetness depth | 0.22 |
| | | Organic matter content low | 0.50 | | | Too sandy | 0.98 |
| | | Too sandy | 0.98 | | | | |
| 21F: | | | | | | | |
| Sewell-------------- | 55 | Poor | | Poor | | Poor | |
| | | Droughty | 0.00 | Slope | 0.00 | Rock fragments | 0.00 |
| | | Stone content | 0.00 | Stone content | 0.00 | Hard to reclaim (rock fragments) | 0.00 |
| | | Organic matter content low | 0.01 | | | | |
| | | | | | | Slope | 0.00 |
| Kaymine------------- | 30 | Fair | | Poor | | Poor | |
| | | Organic matter content low | 0.01 | Slope | 0.00 | Rock fragments | 0.00 |
| | | | | Cobble content | 0.73 | Slope | 0.00 |
| | | Stone content | 0.37 | Stone content | 0.99 | Hard to reclaim (rock fragments) | 0.00 |

Table 12.—Construction Materials, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Potential source of reclamation material: Rating class and limiting features | Value | Potential source of roadfill: Rating class and limiting features | Value | Potential source of topsoil: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 21F: | | | | | | | |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 22E: | | | | | | | |
| Shelocta | 70 | Fair | | Poor | | Poor | |
| | | Organic matter content low | 0.02 | Slope | 0.00 | Slope | 0.00 |
| | | | | | | Hard to reclaim (rock fragments) | 0.00 |
| | | Too acid | 0.32 | | | | |
| | | | | | | Rock fragments | 0.00 |
| Cedarcreek | 25 | Fair | | Poor | | Poor | |
| | | Organic matter content low | 0.01 | Slope | 0.00 | Hard to reclaim (rock fragments) | 0.00 |
| | | | | Stone content | 0.68 | | |
| | | Droughty | 0.14 | | | Rock fragments | 0.00 |
| | | Too acid | 0.50 | | | Slope | 0.00 |
| 23E: | | | | | | | |
| Shelocta | 55 | Fair | | Poor | | Poor | |
| | | Organic matter content low | 0.02 | Slope | 0.00 | Slope | 0.00 |
| | | | | | | Hard to reclaim (rock fragments) | 0.00 |
| | | Too acid | 0.32 | | | | |
| | | | | | | Rock fragments | 0.00 |
| Cloverlick | 35 | Fair | | Poor | | Poor | |
| | | Too acid | 0.12 | Slope | 0.00 | Slope | 0.00 |
| | | Organic matter content low | 0.12 | | | Hard to reclaim (rock fragments) | 0.00 |
| | | Water erosion | 0.99 | | | Rock fragments | 0.00 |
| 24E: | | | | | | | |
| Shelocta | 50 | Fair | | Poor | | Poor | |
| | | Organic matter content low | 0.02 | Slope | 0.00 | Slope | 0.00 |
| | | | | | | Hard to reclaim (rock fragments) | 0.00 |
| | | Too acid | 0.32 | | | | |
| | | | | | | Rock fragments | 0.00 |
| Highsplint | 40 | Fair | | Poor | | Poor | |
| | | Too acid | 0.16 | Slope | 0.00 | Hard to reclaim (rock fragments) | 0.00 |
| | | Organic matter content low | 0.50 | Cobble content | 0.79 | | |
| | | | | | | Rock fragments | 0.00 |
| | | | | | | Slope | 0.00 |
| 25F: | | | | | | | |
| Shelocta | 55 | Fair | | Poor | | Poor | |
| | | Organic matter content low | 0.02 | Slope | 0.00 | Slope | 0.00 |
| | | | | | | Hard to reclaim (rock fragments) | 0.00 |
| | | Too acid | 0.32 | | | | |
| | | | | | | Rock fragments | 0.00 |
| Kaymine | 40 | Fair | | Poor | | Poor | |
| | | Organic matter content low | 0.01 | Slope | 0.00 | Slope | 0.00 |
| | | | | Cobble content | 0.73 | Rock fragments | 0.00 |
| | | Stone content | 0.37 | Stone content | 0.99 | Hard to reclaim (rock fragments) | 0.00 |
| 26F: | | | | | | | |
| Stonecoal | 85 | Poor | | Poor | | Poor | |
| | | Droughty | 0.00 | Slope | 0.00 | Rock fragments | 0.00 |
| | | Organic matter content low | 0.12 | Cobble content | 0.13 | Hard to reclaim (rock fragments) | 0.00 |
| | | Cobble content | 0.92 | | | Slope | 0.00 |

Table 12.—Construction Materials, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Potential source of reclamation material: Rating class and limiting features | Value | Potential source of roadfill: Rating class and limiting features | Value | Potential source of topsoil: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 27: | | | | | | | |
| Udorthents | 45 | Not rated | | Not rated | | Not rated | |
| Urban land | 30 | Not rated | | Not rated | | Not rated | |
| 28: | | | | | | | |
| Udorthents | 45 | Not rated | | Not rated | | Not rated | |
| Urban land | 35 | Not rated | | Not rated | | Not rated | |
| 29D: | | | | | | | |
| Wallen | 90 | Poor | | Poor | | Poor | |
| | | Droughty | 0.00 | Depth to bedrock | 0.00 | Slope | 0.00 |
| | | Depth to bedrock | 0.10 | Slope | 0.00 | Rock fragments | 0.00 |
| | | Organic matter content low | 0.12 | No cobble limitation | 0.99 | Depth to bedrock | 0.10 |
| 29F: | | | | | | | |
| Wallen | 75 | Poor | | Poor | | Poor | |
| | | Droughty | 0.00 | Depth to bedrock | 0.00 | Slope | 0.00 |
| | | Depth to bedrock | 0.10 | Slope | 0.00 | Rock fragments | 0.00 |
| | | Organic matter content low | 0.12 | No cobble limitation | 0.99 | Depth to bedrock | 0.10 |
| 30F: | | | | | | | |
| Wallen | 85 | Poor | | Poor | | Poor | |
| | | Droughty | 0.00 | Depth to bedrock | 0.00 | Slope | 0.00 |
| | | Depth to bedrock | 0.10 | Slope | 0.00 | Rock fragments | 0.00 |
| | | Organic matter content low | 0.12 | No cobble limitation | 0.99 | Depth to bedrock | 0.10 |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 31D: | | | | | | | |
| Wharton | 45 | Fair | | Poor | | Poor | |
| | | Too acid | 0.20 | Low strength | 0.00 | Slope | 0.00 |
| | | Organic matter content low | 0.50 | Wetness depth | 0.20 | Wetness depth | 0.20 |
| | | | | Slope | 0.68 | Too acid | 0.76 |
| | | Water erosion | 0.68 | | | | |
| Gilpin | 40 | Poor | | Poor | | Poor | |
| | | Wind erosion | 0.00 | Depth to bedrock | 0.00 | Slope | 0.00 |
| | | Organic matter content low | 0.12 | Slope | 0.50 | Rock fragments | 0.00 |
| | | | | | | Depth to bedrock | 0.90 |
| | | Too acid | 0.50 | | | | |
| Berks | 15 | Fair | | Poor | | Poor | |
| | | Droughty | 0.08 | Depth to bedrock | 0.00 | Rock fragments | 0.00 |
| | | Organic matter content low | 0.12 | Slope | 0.50 | Slope | 0.00 |
| | | | | | | Depth to bedrock | 0.84 |
| | | Too acid | 0.50 | | | | |
| 32C: | | | | | | | |
| Wharton | 45 | Fair | | Poor | | Fair | |
| | | Too acid | 0.20 | Low strength | 0.00 | Wetness depth | 0.20 |
| | | Organic matter content low | 0.50 | Wetness depth | 0.20 | Too acid | 0.76 |
| | | | | | | Slope | 0.84 |
| | | Water erosion | 0.68 | | | | |

Table 12.—Construction Materials, Part II—Continued

| Map symbol and soil name | Pct. of map unit | Potential source of reclamation material: Rating class and limiting features | Value | Potential source of roadfill: Rating class and limiting features | Value | Potential source of topsoil: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 32C: | | | | | | | |
| Gilpin | 35 | Poor | | Poor | | Poor | |
| | | Wind erosion | 0.00 | Depth to bedrock | 0.00 | Rock fragments | 0.00 |
| | | Organic matter content low | 0.12 | | | Slope | 0.84 |
| | | | | | | Depth to bedrock | 0.90 |
| | | Too acid | 0.50 | | | | |
| Marrowbone | 20 | Poor | | Poor | | Poor | |
| | | Droughty | 0.00 | Depth to bedrock | 0.00 | Rock fragments | 0.00 |
| | | Organic matter content low | 0.12 | | | Depth to bedrock | 0.79 |
| | | | | | | Slope | 0.84 |
| | | Too acid | 0.50 | | | | |
| W: | | | | | | | |
| Water | 100 | Not rated | | Not rated | | Not rated | |

Table 13.—Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

| Map symbol and soil name | Pct. of map unit | Pond reservoir areas | | Embankments, dikes, and levees | | Aquifer-fed excavated ponds | |
|---|---|---|---|---|---|---|---|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| 1D: | | | | | | | |
| Calvin | 85 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Thin layer | 0.86 | Depth to water | 1.00 |
| | | Depth to bedrock | 0.86 | | | | |
| | | Slope | 0.28 | | | | |
| 2F: | | | | | | | |
| Calvin | 70 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Thin layer | 0.86 | Depth to water | 1.00 |
| | | Slope | 1.00 | | | | |
| | | Depth to bedrock | 0.86 | | | | |
| Rough | 20 | Very limited | | Very limited | | Very limited | |
| | | Depth to bedrock | 1.00 | Thin layer | 1.00 | Depth to water | 1.00 |
| | | Slope | 1.00 | Seepage | 0.25 | | |
| 3F: | | | | | | | |
| Cedarcreek | 35 | Very limited | | Somewhat limited | | Very limited | |
| | | Slope | 1.00 | Seepage | 0.12 | Depth to water | 1.00 |
| | | Seepage | 0.57 | | | | |
| Fiveblock | 30 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Seepage | 0.12 | Depth to water | 1.00 |
| | | Slope | 1.00 | Large stones content | 0.05 | | |
| Kaymine | 25 | Very limited | | Somewhat limited | | Very limited | |
| | | Slope | 1.00 | Large stones content | 0.03 | Depth to water | 1.00 |
| | | Seepage | 0.57 | | | | |
| 4C: | | | | | | | |
| Cedarcreek | 35 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Seepage | 0.57 | Seepage | 0.12 | Depth to water | 1.00 |
| Sewell | 30 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Seepage | 0.12 | Depth to water | 1.00 |
| | | | | Large stones content | 0.10 | | |
| Rock outcrop | 10 | Not rated | | Not rated | | Not rated | |
| 5F: | | | | | | | |
| Cloverlick | 45 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Seepage | 0.03 | Depth to water | 1.00 |
| | | Slope | 1.00 | | | | |
| Shelocta | 40 | Very limited | | Not limited | | Very limited | |
| | | Slope | 1.00 | | | Depth to water | 1.00 |
| | | Seepage | 0.70 | | | | |

Table 13.—Water Management—Continued

| Map symbol and soil name | Pct. of map unit | Pond reservoir areas: Rating class and limiting features | Value | Embankments, dikes, and levees: Rating class and limiting features | Value | Aquifer-fed excavated ponds: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 6C: | | | | | | | |
| Cotaco | 90 | Somewhat limited | | Very limited | | Somewhat limited | |
| | | Seepage | 0.70 | Piping | 0.99 | Slow refill | 0.30 |
| | | Slope | 0.01 | Depth to saturated zone | 0.99 | Cutbanks cave | 0.10 |
| | | | | | | Depth to saturated zone | 0.01 |
| 7: | | | | | | | |
| Dumps, mine | 60 | Not rated | | Not rated | | Not rated | |
| Urban land | 30 | Not rated | | Not rated | | Not rated | |
| 8C: | | | | | | | |
| Fiveblock | 80 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Seepage | 0.12 | Depth to water | 1.00 |
| | | | | Large stones content | 0.05 | | |
| Sewell | 20 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Seepage | 0.12 | Depth to water | 1.00 |
| | | | | Large stones content | 0.10 | | |
| 9E: | | | | | | | |
| Gilpin | 55 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Seepage | 0.70 | Thin layer | 0.70 | Depth to water | 1.00 |
| | | Depth to bedrock | 0.52 | | | | |
| | | Slope | 0.50 | | | | |
| Berks | 30 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Thin layer | 0.74 | Depth to water | 1.00 |
| | | Depth to bedrock | 0.66 | Seepage | 0.25 | | |
| | | Slope | 0.50 | | | | |
| 9F: | | | | | | | |
| Gilpin | 55 | Very limited | | Somewhat limited | | Very limited | |
| | | Slope | 1.00 | Thin layer | 0.70 | Depth to water | 1.00 |
| | | Seepage | 0.70 | | | | |
| | | Depth to bedrock | 0.52 | | | | |
| Berks | 35 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Thin layer | 0.74 | Depth to water | 1.00 |
| | | Slope | 1.00 | Seepage | 0.25 | | |
| | | Depth to bedrock | 0.66 | | | | |
| 10A: | | | | | | | |
| Grigsby | 81 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Seepage | 0.86 | Depth to water | 1.00 |
| 11F: | | | | | | | |
| Highsplint | 55 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Large stones content | 0.01 | Depth to water | 1.00 |
| | | Slope | 1.00 | | | | |
| Shelocta | 40 | Very limited | | Not limited | | Very limited | |
| | | Slope | 1.00 | | | Depth to water | 1.00 |
| | | Seepage | 0.70 | | | | |

Table 13.—Water Management—Continued

| Map symbol and soil name | Pct. of map unit | Pond reservoir areas: Rating class and limiting features | Value | Embankments, dikes, and levees: Rating class and limiting features | Value | Aquifer-fed excavated ponds: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 12F: | | | | | | | |
| Itmann-------------- | 95 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Seepage | 0.12 | Depth to water | 1.00 |
| | | Slope | 1.00 | | | | |
| 13D: | | | | | | | |
| Kaymine------------- | 90 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Seepage | 0.57 | Large stones content | 0.03 | Depth to water | 1.00 |
| | | Slope | 0.28 | | | | |
| 14E: | | | | | | | |
| Kaymine------------- | 85 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Slope | 0.97 | Large stones content | 0.03 | Depth to water | 1.00 |
| | | Seepage | 0.57 | | | | |
| Cedarcreek---------- | 15 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Slope | 0.97 | Seepage | 0.12 | Depth to water | 1.00 |
| | | Seepage | 0.57 | | | | |
| 15C: | | | | | | | |
| Kaymine------------- | 55 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Seepage | 0.57 | Large stones content | 0.03 | Depth to water | 1.00 |
| Fiveblock----------- | 25 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Seepage | 0.12 | Depth to water | 1.00 |
| | | | | Large stones content | 0.05 | | |
| Cedarcreek---------- | 20 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Seepage | 0.57 | Seepage | 0.12 | Depth to water | 1.00 |
| 16C: | | | | | | | |
| Lily---------------- | 85 | Very limited | | Very limited | | Very limited | |
| | | Seepage | 1.00 | Piping | 0.99 | Depth to water | 1.00 |
| | | Depth to bedrock | 0.91 | Thin layer | 0.91 | | |
| | | Slope | 0.01 | Seepage | 0.03 | | |
| 16D: | | | | | | | |
| Lily---------------- | 95 | Very limited | | Very limited | | Very limited | |
| | | Seepage | 1.00 | Piping | 0.99 | Depth to water | 1.00 |
| | | Depth to bedrock | 0.91 | Thin layer | 0.91 | | |
| | | Slope | 0.28 | Seepage | 0.03 | | |
| 16E: | | | | | | | |
| Lily---------------- | 80 | Very limited | | Very limited | | Very limited | |
| | | Seepage | 1.00 | Piping | 0.99 | Depth to water | 1.00 |
| | | Slope | 0.97 | Thin layer | 0.91 | | |
| | | Depth to bedrock | 0.91 | Seepage | 0.03 | | |
| 17D: | | | | | | | |
| Marrowbone---------- | 50 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Thin layer | 0.77 | Depth to water | 1.00 |
| | | Depth to bedrock | 0.26 | Seepage | 0.07 | | |
| | | Slope | 0.12 | | | | |
| Gilpin-------------- | 45 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Seepage | 0.70 | Thin layer | 0.70 | Depth to water | 1.00 |
| | | Depth to bedrock | 0.52 | | | | |
| | | Slope | 0.12 | | | | |

Table 13.—Water Management—Continued

| Map symbol and soil name | Pct. of map unit | Pond reservoir areas: Rating class and limiting features | Value | Embankments, dikes, and levees: Rating class and limiting features | Value | Aquifer-fed excavated ponds: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 17E: | | | | | | | |
| Marrowbone---------- | 60 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Thin layer | 0.77 | Depth to water | 1.00 |
| | | Slope | 0.50 | Seepage | 0.07 | | |
| | | Depth to bedrock | 0.26 | | | | |
| Gilpin------------- | 35 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Seepage | 0.70 | Thin layer | 0.70 | Depth to water | 1.00 |
| | | Depth to bedrock | 0.52 | | | | |
| | | Slope | 0.50 | | | | |
| 17F: | | | | | | | |
| Marrowbone---------- | 75 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Thin layer | 0.77 | Depth to water | 1.00 |
| | | Slope | 1.00 | Seepage | 0.07 | | |
| | | Depth to bedrock | 0.26 | | | | |
| Gilpin------------- | 15 | Very limited | | Somewhat limited | | Very limited | |
| | | Slope | 1.00 | Thin layer | 0.70 | Depth to water | 1.00 |
| | | Seepage | 0.70 | | | | |
| | | Depth to bedrock | 0.52 | | | | |
| 18F: | | | | | | | |
| Matewan------------- | 55 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Thin layer | 0.56 | Depth to water | 1.00 |
| | | Slope | 1.00 | Seepage | 0.03 | | |
| | | Depth to bedrock | 0.56 | | | | |
| Gilpin------------- | 30 | Very limited | | Somewhat limited | | Very limited | |
| | | Slope | 1.00 | Thin layer | 0.70 | Depth to water | 1.00 |
| | | Seepage | 0.70 | | | | |
| | | Depth to bedrock | 0.52 | | | | |
| Rock outcrop-------- | 10 | Not rated | | Not rated | | Not rated | |
| 19D: | | | | | | | |
| Oriskany------------ | 95 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Large stones content | 0.01 | Depth to water | 1.00 |
| | | Slope | 0.28 | | | | |
| 19E: | | | | | | | |
| Oriskany------------ | 95 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Large stones content | 0.01 | Depth to water | 1.00 |
| | | Slope | 0.97 | | | | |
| 20A: | | | | | | | |
| Philo--------------- | 95 | Very limited | | Very limited | | Somewhat limited | |
| | | Seepage | 1.00 | Depth to saturated zone | 1.00 | Cutbanks cave | 0.10 |
| | | | | Seepage | 0.02 | | |
| 21F: | | | | | | | |
| Sewell-------------- | 55 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Seepage | 0.12 | Depth to water | 1.00 |
| | | Slope | 0.97 | Large stones content | 0.10 | | |
| Kaymine------------- | 30 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Slope | 0.97 | Large stones content | 0.03 | Depth to water | 1.00 |
| | | Seepage | 0.57 | | | | |

Table 13.—Water Management—Continued

| Map symbol and soil name | Pct. of map unit | Pond reservoir areas: Rating class and limiting features | Value | Embankments, dikes, and levees: Rating class and limiting features | Value | Aquifer-fed excavated ponds: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 21F: | | | | | | | |
| Rock outcrop-------- | 10 | Not rated | | Not rated | | Not rated | |
| 22E: | | | | | | | |
| Shelocta------------ | 70 | Somewhat limited | | Not limited | | Very limited | |
| | | Slope | 0.97 | | | Depth to water | 1.00 |
| | | Seepage | 0.70 | | | | |
| Cedarcreek---------- | 25 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Slope | 0.97 | Seepage | 0.12 | Depth to water | 1.00 |
| | | Seepage | 0.57 | | | | |
| 23E: | | | | | | | |
| Shelocta------------ | 55 | Somewhat limited | | Not limited | | Very limited | |
| | | Slope | 0.97 | | | Depth to water | 1.00 |
| | | Seepage | 0.70 | | | | |
| Cloverlick---------- | 35 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Seepage | 0.03 | Depth to water | 1.00 |
| | | Slope | 0.97 | | | | |
| 24E: | | | | | | | |
| Shelocta------------ | 50 | Somewhat limited | | Not limited | | Very limited | |
| | | Slope | 0.97 | | | Depth to water | 1.00 |
| | | Seepage | 0.70 | | | | |
| Highsplint---------- | 40 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Large stones content | 0.01 | Depth to water | 1.00 |
| | | Slope | 0.97 | | | | |
| 25F: | | | | | | | |
| Shelocta------------ | 55 | Very limited | | Not limited | | Very limited | |
| | | Slope | 1.00 | | | Depth to water | 1.00 |
| | | Seepage | 0.70 | | | | |
| Kaymine------------- | 40 | Very limited | | Somewhat limited | | Very limited | |
| | | Slope | 1.00 | Large stones content | 0.03 | Depth to water | 1.00 |
| | | Seepage | 0.57 | | | | |
| 26F: | | | | | | | |
| Stonecoal----------- | 85 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Seepage | 0.38 | Depth to water | 1.00 |
| | | Slope | 0.88 | Large stones content | 0.08 | | |
| 27: | | | | | | | |
| Udorthents---------- | 45 | Not rated | | Not rated | | Not rated | |
| Urban land---------- | 30 | Not rated | | Not rated | | Not rated | |
| 28: | | | | | | | |
| Udorthents---------- | 45 | Not rated | | Not rated | | Not rated | |
| Urban land---------- | 35 | Not rated | | Not rated | | Not rated | |
| 29D: | | | | | | | |
| Wallen-------------- | 90 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Thin layer | 0.98 | Depth to water | 1.00 |
| | | Depth to bedrock | 0.98 | Seepage | 0.03 | | |
| | | Slope | 0.28 | | | | |

Table 13.—Water Management—Continued

| Map symbol and soil name | Pct. of map unit | Pond reservoir areas: Rating class and limiting features | Value | Embankments, dikes, and levees: Rating class and limiting features | Value | Aquifer-fed excavated ponds: Rating class and limiting features | Value |
|---|---|---|---|---|---|---|---|
| 29F: | | | | | | | |
| Wallen-------------- | 75 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Thin layer | 0.98 | Depth to water | 1.00 |
| | | Slope | 1.00 | Seepage | 0.03 | | |
| | | Depth to bedrock | 0.98 | | | | |
| 30F: | | | | | | | |
| Wallen-------------- | 85 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Thin layer | 0.98 | Depth to water | 1.00 |
| | | Slope | 1.00 | Seepage | 0.03 | | |
| | | Depth to bedrock | 0.98 | | | | |
| Rock outcrop-------- | 10 | Not rated | | Not rated | | Not rated | |
| 31D: | | | | | | | |
| Wharton------------- | 45 | Somewhat limited | | Very limited | | Very limited | |
| | | Slope | 0.10 | Depth to saturated zone | 1.00 | Depth to water | 1.00 |
| | | Seepage | 0.01 | Piping | 1.00 | | |
| Gilpin-------------- | 40 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Seepage | 0.70 | Thin layer | 0.70 | Depth to water | 1.00 |
| | | Depth to bedrock | 0.52 | | | | |
| | | Slope | 0.12 | | | | |
| Berks--------------- | 15 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Thin layer | 0.74 | Depth to water | 1.00 |
| | | Depth to bedrock | 0.66 | Seepage | 0.25 | | |
| | | Slope | 0.12 | | | | |
| 32C: | | | | | | | |
| Wharton------------- | 45 | Somewhat limited | | Very limited | | Very limited | |
| | | Seepage | 0.01 | Depth to saturated zone | 1.00 | Depth to water | 1.00 |
| | | | | Piping | 1.00 | | |
| Gilpin-------------- | 35 | Somewhat limited | | Somewhat limited | | Very limited | |
| | | Seepage | 0.70 | Thin layer | 0.70 | Depth to water | 1.00 |
| | | Depth to bedrock | 0.52 | | | | |
| Marrowbone---------- | 20 | Very limited | | Somewhat limited | | Very limited | |
| | | Seepage | 1.00 | Thin layer | 0.77 | Depth to water | 1.00 |
| | | Depth to bedrock | 0.26 | Seepage | 0.07 | | |
| W: | | | | | | | |
| Water--------------- | 100 | Not rated | | Not rated | | Not rated | |

Table 14.—Engineering Properties

(Absence of an entry indicates that 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 | Percentage passing sieve number--: 10 | Percentage passing sieve number--: 40 | Percentage passing sieve number--: 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 1D: | | | | | | | | | | | | |
| Calvin---------- | 0-9 | Loam | CL-ML, CL, ML, SC, SC-SM | A-4 | 0 | 0-5 | 85-95 | 80-90 | 65-85 | 45-70 | 16-30 | 3-11 |
| | 9-25 | Very channery loam, channery loam, channery silt loam | SC, SC-SM, CL, CL-ML | A-4, A-2-4 | 0 | 5-20 | 55-75 | 40-70 | 35-70 | 25-60 | 16-30 | 3-11 |
| | 25-30 | Very channery loam, very channery silt loam, extremely channery loam | SC, SC-SM, GW-GC, GC, GC-GM | A-2-4, A-1 | 0 | 5-30 | 40-65 | 20-55 | 15-55 | 10-50 | 16-30 | 3-11 |
| | 30-40 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| 2F: | | | | | | | | | | | | |
| Calvin---------- | 0-9 | Loam | CL-ML, CL, ML, SC, SC-SM | A-4 | 0 | 0-5 | 85-95 | 80-90 | 65-85 | 45-70 | 16-30 | 3-11 |
| | 9-25 | Very channery loam, channery loam, channery silt loam | SC, SC-SM, CL, CL-ML | A-4, A-2-4 | 0 | 5-20 | 55-75 | 40-70 | 35-70 | 25-60 | 16-30 | 3-11 |
| | 25-30 | Very channery loam, very channery silt loam, extremely channery loam | SC, SC-SM, GW-GC, GC, GC-GM | A-2-4, A-1 | 0 | 5-30 | 40-65 | 20-55 | 15-55 | 10-50 | 16-30 | 3-11 |
| | 30-40 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| Rough----------- | 0-2 | Channery loam | CL, CL-ML | A-4, A-2-4 | 0 | 0-5 | 60-80 | 50-75 | 45-70 | 30-55 | 18-31 | 4-11 |
| | 2-8 | Very channery loam, very channery silt loam | SC, SC-SM | A-2-4, A-1 | 0 | 5-15 | 45-60 | 30-55 | 25-50 | 15-45 | 18-31 | 4-11 |
| | 8-10 | Extremely channery loam, very channery silt loam | GC, GC-GM, GW-GC | A-2-4, A-1 | 0 | 5-25 | 35-45 | 15-30 | 15-30 | 10-25 | 18-31 | 4-11 |
| | 10-20 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments: >10 inches | Fragments: 3-10 inches | Percentage passing sieve number--: 4 | Percentage passing sieve number--: 10 | Percentage passing sieve number--: 40 | Percentage passing sieve number--: 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 3F: | | | | | | | | | | | | |
| Cedarcreek------ | 0-3 | Very channery loam | SC | A-2, A-4 | 0-5 | 10-20 | 50-65 | 35-55 | 30-50 | 20-40 | 21-31 | 6-11 |
| | 3-15 | Very channery loam, very channery silt loam, stony loam, extremely channery fine sandy loam | SC, GW-GC, GC | A-2, A-4 | 0-15 | 10-30 | 40-65 | 15-55 | 15-55 | 5-50 | 21-31 | 6-11 |
| | 15-65 | Extremely channery loam, extremely channery silt loam, very stony loam, extremely channery fine sandy loam | GC, GW-GC, SC | A-2, A-4 | 0-25 | 10-35 | 40-65 | 20-55 | 15-55 | 5-50 | 23-31 | 7-11 |
| Fiveblock------- | 0-6 | Very channery sandy loam | SC-SM, SM | A-1, A-2 | 0-10 | 10-35 | 50-65 | 35-55 | 20-40 | 10-20 | 12-23 | 1-7 |
| | 6-25 | Very channery sandy loam, extremely channery sandy loam, extremely stony loamy sand | SC-SM, SM, GW-GM | A-1, A-2 | 10-40 | 10-40 | 40-70 | 20-60 | 10-45 | 5-25 | 12-23 | 1-7 |
| | 25-65 | Extremely channery sandy loam, very channery sandy loam, extremely stony loamy sand | GW-GM, SM, SC-SM | A-1, A-2 | 10-30 | 10-40 | 40-70 | 20-60 | 10-45 | 5-25 | 12-23 | 1-7 |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas-ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Unified | AASHTO | >10 inches | 3-10 inches | 4 | 10 | 40 | 200 | | |
| | In | | | | Pct | Pct | | | | | Pct | |
| 3F: | | | | | | | | | | | | |
| Kaymine--------- | 0-4 | Very channery silt loam | SC-SM, SM, SC, GC-GM, GC, GM | A-1, A-2, A-4 | 0 | 2-10 | 45-65 | 30-50 | 30-50 | 20-45 | 13-25 | 1-8 |
| | 4-28 | Extremely channery silt loam, very channery silt loam, extremely channery loam, stony loam | SC-SM, SM, SC, GC-GM, GC, GM | A-1, A-2, A-4 | 0-15 | 10-25 | 40-70 | 20-60 | 20-60 | 10-50 | 13-30 | 1-11 |
| | 28-64 | Very flaggy silt loam, very channery silt loam, extremely channery loam, very stony loam | SC-SM, SM, SC, ML, GC-GM, GC, GM, CL-ML, CL | A-1, A-2, A-4 | 10-25 | 10-35 | 45-80 | 30-70 | 25-70 | 20-65 | 13-30 | 1-11 |
| 4C: | | | | | | | | | | | | |
| Cedarcreek------ | 0-3 | Very channery loam | SC | A-2, A-4 | 0-5 | 10-20 | 50-65 | 35-55 | 30-50 | 20-40 | 21-31 | 6-11 |
| | 3-15 | Very channery loam, very channery silt loam, stony loam, extremely channery fine sandy loam | SC, GW-GC, GC | A-2, A-4 | 0-15 | 10-30 | 40-65 | 15-55 | 15-55 | 5-50 | 21-31 | 6-11 |
| | 15-65 | Extremely channery loam, extremely channery silt loam, very stony loam, extremely channery fine sandy loam | GC, GW-GC, SC | A-2, A-4 | 0-25 | 10-35 | 40-65 | 20-55 | 15-55 | 5-50 | 23-31 | 7-11 |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments: >10 inches | Fragments: 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 4C: | | | | | | | | | | | | |
| Sewell---------- | 0-4 | Channery sandy loam | SC-SM, SM | A-1, A-2 | 0-10 | 5-20 | 75-85 | 60-80 | 35-55 | 20-35 | 15-25 | NP-7 |
| | 4-9 | Very channery sandy loam, very channery fine sandy loam, extremely stony loam | GW-GM, GC-GM, GM, SM, SC-SM | A-1, A-2, A-4 | 10-40 | 10-40 | 40-70 | 20-60 | 15-55 | 10-45 | 15-25 | NP-7 |
| | 9-65 | Extremely channery sandy loam, very channery fine sandy loam, extremely stony loam | GW-GM, GC-GM, GM, SM, SC-SM | A-1, A-2, A-4 | 10-30 | 10-40 | 40-70 | 20-60 | 15-55 | 10-45 | 15-25 | NP-7 |
| Rock outcrop. | | | | | | | | | | | | |
| 5F: | | | | | | | | | | | | |
| Cloverlick------ | 0-7 | Gravelly silt loam | CL, ML, CL-ML, SM, SC, SC-SM | A-4 | 0 | 0-5 | 60-80 | 50-70 | 40-70 | 35-60 | 10-30 | NP-11 |
| | 7-10 | Gravelly silt loam, channery loam | CL, ML, CL-ML, SM, SC, SC-SM | A-4, A-2 | 0 | 0-5 | 60-80 | 50-70 | 40-70 | 30-65 | 10-30 | NP-11 |
| | 10-44 | Very gravelly loam, gravelly loam, very channery silt loam, very flaggy silt loam | SC-SM, SC, SM, CL-ML, CL, ML | A-2, A-4 | 0-5 | 5-20 | 60-80 | 45-80 | 40-80 | 30-70 | 13-30 | 1-11 |
| | 44-63 | Very gravelly sandy loam, very gravelly loam, extremely channery fine sandy loam, very flaggy silt loam | GM, GC, GC-GM, SM, SC, SC-SM, GP-GM, GP-GC | A-1, A-2, A-4 | 0-5 | 10-25 | 30-70 | 10-60 | 5-60 | 5-50 | 12-30 | 1-11 |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas-ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Unified | AASHTO | >10 inches | 3-10 inches | 4 | 10 | 40 | 200 | | |
| | In | | | | Pct | Pct | | | | | Pct | |
| 5F: | | | | | | | | | | | | |
| Shelocta-------- | 0-4 | Gravelly loam | SC-SM, SM, SC | A-4, A-2 | 0 | 0-5 | 60-80 | 50-70 | 40-70 | 30-55 | 13-30 | 1-11 |
| | 4-13 | Loam, silty clay loam, gravelly silt loam | CL-ML, ML, CL, SM, SC, SC-SM | A-4, A-2, A-6 | 0 | 0-10 | 60-95 | 50-90 | 40-90 | 30-85 | 13-39 | 1-16 |
| | 13-50 | Gravelly loam, gravelly silt loam, silty clay loam, very gravelly silt loam | SC, SC-SM, CL, CL-ML | A-6, A-4, A-2 | 0-5 | 0-15 | 60-95 | 45-90 | 40-90 | 30-85 | 23-39 | 7-16 |
| | 50-86 | Very gravelly loam, extremely gravelly loam, gravelly silty clay loam, cobbly clay loam | SC, SC-SM, SM, CL, CL-ML, ML | A-2, A-1, A-4, A-6 | 0-5 | 0-15 | 50-80 | 35-75 | 30-75 | 20-70 | 13-39 | 1-16 |
| 6C: | | | | | | | | | | | | |
| Cotaco---------- | 0-12 | Loam | CL, CL-ML, ML | A-4 | 0 | 0-5 | 85-100 | 80-100 | 70-95 | 50-75 | 13-31 | 1-11 |
| | 12-39 | Clay loam, loam, channery sandy clay loam, silt loam, silty clay loam | CL, SC | A-6, A-4, A-2 | 0 | 0-10 | 70-100 | 60-100 | 50-100 | 20-95 | 23-39 | 7-16 |
| | 39-65 | Channery loam, loam, clay loam, very channery sandy clay loam, silt loam, silty clay loam | CL, CL-ML, ML, SC, SC-SM, SM | A-4, A-6, A-1, A-2 | 0 | 0-15 | 55-100 | 40-100 | 35-100 | 15-95 | 13-34 | 1-13 |
| 7. | | | | | | | | | | | | |
| Dumps, mine-Urban land | | | | | | | | | | | | |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments: >10 inches | Fragments: 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 8C: | | | | | | | | | | | | |
| Fiveblock------- | 0-6 | Very channery sandy loam | SC-SM, SM | A-1, A-2 | 0-10 | 10-35 | 50-65 | 35-55 | 20-40 | 10-20 | 12-23 | 1-7 |
| | 6-25 | Very channery sandy loam, extremely channery sandy loam, extremely stony loamy sand | SC-SM, SM, GW-GM | A-1, A-2 | 10-40 | 10-40 | 40-70 | 20-60 | 10-45 | 5-25 | 12-23 | 1-7 |
| | 25-65 | Extremely channery sandy loam, very channery sandy loam, extremely stony loamy sand | GW-GM, SM, SC-SM | A-1, A-2 | 10-30 | 10-40 | 40-70 | 20-60 | 10-45 | 5-25 | 12-23 | 1-7 |
| Sewell---------- | 0-4 | Channery sandy loam | SC-SM, SM | A-1, A-2 | 0-10 | 5-20 | 75-85 | 60-80 | 35-55 | 20-35 | 15-25 | NP-7 |
| | 4-9 | Very channery sandy loam, very channery fine sandy loam, extremely stony loam | GW-GM, GC-GM, GM, SM, SC-SM | A-1, A-2, A-4 | 10-40 | 10-40 | 40-70 | 20-60 | 15-55 | 10-45 | 15-25 | NP-7 |
| | 9-65 | Extremely channery sandy loam, very channery fine sandy loam, extremely stony loam | GW-GM, GC-GM, GM, SM, SC-SM | A-1, A-2, A-4 | 10-30 | 10-40 | 40-70 | 20-60 | 15-55 | 10-45 | 15-25 | NP-7 |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments >10 inches | Fragments 3-10 inches | Percentage passing sieve number-- 4 | 10 | 40 | 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 9E: | | | | | | | | | | | | |
| Gilpin---------- | 0-3 | Silt loam | ML, CL, CL-ML, SM, SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 60-95 | 50-90 | 45-90 | 35-80 | 9-30 | NP-11 |
| | 3-5 | Silt loam, loam, gravelly loam | ML, CL, CL-ML, SM, SC, SC-SM | A-2, A-4, A-6 | 0 | 0-1 | 60-95 | 50-90 | 45-90 | 30-80 | 9-30 | NP-11 |
| | 5-30 | Gravelly silt loam, silty clay loam, silt loam, gravelly loam | CL, CL-ML, SC, SC-SM | A-6, A-2 | 0 | 0-3 | 65-95 | 50-90 | 45-90 | 30-85 | 23-39 | 7-16 |
| | 30-35 | Very gravelly loam, very gravelly silt loam, extremely gravelly sandy loam, extremely gravelly loamy fine sand | SM, SC, SC-SM, GM, GC, GC-GM | A-1, A-2, A-6 | 0 | 0-10 | 35-65 | 15-50 | 10-50 | 5-45 | 9-30 | NP-11 |
| | 35-39 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| | 39-49 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| Berks----------- | 0-4 | Silt loam | CL-ML, ML, CL | A-4 | 0 | 0 | 75-100 | 70-100 | 60-100 | 45-90 | 12-30 | 1-11 |
| | 4-8 | Channery silt loam, very channery loam, channery silty clay loam | CL-ML, CL, ML, SM, SC, SC-SM, GM, GC, GC-GM | A-4, A-1, A-2, A-6 | 0 | 0-5 | 45-80 | 30-75 | 25-70 | 15-70 | 12-34 | 1-13 |
| | 8-23 | Very channery silt loam, very channery loam, very channery silty clay loam | SC-SM, SC, SM | A-4, A-1, A-2, A-6 | 0 | 0-20 | 50-65 | 30-50 | 30-50 | 20-50 | 12-34 | 1-13 |
| | 23-34 | Extremely channery silt loam, very channery silt loam, extremely channery loam | GC-GM, GC, GM, SC-SM, SM, SC | A-1, A-2, A-4 | 0-1 | 0-25 | 35-65 | 15-50 | 15-50 | 10-45 | 12-25 | 1-8 |
| | 34-36 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| | 36-46 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments: >10 inches | Fragments: 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas-ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 9F: | | | | | | | | | | | | |
| Gilpin---------- | 0-3 | Silt loam | ML, CL, CL-ML, SM, SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 60-95 | 50-90 | 45-90 | 35-80 | 9-30 | NP-11 |
| | 3-5 | Silt loam, loam, gravelly loam | ML, CL, CL-ML, SM, SC, SC-SM | A-2, A-4, A-6 | 0 | 0-1 | 60-95 | 50-90 | 45-90 | 30-80 | 9-30 | NP-11 |
| | 5-30 | Gravelly silt loam, silty clay loam, silt loam, gravelly loam | CL, CL-ML, SC, SC-SM | A-6, A-2 | 0 | 0-3 | 65-95 | 50-90 | 45-90 | 30-85 | 23-39 | 7-16 |
| | 30-35 | Very gravelly loam, very gravelly silt loam, extremely gravelly sandy loam, extremely gravelly loamy fine sand | SM, SC, SC-SM, GM, GC, GC-GM | A-1, A-2, A-6 | 0 | 0-10 | 35-65 | 15-50 | 10-50 | 5-45 | 9-30 | NP-11 |
| | 35-39 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| | 39-49 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| Berks----------- | 0-4 | Silt loam | CL-ML, ML, CL | A-4 | 0 | 0 | 75-100 | 70-100 | 60-100 | 45-90 | 12-30 | 1-11 |
| | 4-8 | Channery silt loam, very channery loam, channery silty clay loam | CL-ML, CL, ML, SM, SC, SC-SM, GM, GC, GC-GM | A-4, A-1, A-2, A-6 | 0 | 0-5 | 45-80 | 30-75 | 25-70 | 15-70 | 12-34 | 1-13 |
| | 8-23 | Very channery silt loam, very channery loam, very channery silty clay loam | SC-SM, SC, SM | A-4, A-1, A-2, A-6 | 0 | 0-20 | 50-65 | 30-50 | 30-50 | 20-50 | 12-34 | 1-13 |
| | 23-34 | Extremely channery silt loam, very channery silt loam, extremely channery loam | GC-GM, GC, GM, SC-SM, SM, SC | A-1, A-2, A-4 | 0-1 | 0-25 | 35-65 | 15-50 | 15-50 | 10-45 | 12-25 | 1-8 |
| | 34-36 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| | 36-46 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments: >10 inches | Fragments: 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 10A: | | | | | | | | | | | | |
| Grigsby--------- | 0-11 | Fine sandy loam | SC-SM, SM, SC | A-4, A-2 | 0 | 0 | 85-100 | 75-100 | 50-85 | 30-55 | 12-25 | 1-8 |
| | 11-32 | Fine sandy loam, loam, sandy loam | SM, SC-SM, ML, CL-ML | A-4, A-2 | 0 | 0 | 85-100 | 75-100 | 45-95 | 25-75 | 12-23 | 1-7 |
| | 32-53 | Loamy sand, gravelly loamy fine sand, very gravelly sandy loam, fine sandy loam | SM, GM, GW-GM | A-2, A-1, A-4 | 0 | 0 | 45-100 | 30-100 | 15-85 | 5-55 | 9-16 | NP-3 |
| | 53-61 | Gravelly sand, sandy loam, gravelly sandy loam, fine sandy loam, loamy fine sand, loamy sand, fine sand | SP-SM, SW, SM, GW-GM, GW | A-1, A-2, A-4 | 0 | 0-10 | 45-100 | 25-100 | 15-85 | 1-55 | 8-16 | NP-3 |
| 11F: | | | | | | | | | | | | |
| Highsplint------ | 0-3 | Channery silt loam | CL-ML, ML, CL, SC-SM, SM, SC | A-4 | 0-3 | 0-15 | 70-85 | 60-80 | 50-75 | 40-70 | 12-25 | 1-8 |
| | 3-59 | Very channery silt loam, channery silt loam, very flaggy silt loam, channery silty clay loam, very channery clay loam | SC-SM, SM, SC, CL-ML, ML, CL | A-4, A-6, A-2 | 0-10 | 10-30 | 60-85 | 45-80 | 40-75 | 30-70 | 12-34 | 1-13 |
| | 59-82 | Very channery loam, very gravelly fine sandy loam, very channery sandy loam, extremely flaggy silt loam | SC-SM, SC, SM, SP-SM, SP-SC | A-2, A-4, A-1 | 0-10 | 15-30 | 50-70 | 30-60 | 20-60 | 10-55 | 12-30 | 1-11 |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Unified | AASHTO | >10 inches | 3-10 inches | 4 | 10 | 40 | 200 | | |
| | In | | | | Pct | Pct | | | | | Pct | |
| 11F: | | | | | | | | | | | | |
| Shelocta-------- | 0-4 | Gravelly loam | SC-SM, SM, SC | A-4, A-2 | 0 | 0-5 | 60-80 | 50-70 | 40-70 | 30-55 | 13-30 | 1-11 |
| | 4-13 | Loam, silty clay loam, gravelly silt loam | CL-ML, ML, CL, SM, SC, SC-SM | A-4, A-2, A-6 | 0 | 0-10 | 60-95 | 50-90 | 40-90 | 30-85 | 13-39 | 1-16 |
| | 13-50 | Gravelly loam, gravelly silt loam, silty clay loam, very gravelly silt loam | SC, SC-SM, CL, CL-ML | A-6, A-4, A-2 | 0-5 | 0-15 | 60-95 | 45-90 | 40-90 | 30-85 | 23-39 | 7-16 |
| | 50-86 | Very gravelly loam, extremely gravelly loam, gravelly silty clay loam, cobbly clay loam | SC, SC-SM, SM, CL, CL-ML, ML | A-2, A-1, A-4, A-6 | 0-5 | 0-15 | 50-80 | 35-75 | 30-75 | 20-70 | 13-39 | 1-16 |
| 12F: | | | | | | | | | | | | |
| Itmann---------- | 0-4 | Gravelly loam | SM, SC-SM, ML, CL-ML | A-4, A-2 | 0 | 0-10 | 65-85 | 50-80 | 45-75 | 30-60 | 12-20 | 1-5 |
| | 4-27 | Very channery sandy loam, very gravelly loam, extremely gravelly sandy loam | GC, GM, GC-GM, GP-GC, GP-GM, SC, SC-SM, SM | A-1, A-2 | 0 | 0-20 | 30-60 | 15-50 | 10-45 | 5-40 | 12-25 | 1-8 |
| | 27-63 | Extremely gravelly sandy loam, very channery loam, very channery sandy loam | GM, GP-GM, GC-GM, SM, SC-SM | A-1, A-2 | 0 | 0-15 | 30-60 | 15-50 | 10-45 | 5-35 | 12-20 | 1-5 |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments: >10 inches | Fragments: 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas-ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 13D: | | | | | | | | | | | | |
| Kaymine--------- | 0-4 | Very channery silt loam | SC-SM, SM, SC, GC-GM, GC, GM | A-1, A-2, A-4 | 0 | 2-10 | 45-65 | 30-50 | 30-50 | 20-45 | 13-25 | 1-8 |
| | 4-28 | Extremely channery silt loam, very channery silt loam, extremely channery loam, stony loam | SC-SM, SM, SC, GC-GM, GC, GM | A-1, A-2, A-4 | 0-15 | 10-25 | 40-70 | 20-60 | 20-60 | 10-50 | 13-30 | 1-11 |
| | 28-64 | Very flaggy silt loam, very channery silt loam, extremely channery loam, very stony loam | SC-SM, SM, SC, ML, GC-GM, GC, GM, CL-ML, CL | A-1, A-2, A-4 | 10-25 | 10-35 | 45-80 | 30-70 | 25-70 | 20-65 | 13-30 | 1-11 |
| 14E: | | | | | | | | | | | | |
| Kaymine--------- | 0-4 | Very channery silt loam | SC-SM, SM, SC, GC-GM, GC, GM | A-1, A-2, A-4 | 0 | 2-10 | 45-65 | 30-50 | 30-50 | 20-45 | 13-25 | 1-8 |
| | 4-28 | Extremely channery silt loam, very channery silt loam, extremely channery loam, stony loam | SC-SM, SM, SC, GC-GM, GC, GM | A-1, A-2, A-4 | 0-15 | 10-25 | 40-70 | 20-60 | 20-60 | 10-50 | 13-30 | 1-11 |
| | 28-64 | Very flaggy silt loam, very channery silt loam, extremely channery loam, very stony loam | SC-SM, SM, SC, ML, GC-GM, GC, GM, CL-ML, CL | A-1, A-2, A-4 | 10-25 | 10-35 | 45-80 | 30-70 | 25-70 | 20-65 | 13-30 | 1-11 |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments: >10 inches | Fragments: 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 14E: | | | | | | | | | | | | |
| Cedarcreek------ | 0-3 | Very channery loam | SC | A-2, A-4 | 0-5 | 10-20 | 50-65 | 35-55 | 30-50 | 20-40 | 21-31 | 6-11 |
| | 3-15 | Very channery loam, very channery silt loam, stony loam, extremely channery fine sandy loam | SC, GW-GC, GC | A-2, A-4 | 0-15 | 10-30 | 40-65 | 15-55 | 15-55 | 5-50 | 21-31 | 6-11 |
| | 15-65 | Extremely channery loam, extremely channery silt loam, very stony loam, extremely channery fine sandy loam | GC, GW-GC, SC | A-2, A-4 | 0-25 | 10-35 | 40-65 | 20-55 | 15-55 | 5-50 | 23-31 | 7-11 |
| 15C: | | | | | | | | | | | | |
| Kaymine--------- | 0-4 | Very channery silt loam | SC-SM, SM, SC, GC-GM, GC, GM | A-1, A-2, A-4 | 0 | 2-10 | 45-65 | 30-50 | 30-50 | 20-45 | 13-25 | 1-8 |
| | 4-28 | Extremely channery silt loam, very channery silt loam, extremely channery loam, stony loam | SC-SM, SM, SC, GC-GM, GC, GM | A-1, A-2, A-4 | 0-15 | 10-25 | 40-70 | 20-60 | 20-60 | 10-50 | 13-30 | 1-11 |
| | 28-64 | Very flaggy silt loam, very channery silt loam, extremely channery loam, very stony loam | SC-SM, SM, SC, ML, GC-GM, GC, GM, CL-ML, CL | A-1, A-2, A-4 | 10-25 | 10-35 | 45-80 | 30-70 | 25-70 | 20-65 | 13-30 | 1-11 |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments: >10 inches | Fragments: 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 15C: | | | | | | | | | | | | |
| Fiveblock------- | 0-6 | Very channery sandy loam | SC-SM, SM | A-1, A-2 | 0-10 | 10-35 | 50-65 | 35-55 | 20-40 | 10-20 | 12-23 | 1-7 |
| | 6-25 | Very channery sandy loam, extremely channery sandy loam, extremely stony loamy sand | SC-SM, SM, GW-GM | A-1, A-2 | 10-40 | 10-40 | 40-70 | 20-60 | 10-45 | 5-25 | 12-23 | 1-7 |
| | 25-65 | Extremely channery sandy loam, very channery sandy loam, extremely stony loamy sand | GW-GM, SM, SC-SM | A-1, A-2 | 10-30 | 10-40 | 40-70 | 20-60 | 10-45 | 5-25 | 12-23 | 1-7 |
| Cedarcreek------ | 0-3 | Very channery loam | SC | A-2, A-4 | 0-5 | 10-20 | 50-65 | 35-55 | 30-50 | 20-40 | 21-31 | 6-11 |
| | 3-15 | Very channery loam, very channery silt loam, stony loam, extremely channery fine sandy loam | SC, GW-GC, GC | A-2, A-4 | 0-15 | 10-30 | 40-65 | 15-55 | 15-55 | 5-50 | 21-31 | 6-11 |
| | 15-65 | Extremely channery loam, extremely channery silt loam, very stony loam, extremely channery fine sandy loam | GC, GW-GC, SC | A-2, A-4 | 0-25 | 10-35 | 40-65 | 20-55 | 15-55 | 5-50 | 23-31 | 7-11 |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas-ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Unified | AASHTO | >10 inches | 3-10 inches | 4 | 10 | 40 | 200 | | |
| | In | | | | Pct | Pct | | | | | Pct | |
| 16C: | | | | | | | | | | | | |
| Lily------------ | 0-3 | Loam | CL-ML, CL, ML, SC-SM | A-4 | 0 | 0-8 | 85-100 | 80-100 | 70-95 | 50-75 | 12-25 | 1-8 |
| | 3-7 | Loam, gravelly sandy loam | CL-ML, CL, ML, SC, SC-SM | A-4, A-2-4 | 0 | 0-7 | 85-100 | 75-100 | 45-95 | 25-75 | 12-25 | 1-8 |
| | 7-24 | Loam, cobbly loam, clay loam | CL, SC | A-6, A-2-4 | 0 | 0-15 | 90-100 | 85-100 | 65-100 | 30-80 | 23-39 | 7-16 |
| | 24-28 | Cobbly sandy loam, loam | SC, SC-SM, CL, CL-ML | A-2-6, A-2-4, A-6 | 0 | 0-25 | 75-100 | 65-100 | 40-95 | 20-75 | 21-39 | 6-16 |
| | 28-38 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| 16D: | | | | | | | | | | | | |
| Lily------------ | 0-3 | Loam | CL-ML, CL, ML, SC-SM | A-4 | 0 | 0-8 | 85-100 | 80-100 | 70-95 | 50-75 | 12-25 | 1-8 |
| | 3-7 | Loam, gravelly sandy loam | CL-ML, CL, ML, SC, SC-SM | A-4, A-2-4 | 0 | 0-7 | 85-100 | 75-100 | 45-95 | 25-75 | 12-25 | 1-8 |
| | 7-24 | Loam, cobbly loam, clay loam | CL, SC | A-6, A-2-4 | 0 | 0-15 | 90-100 | 85-100 | 65-100 | 30-80 | 23-39 | 7-16 |
| | 24-28 | Cobbly sandy loam, loam | SC, SC-SM, CL, CL-ML | A-2-6, A-2-4, A-6 | 0 | 0-25 | 75-100 | 65-100 | 40-95 | 20-75 | 21-39 | 6-16 |
| | 28-38 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| 16E: | | | | | | | | | | | | |
| Lily------------ | 0-3 | Loam | CL-ML, CL, ML, SC-SM | A-4 | 0 | 0-8 | 85-100 | 80-100 | 70-95 | 50-75 | 12-25 | 1-8 |
| | 3-7 | Loam, gravelly sandy loam | CL-ML, CL, ML, SC, SC-SM | A-4, A-2-4 | 0 | 0-7 | 85-100 | 75-100 | 45-95 | 25-75 | 12-25 | 1-8 |
| | 7-24 | Loam, cobbly loam, clay loam | CL, SC | A-6, A-2-4 | 0 | 0-15 | 90-100 | 85-100 | 65-100 | 30-80 | 23-39 | 7-16 |
| | 24-28 | Cobbly sandy loam, loam | SC, SC-SM, CL, CL-ML | A-2-6, A-2-4, A-6 | 0 | 0-25 | 75-100 | 65-100 | 40-95 | 20-75 | 21-39 | 6-16 |
| | 28-38 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments: >10 inches | Fragments: 3-10 inches | Percentage passing sieve number--: 4 | Percentage passing sieve number--: 10 | Percentage passing sieve number--: 40 | Percentage passing sieve number--: 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 17D: | | | | | | | | | | | | |
| Marrowbone------ | 0-5 | Fine sandy loam | SM, SC-SM, ML, CL-ML | A-4, A-2 | 0 | 0 | 85-100 | 75-100 | 55-85 | 30-55 | 11-23 | NP-7 |
| | 5-22 | Gravelly sandy loam, fine sandy loam, sandy loam | SM, SC-SM | A-2, A-1, A-4 | 0 | 0 | 65-100 | 55-90 | 30-80 | 15-50 | 9-23 | NP-7 |
| | 22-33 | Very gravelly loamy fine sand, fine sandy loam, gravelly sandy loam, very gravelly loamy sand | SM, SC-SM, SW-SM | A-2, A-1, A-4 | 0 | 0-10 | 55-90 | 40-85 | 20-70 | 5-45 | 9-21 | NP-6 |
| | 33-45 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| | 45-55 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| Gilpin---------- | 0-3 | Silt loam | ML, CL, CL-ML, SM, SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 60-95 | 50-90 | 45-90 | 35-80 | 9-30 | NP-11 |
| | 3-5 | Silt loam, loam, gravelly loam | ML, CL, CL-ML, SM, SC, SC-SM | A-2, A-4, A-6 | 0 | 0-1 | 60-95 | 50-90 | 45-90 | 30-80 | 9-30 | NP-11 |
| | 5-30 | Gravelly silt loam, silty clay loam, silt loam, gravelly loam | CL, CL-ML, SC, SC-SM | A-6, A-2 | 0 | 0-3 | 65-95 | 50-90 | 45-90 | 30-85 | 23-39 | 7-16 |
| | 30-35 | Very gravelly loam, very gravelly silt loam, extremely gravelly sandy loam, extremely gravelly loamy fine sand | SM, SC, SC-SM, GM, GC, GC-GM | A-1, A-2, A-6 | 0 | 0-10 | 35-65 | 15-50 | 10-50 | 5-45 | 9-30 | NP-11 |
| | 35-39 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| | 39-49 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments: >10 inches | Fragments: 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 17E: | | | | | | | | | | | | |
| Marrowbone------ | 0-5 | Fine sandy loam | SM, SC-SM, ML, CL-ML | A-4, A-2 | 0 | 0 | 85-100 | 75-100 | 55-85 | 30-55 | 11-23 | NP-7 |
| | 5-22 | Gravelly sandy loam, fine sandy loam, sandy loam | SM, SC-SM | A-2, A-1, A-4 | 0 | 0 | 65-100 | 55-90 | 30-80 | 15-50 | 9-23 | NP-7 |
| | 22-33 | Very gravelly loamy fine sand, fine sandy loam, gravelly sandy loam, very gravelly loamy sand | SM, SC-SM, SW-SM | A-2, A-1, A-4 | 0 | 0-10 | 55-90 | 40-85 | 20-70 | 5-45 | 9-21 | NP-6 |
| | 33-45 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| | 45-55 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| Gilpin---------- | 0-3 | Silt loam | ML, CL, CL-ML, SM, SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 60-95 | 50-90 | 45-90 | 35-80 | 9-30 | NP-11 |
| | 3-5 | Silt loam, loam, gravelly loam | ML, CL, CL-ML, SM, SC, SC-SM | A-2, A-4, A-6 | 0 | 0-1 | 60-95 | 50-90 | 45-90 | 30-80 | 9-30 | NP-11 |
| | 5-30 | Gravelly silt loam, silty clay loam, silt loam, gravelly loam | CL, CL-ML, SC, SC-SM | A-6, A-2 | 0 | 0-3 | 65-95 | 50-90 | 45-90 | 30-85 | 23-39 | 7-16 |
| | 30-35 | Very gravelly loam, very gravelly silt loam, extremely gravelly sandy loam, extremely gravelly loamy fine sand | SM, SC, SC-SM, GM, GC, GC-GM | A-1, A-2, A-6 | 0 | 0-10 | 35-65 | 15-50 | 10-50 | 5-45 | 9-30 | NP-11 |
| | 35-39 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| | 39-49 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments: >10 inches | Fragments: 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 17F: | | | | | | | | | | | | |
| Marrowbone------ | 0-5 | Fine sandy loam | SM, SC-SM, ML, CL-ML | A-4, A-2 | 0 | 0 | 85-100 | 75-100 | 55-85 | 30-55 | 11-23 | NP-7 |
| | 5-22 | Gravelly sandy loam, fine sandy loam, sandy loam | SM, SC-SM | A-2, A-1, A-4 | 0 | 0 | 65-100 | 55-90 | 30-80 | 15-50 | 9-23 | NP-7 |
| | 22-33 | Very gravelly loamy fine sand, fine sandy loam, gravelly sandy loam, very gravelly loamy sand | SM, SC-SM, SW-SM | A-2, A-1, A-4 | 0 | 0-10 | 55-90 | 40-85 | 20-70 | 5-45 | 9-21 | NP-6 |
| | 33-45 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| | 45-55 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| Gilpin---------- | 0-3 | Silt loam | ML, CL, CL-ML, SM, SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 60-95 | 50-90 | 45-90 | 35-80 | 9-30 | NP-11 |
| | 3-5 | Silt loam, loam, gravelly loam | ML, CL, CL-ML, SM, SC, SC-SM | A-2, A-4, A-6 | 0 | 0-1 | 60-95 | 50-90 | 45-90 | 30-80 | 9-30 | NP-11 |
| | 5-30 | Gravelly silt loam, silty clay loam, silt loam, gravelly loam | CL, CL-ML, SC, SC-SM | A-6, A-2 | 0 | 0-3 | 65-95 | 50-90 | 45-90 | 30-85 | 23-39 | 7-16 |
| | 30-35 | Very gravelly loam, very gravelly silt loam, extremely gravelly sandy loam, extremely gravelly loamy fine sand | SM, SC, SC-SM, GM, GC, GC-GM | A-1, A-2, A-6 | 0 | 0-10 | 35-65 | 15-50 | 10-50 | 5-45 | 9-30 | NP-11 |
| | 35-39 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| | 39-49 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments: >10 inches | Fragments: 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 18F: | | | | | | | | | | | | |
| Matewan--------- | 0-4 | Flaggy fine sandy loam | SM, SC, SC-SM | A-4 | 0-5 | 5-20 | 80-90 | 75-85 | 55-70 | 30-50 | 10-25 | NP-8 |
| | 4-21 | Very flaggy fine sandy loam, very flaggy sandy loam, very channery loam | SM, SC-SM | A-2, A-4, A-1 | 5-15 | 15-30 | 65-75 | 55-70 | 30-65 | 15-50 | 12-23 | 1-7 |
| | 21-38 | Very gravelly sandy loam, extremely gravelly sandy loam, extremely channery loamy sand, extremely gravelly loam | GM, GC-GM, GP-GM, SC-SM, SM | A-1, A-2 | 0-15 | 5-20 | 40-60 | 20-50 | 10-50 | 5-40 | 10-21 | NP-6 |
| | 38-48 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| Gilpin---------- | 0-3 | Silt loam | ML, CL, CL-ML, SM, SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 60-95 | 50-90 | 45-90 | 35-80 | 9-30 | NP-11 |
| | 3-5 | Silt loam, loam, gravelly loam | ML, CL, CL-ML, SM, SC, SC-SM | A-2, A-4, A-6 | 0 | 0-1 | 60-95 | 50-90 | 45-90 | 30-80 | 9-30 | NP-11 |
| | 5-30 | Gravelly silt loam, silty clay loam, silt loam, gravelly loam | CL, CL-ML, SC, SC-SM | A-6, A-2 | 0 | 0-3 | 65-95 | 50-90 | 45-90 | 30-85 | 23-39 | 7-16 |
| | 30-35 | Very gravelly loam, very gravelly silt loam, extremely gravelly sandy loam, extremely gravelly loamy fine sand | SM, SC, SC-SM, GM, GC, GC-GM | A-1, A-2, A-6 | 0 | 0-10 | 35-65 | 15-50 | 10-50 | 5-45 | 9-30 | NP-11 |
| | 35-39 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| | 39-49 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| Rock outcrop. | | | | | | | | | | | | |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments: >10 inches | Fragments: 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 19D: | | | | | | | | | | | | |
| Oriskany-------- | 0-6 | Very cobbly fine sandy loam | SM, SC-SM, SC | A-2-4, A-1 | 0-15 | 20-30 | 55-70 | 40-60 | 30-50 | 15-35 | 12-25 | 1-8 |
| | 6-17 | Very cobbly fine sandy loam, very gravelly loam, extremely cobbly sandy loam | SM, SC-SM, SC | A-2-4, A-1, A-4 | 0-15 | 20-30 | 55-70 | 35-60 | 20-55 | 10-45 | 13-31 | 1-11 |
| | 17-70 | Very cobbly loam, very gravelly loam, very cobbly clay loam, very cobbly sandy clay loam, very gravelly clay loam, extremely stony loam | SC, SC-SM | A-4, A-2-6, A-6, A-2-4 | 0-20 | 15-30 | 50-65 | 30-60 | 25-55 | 10-45 | 21-39 | 6-16 |
| 19E: | | | | | | | | | | | | |
| Oriskany-------- | 0-6 | Very cobbly fine sandy loam | SM, SC-SM, SC | A-2-4, A-1 | 0-15 | 20-30 | 55-70 | 40-60 | 30-50 | 15-35 | 12-25 | 1-8 |
| | 6-17 | Very cobbly fine sandy loam, very gravelly loam, extremely cobbly sandy loam | SM, SC-SM, SC | A-2-4, A-1, A-4 | 0-15 | 20-30 | 55-70 | 35-60 | 20-55 | 10-45 | 13-31 | 1-11 |
| | 17-70 | Very cobbly loam, very gravelly loam, very cobbly clay loam, very cobbly sandy clay loam, very gravelly clay loam, extremely stony loam | SC, SC-SM | A-4, A-2-6, A-6, A-2-4 | 0-20 | 15-30 | 50-65 | 30-60 | 25-55 | 10-45 | 21-39 | 6-16 |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments: >10 inches | Fragments: 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 20A: | | | | | | | | | | | | |
| Philo----------- | 0-8 | Fine sandy loam | SC-SM, SM | A-4 | 0 | 0-8 | 85-100 | 80-100 | 55-85 | 30-55 | 16-23 | 3-7 |
| | 8-62 | Fine sandy loam, sandy loam, loam | SC-SM, SM, ML, CL-ML | A-4, A-2-4 | 0 | 0-8 | 85-100 | 80-100 | 50-95 | 25-75 | 16-23 | 3-7 |
| 21F: | | | | | | | | | | | | |
| Sewell---------- | 0-4 | Channery sandy loam | SC-SM, SM | A-1, A-2 | 0-10 | 5-20 | 75-85 | 60-80 | 35-55 | 20-35 | 15-25 | NP-7 |
| | 4-9 | Very channery sandy loam, very channery fine sandy loam, extremely stony loam | GW-GM, GC-GM, GM, SM, SC-SM | A-1, A-2, A-4 | 10-40 | 10-40 | 40-70 | 20-60 | 15-55 | 10-45 | 15-25 | NP-7 |
| | 9-65 | Extremely channery sandy loam, very channery fine sandy loam, extremely stony loam | GW-GM, GC-GM, GM, SM, SC-SM | A-1, A-2, A-4 | 10-30 | 10-40 | 40-70 | 20-60 | 15-55 | 10-45 | 15-25 | NP-7 |
| Kaymine--------- | 0-4 | Very channery silt loam | SC-SM, SM, SC, GC-GM, GC, GM | A-1, A-2, A-4 | 0 | 2-10 | 45-65 | 30-50 | 30-50 | 20-45 | 13-25 | 1-8 |
| | 4-28 | Extremely channery silt loam, very channery silt loam, extremely channery loam, stony loam | SC-SM, SM, SC, GC-GM, GC, GM | A-1, A-2, A-4 | 0-15 | 10-25 | 40-70 | 20-60 | 20-60 | 10-50 | 13-30 | 1-11 |
| | 28-64 | Very flaggy silt loam, very channery silt loam, extremely channery loam, very stony loam | SC-SM, SM, SC, ML, GC-GM, GC, GM, CL-ML, CL | A-1, A-2, A-4 | 10-25 | 10-35 | 45-80 | 30-70 | 25-70 | 20-65 | 13-30 | 1-11 |
| Rock outcrop. | | | | | | | | | | | | |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Unified | AASHTO | >10 inches | 3-10 inches | 4 | 10 | 40 | 200 | | |
| | In | | | | Pct | Pct | | | | | Pct | |
| 22E: | | | | | | | | | | | | |
| Shelocta-------- | 0-4 | Gravelly loam | SC-SM, SM, SC | A-4, A-2 | 0 | 0-5 | 60-80 | 50-70 | 40-70 | 30-55 | 13-30 | 1-11 |
| | 4-13 | Loam, silty clay loam, gravelly silt loam | CL-ML, ML, CL, SM, SC, SC-SM | A-4, A-2, A-6 | 0 | 0-10 | 60-95 | 50-90 | 40-90 | 30-85 | 13-39 | 1-16 |
| | 13-50 | Gravelly loam, gravelly silt loam, silty clay loam, very gravelly silt loam | SC, SC-SM, CL, CL-ML | A-6, A-4, A-2 | 0-5 | 0-15 | 60-95 | 45-90 | 40-90 | 30-85 | 23-39 | 7-16 |
| | 50-86 | Very gravelly loam, extremely gravelly loam, gravelly silty clay loam, cobbly clay loam | SC, SC-SM, SM, CL, CL-ML, ML | A-2, A-1, A-4, A-6 | 0-5 | 0-15 | 50-80 | 35-75 | 30-75 | 20-70 | 13-39 | 1-16 |
| Cedarcreek------ | 0-3 | Very channery loam | SC | A-2, A-4 | 0-5 | 10-20 | 50-65 | 35-55 | 30-50 | 20-40 | 21-31 | 6-11 |
| | 3-15 | Very channery loam, very channery silt loam, stony loam, extremely channery fine sandy loam | SC, GW-GC, GC | A-2, A-4 | 0-15 | 10-30 | 40-65 | 15-55 | 15-55 | 5-50 | 21-31 | 6-11 |
| | 15-65 | Extremely channery loam, extremely channery silt loam, very stony loam, extremely channery fine sandy loam | GC, GW-GC, SC | A-2, A-4 | 0-25 | 10-35 | 40-65 | 20-55 | 15-55 | 5-50 | 23-31 | 7-11 |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments: >10 inches | Fragments: 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 23E: | | | | | | | | | | | | |
| Shelocta-------- | 0-4 | Gravelly loam | SC-SM, SM, SC | A-4, A-2 | 0 | 0-5 | 60-80 | 50-70 | 40-70 | 30-55 | 13-30 | 1-11 |
| | 4-13 | Loam, silty clay loam, gravelly silt loam | CL-ML, ML, CL, SM, SC, SC-SM | A-4, A-2, A-6 | 0 | 0-10 | 60-95 | 50-90 | 40-90 | 30-85 | 13-39 | 1-16 |
| | 13-50 | Gravelly loam, gravelly silt loam, silty clay loam, very gravelly silt loam | SC, SC-SM, CL, CL-ML | A-6, A-4, A-2 | 0-5 | 0-15 | 60-95 | 45-90 | 40-90 | 30-85 | 23-39 | 7-16 |
| | 50-86 | Very gravelly loam, extremely gravelly loam, gravelly silty clay loam, cobbly clay loam | SC, SC-SM, SM, CL, CL-ML, ML | A-2, A-1, A-4, A-6 | 0-5 | 0-15 | 50-80 | 35-75 | 30-75 | 20-70 | 13-39 | 1-16 |
| Cloverlick------ | 0-7 | Gravelly silt loam | CL, ML, CL-ML, SM, SC, SC-SM | A-4 | 0 | 0-5 | 60-80 | 50-70 | 40-70 | 35-60 | 10-30 | NP-11 |
| | 7-10 | Gravelly silt loam, channery loam | CL, ML, CL-ML, SM, SC, SC-SM | A-4, A-2 | 0 | 0-5 | 60-80 | 50-70 | 40-70 | 30-65 | 10-30 | NP-11 |
| | 10-44 | Very gravelly loam, gravelly loam, very channery silt loam, very flaggy silt loam | SC-SM, SC, SM, CL-ML, CL, ML | A-2, A-4 | 0-5 | 5-20 | 60-80 | 45-80 | 40-80 | 30-70 | 13-30 | 1-11 |
| | 44-63 | Very gravelly sandy loam, very gravelly loam, extremely channery fine sandy loam, very flaggy silt loam | GM, GC, GC-GM, SM, SC, SC-SM, GP-GM, GP-GC | A-1, A-2, A-4 | 0-5 | 10-25 | 30-70 | 10-60 | 5-60 | 5-50 | 12-30 | 1-11 |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments: >10 inches | Fragments: 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 24E: | | | | | | | | | | | | |
| Shelocta-------- | 0-4 | Gravelly loam | SC-SM, SM, SC | A-4, A-2 | 0 | 0-5 | 60-80 | 50-70 | 40-70 | 30-55 | 13-30 | 1-11 |
| | 4-13 | Loam, silty clay loam, gravelly silt loam | CL-ML, ML, CL, SM, SC, SC-SM | A-4, A-2, A-6 | 0 | 0-10 | 60-95 | 50-90 | 40-90 | 30-85 | 13-39 | 1-16 |
| | 13-50 | Gravelly loam, gravelly silt loam, silty clay loam, very gravelly silt loam | SC, SC-SM, CL, CL-ML | A-6, A-4, A-2 | 0-5 | 0-15 | 60-95 | 45-90 | 40-90 | 30-85 | 23-39 | 7-16 |
| | 50-86 | Very gravelly loam, extremely gravelly loam, gravelly silty clay loam, cobbly clay loam | SC, SC-SM, SM, CL, CL-ML, ML | A-2, A-1, A-4, A-6 | 0-5 | 0-15 | 50-80 | 35-75 | 30-75 | 20-70 | 13-39 | 1-16 |
| Highsplint------ | 0-3 | Channery silt loam | CL-ML, ML, CL, SC-SM, SM, SC | A-4 | 0-3 | 0-15 | 70-85 | 60-80 | 50-75 | 40-70 | 12-25 | 1-8 |
| | 3-59 | Very channery silt loam, channery silt loam, very flaggy silt loam, channery silty clay loam, very channery clay loam | SC-SM, SM, SC, CL-ML, ML, CL | A-4, A-6, A-2 | 0-10 | 10-30 | 60-85 | 45-80 | 40-75 | 30-70 | 12-34 | 1-13 |
| | 59-82 | Very channery loam, very gravelly fine sandy loam, very channery sandy loam, extremely flaggy silt loam | SC-SM, SC, SM, SP-SM, SP-SC | A-2, A-4, A-1 | 0-10 | 15-30 | 50-70 | 30-60 | 20-60 | 10-55 | 12-30 | 1-11 |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments: >10 inches | Fragments: 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 25F: | | | | | | | | | | | | |
| Shelocta-------- | 0-4 | Gravelly loam | SC-SM, SM, SC | A-4, A-2 | 0 | 0-5 | 60-80 | 50-70 | 40-70 | 30-55 | 13-30 | 1-11 |
| | 4-13 | Loam, silty clay loam, gravelly silt loam | CL-ML, ML, CL, SM, SC, SC-SM | A-4, A-2, A-6 | 0 | 0-10 | 60-95 | 50-90 | 40-90 | 30-85 | 13-39 | 1-16 |
| | 13-50 | Gravelly loam, gravelly silt loam, silty clay loam, very gravelly silt loam | SC, SC-SM, CL, CL-ML | A-6, A-4, A-2 | 0-5 | 0-15 | 60-95 | 45-90 | 40-90 | 30-85 | 23-39 | 7-16 |
| | 50-86 | Very gravelly loam, extremely gravelly loam, gravelly silty clay loam, cobbly clay loam | SC, SC-SM, SM, CL, CL-ML, ML | A-2, A-1, A-4, A-6 | 0-5 | 0-15 | 50-80 | 35-75 | 30-75 | 20-70 | 13-39 | 1-16 |
| Kaymine--------- | 0-4 | Very channery silt loam | SC-SM, SM, SC, GC-GM, GC, GM | A-1, A-2, A-4 | 0 | 2-10 | 45-65 | 30-50 | 30-50 | 20-45 | 13-25 | 1-8 |
| | 4-28 | Extremely channery silt loam, very channery silt loam, extremely channery loam, stony loam | SC-SM, SM, SC, GC-GM, GC, GM | A-1, A-2, A-4 | 0-15 | 10-25 | 40-70 | 20-60 | 20-60 | 10-50 | 13-30 | 1-11 |
| | 28-64 | Very flaggy silt loam, very channery silt loam, extremely channery loam, very stony loam | SC-SM, SM, SC, GC-GM, ML, GC, GM, CL-ML, CL | A-1, A-2, A-4 | 10-25 | 10-35 | 45-80 | 30-70 | 25-70 | 20-65 | 13-30 | 1-11 |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Unified | AASHTO | >10 inches | 3-10 inches | 4 | 10 | 40 | 200 | | |
| | In | | | | Pct | Pct | | | | | Pct | |
| 26F: | | | | | | | | | | | | |
| Stonecoal------- | 0-31 | Extremely channery sandy loam, extremely channery loamy sand, very channery fine sandy loam | GW-GM, GW, SM, GM | A-1, A-2 | 0-1 | 20-35 | 35-65 | 15-55 | 10-45 | 3-30 | 11-16 | NP-3 |
| | 31-39 | Extremely channery sandy loam, extremely channery loamy sand, very channery fine sandy loam | GW-GM, GW, SM, SC-SM, GM, GC-GM | A-1, A-2 | 0-1 | 20-35 | 35-65 | 15-55 | 10-45 | 3-30 | 11-20 | NP-6 |
| | 39-68 | Extremely channery loamy sand, extremely channery sandy loam, very channery fine sandy loam | GW, GW-GM, SM, GM | A-1, A-2 | 0-1 | 20-35 | 35-65 | 15-55 | 10-45 | 2-30 | 9-16 | NP-3 |
| 27. Udorthents-Urban land | | | | | | | | | | | | |
| 28. Udorthents-Urban land | | | | | | | | | | | | |
| 29D: | | | | | | | | | | | | |
| Wallen---------- | 0-4 | Channery sandy loam | SC-SM, SC | A-2 | 0 | 0-10 | 50-90 | 50-75 | 30-55 | 15-30 | 20-35 | 4-13 |
| | 4-24 | Very channery sandy loam, very cobbly loam, very cobbly fine sandy loam, extremely channery sandy loam | SC-SM, GC-GM, GC | A-1, A-2, A-4 | 0 | 15-45 | 35-70 | 25-60 | 15-55 | 10-45 | 18-32 | 4-13 |
| | 24-34 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments: >10 inches | Fragments: 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 29F: | | | | | | | | | | | | |
| Wallen---------- | 0-4 | Channery sandy loam | SC-SM, SC | A-2 | 0 | 0-10 | 50-90 | 50-75 | 30-55 | 15-30 | 20-35 | 4-13 |
| | 4-24 | Very channery sandy loam, very cobbly loam, very cobbly fine sandy loam, extremely channery sandy loam | SC-SM, GC-GM, GC | A-1, A-2, A-4 | 0 | 15-45 | 35-70 | 25-60 | 15-55 | 10-45 | 18-32 | 4-13 |
| | 24-34 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| 30F: | | | | | | | | | | | | |
| Wallen---------- | 0-4 | Channery sandy loam | SC, SC-SM | A-2 | 0 | 0-10 | 50-90 | 50-75 | 30-55 | 15-30 | 20-35 | 4-13 |
| | 4-24 | Very channery sandy loam, very cobbly loam, very cobbly fine sandy loam, extremely channery sandy loam | GC-GM, SC-SM, GC | A-1, A-2, A-4 | 0 | 15-45 | 35-70 | 25-60 | 15-55 | 10-45 | 18-32 | 4-13 |
| | 24-34 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| Rock outcrop. | | | | | | | | | | | | |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments: >10 inches | Fragments: 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 31D: | | | | | | | | | | | | |
| Wharton--------- | 0-2 | Silt loam | CL-ML, CL, ML | A-4, A-6 | 0 | 0-1 | 90-100 | 85-100 | 75-100 | 60-90 | 16-30 | 3-11 |
| | 2-9 | Silt loam, silty clay loam, loam | CL-ML, CL, ML | A-4, A-6 | 0 | 0-2 | 90-100 | 85-100 | 70-100 | 50-95 | 16-34 | 3-13 |
| | 9-35 | Silty clay loam, silt loam, loam | CL, CL-ML | A-6, A-4 | 0 | 0-2 | 90-100 | 85-100 | 70-100 | 50-95 | 23-39 | 7-16 |
| | 35-55 | Silt loam, channery silt loam, very channery loam | CL-ML, CL, SC, SC-SM | A-2, A-4, A-6 | 0 | 0-10 | 65-95 | 50-95 | 40-95 | 30-85 | 18-31 | 4-11 |
| | 55-65 | Silt loam, silty clay loam, very channery loam, channery sandy loam | CL-ML, CL, ML, SM, SC, SC-SM | A-1, A-2, A-4, A-6 | 0 | 0-10 | 55-90 | 40-90 | 40-85 | 10-80 | 12-34 | 1-13 |
| | 65-75 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| Gilpin---------- | 0-3 | Silt loam | ML, CL, CL-ML, SM, SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 60-95 | 50-90 | 45-90 | 35-80 | 9-30 | NP-11 |
| | 3-5 | Silt loam, loam, gravelly loam | ML, CL, CL-ML, SM, SC, SC-SM | A-2, A-4, A-6 | 0 | 0-1 | 60-95 | 50-90 | 45-90 | 30-80 | 9-30 | NP-11 |
| | 5-30 | Gravelly silt loam, silty clay loam, silt loam, gravelly loam | CL, CL-ML, SC, SC-SM | A-6, A-2 | 0 | 0-3 | 65-95 | 50-90 | 45-90 | 30-85 | 23-39 | 7-16 |
| | 30-35 | Very gravelly loam, very gravelly silt loam, extremely gravelly sandy loam, extremely gravelly loamy fine sand | SM, SC, SC-SM, GM, GC, GC-GM | A-1, A-2, A-6 | 0 | 0-10 | 35-65 | 15-50 | 10-50 | 5-45 | 9-30 | NP-11 |
| | 35-39 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| | 39-49 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Unified | AASHTO | >10 inches | 3-10 inches | 4 | 10 | 40 | 200 | | |
| | In | | | | Pct | Pct | | | | | Pct | |
| 31D: | | | | | | | | | | | | |
| Berks----------- | 0-4 | Silt loam | CL-ML, ML, CL | A-4 | 0 | 0 | 75-100 | 70-100 | 60-100 | 45-90 | 12-30 | 1-11 |
| | 4-8 | Channery silt loam, very channery loam, channery silty clay loam | CL-ML, CL, ML, SM, SC, SC-SM, GM, GC, GC-GM | A-4, A-1, A-2, A-6 | 0 | 0-5 | 45-80 | 30-75 | 25-70 | 15-70 | 12-34 | 1-13 |
| | 8-23 | Very channery silt loam, very channery loam, very channery silty clay loam | SC-SM, SC, SM | A-4, A-1, A-2, A-6 | 0 | 0-20 | 50-65 | 30-50 | 30-50 | 20-50 | 12-34 | 1-13 |
| | 23-34 | Extremely channery silt loam, very channery silt loam, extremely channery loam | GC-GM, GC, GM, SC-SM, SM, SC | A-1, A-2, A-4 | 0-1 | 0-25 | 35-65 | 15-50 | 15-50 | 10-45 | 12-25 | 1-8 |
| | 34-36 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| | 36-46 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| 32C: | | | | | | | | | | | | |
| Wharton--------- | 0-2 | Silt loam | CL-ML, CL, ML | A-4, A-6 | 0 | 0-1 | 90-100 | 85-100 | 75-100 | 60-90 | 16-30 | 3-11 |
| | 2-9 | Silt loam, silty clay loam, loam | CL-ML, CL, ML | A-4, A-6 | 0 | 0-2 | 90-100 | 85-100 | 70-100 | 50-95 | 16-34 | 3-13 |
| | 9-35 | Silty clay loam, silt loam, loam | CL, CL-ML | A-6, A-4 | 0 | 0-2 | 90-100 | 85-100 | 70-100 | 50-95 | 23-39 | 7-16 |
| | 35-55 | Silt loam, channery silt loam, very channery loam | CL-ML, CL, SC, SC-SM | A-2, A-4, A-6 | 0 | 0-10 | 65-95 | 50-95 | 40-95 | 30-85 | 18-31 | 4-11 |
| | 55-65 | Silt loam, silty clay loam, very channery loam, channery sandy loam | CL-ML, CL, ML, SM, SC, SC-SM | A-1, A-2, A-4, A-6 | 0 | 0-10 | 55-90 | 40-90 | 40-85 | 10-80 | 12-34 | 1-13 |
| | 65-75 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |

Table 14.—Engineering Properties—Continued

| Map symbol and soil name | Depth | USDA texture | Classification: Unified | Classification: AASHTO | Fragments: >10 inches | Fragments: 3-10 inches | Percentage passing sieve number--: 4 | 10 | 40 | 200 | Liquid limit | Plas- ticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | | | | Pct | Pct | | | | | Pct | |
| 32C: | | | | | | | | | | | | |
| Gilpin---------- | 0-3 | Silt loam | ML, CL, CL-ML, SM, SC, SC-SM | A-2, A-4, A-6 | 0 | 0 | 60-95 | 50-90 | 45-90 | 35-80 | 9-30 | NP-11 |
| | 3-5 | Silt loam, loam, gravelly loam | ML, CL, CL-ML, SM, SC, SC-SM | A-2, A-4, A-6 | 0 | 0-1 | 60-95 | 50-90 | 45-90 | 30-80 | 9-30 | NP-11 |
| | 5-30 | Gravelly silt loam, silty clay loam, silt loam, gravelly loam | CL, CL-ML, SC, SC-SM | A-6, A-2 | 0 | 0-3 | 65-95 | 50-90 | 45-90 | 30-85 | 23-39 | 7-16 |
| | 30-35 | Very gravelly loam, very gravelly silt loam, extremely gravelly sandy loam, extremely gravelly loamy fine sand | SM, SC, SC-SM, GM, GC, GC-GM | A-1, A-2, A-6 | 0 | 0-10 | 35-65 | 15-50 | 10-50 | 5-45 | 9-30 | NP-11 |
| | 35-39 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| | 39-49 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| Marrowbone------ | 0-5 | Fine sandy loam | SM, SC-SM, ML, CL-ML | A-4, A-2 | 0 | 0 | 85-100 | 75-100 | 55-85 | 30-55 | 11-23 | NP-7 |
| | 5-22 | Gravelly sandy loam, fine sandy loam, sandy loam | SM, SC-SM | A-2, A-1, A-4 | 0 | 0 | 65-100 | 55-90 | 30-80 | 15-50 | 9-23 | NP-7 |
| | 22-33 | Very gravelly loamy fine sand, fine sandy loam, gravelly sandy loam, very gravelly loamy sand | SM, SC-SM, SW-SM | A-2, A-1, A-4 | 0 | 0-10 | 55-90 | 40-85 | 20-70 | 5-45 | 9-21 | NP-6 |
| | 33-45 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| | 45-55 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| W. Water | | | | | | | | | | | | |

Table 15.—Physical Soil Properties

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not estimated)

| Map symbol and soil name | Depth | Sand | Silt | Clay | Moist bulk density | Saturated hydraulic conductivity | Available water capacity | Linear extensi-bility | Organic matter | Erosion factors Kw | Erosion factors Kf | Erosion factors T | Wind erodi-bility group | Wind erodi-bility index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | Pct | Pct | g/cc | um/sec | In/in | Pct | Pct | | | | | |
| 1D: | | | | | | | | | | | | | | |
| Calvin----------- | 0-9 | 25-51 | 29-49 | 10-25 | 1.20-1.40 | 14.00-42.00 | 0.15-0.17 | 0.0-2.9 | 0.5-2.0 | .24 | .32 | 2 | 5 | 56 |
| | 9-25 | 5-51 | 29-80 | 10-25 | 1.40-1.60 | 14.00-42.00 | 0.08-0.15 | 0.0-2.9 | 0.0-0.5 | .17 | .43 | | | |
| | 25-30 | 5-51 | 29-80 | 10-25 | 1.40-1.60 | 14.00-42.00 | 0.04-0.12 | 0.0-2.9 | 0.0-0.5 | .10 | .43 | | | |
| | 30-40 | --- | --- | --- | --- | 1.40-42.00 | --- | --- | --- | --- | --- | | | |
| 2F: | | | | | | | | | | | | | | |
| Calvin----------- | 0-9 | 25-51 | 29-49 | 10-25 | 1.20-1.40 | 14.00-42.00 | 0.15-0.17 | 0.0-2.9 | 0.5-2.0 | .24 | .32 | 2 | 5 | 56 |
| | 9-25 | 5-51 | 29-80 | 10-25 | 1.40-1.60 | 14.00-42.00 | 0.08-0.15 | 0.0-2.9 | 0.0-0.5 | .17 | .43 | | | |
| | 25-30 | 5-51 | 29-80 | 10-25 | 1.40-1.60 | 14.00-42.00 | 0.04-0.12 | 0.0-2.9 | 0.0-0.5 | .10 | .43 | | | |
| | 30-40 | --- | --- | --- | --- | 1.40-42.00 | --- | --- | --- | --- | --- | | | |
| Rough------------ | 0-2 | 25-51 | 29-49 | 12-27 | 1.20-1.40 | 14.00-141.00 | 0.10-0.14 | 0.0-2.9 | 0.5-2.0 | .24 | .37 | 1 | 6 | 38 |
| | 2-8 | 5-51 | 29-80 | 12-27 | 1.20-1.40 | 14.00-141.00 | 0.06-0.11 | 0.0-2.9 | 0.0-0.5 | .17 | .43 | | | |
| | 8-10 | 5-51 | 29-80 | 12-27 | 1.20-1.40 | 14.00-141.00 | 0.03-0.07 | 0.0-2.9 | 0.0-0.5 | .10 | .43 | | | |
| | 10-20 | --- | --- | --- | --- | 0.01-4.00 | --- | --- | --- | --- | --- | | | |
| 3F: | | | | | | | | | | | | | | |
| Cedarcreek------- | 0-3 | 25-50 | 30-50 | 15-27 | 1.35-1.65 | 4.00-42.00 | 0.07-0.11 | 0.0-2.9 | 0.0-0.5 | .10 | .28 | 5 | 6 | 0 |
| | 3-15 | 15-65 | 20-65 | 15-27 | 1.35-1.65 | 4.00-42.00 | 0.03-0.12 | 0.0-2.9 | 0.0-0.1 | .10 | .32 | | | |
| | 15-65 | 15-65 | 20-65 | 18-27 | 1.35-1.65 | 4.00-42.00 | 0.03-0.12 | 0.0-2.9 | 0.0-0.1 | .05 | .43 | | | |
| Fiveblock-------- | 0-6 | 55-75 | 10-35 | 5-18 | 1.35-1.65 | 14.00-42.00 | 0.05-0.07 | 0.0-2.9 | 0.0-0.5 | .10 | .15 | 5 | 3 | 48 |
| | 6-25 | 55-85 | 5-35 | 5-18 | 1.35-1.65 | 14.00-42.00 | 0.02-0.08 | 0.0-2.9 | 0.0-0.1 | .10 | .17 | | | |
| | 25-65 | 55-85 | 5-35 | 5-18 | 1.35-1.65 | 14.00-42.00 | 0.00-0.08 | 0.0-2.9 | 0.0-0.1 | .10 | .17 | | | |
| Kaymine---------- | 0-4 | 10-40 | 50-75 | 7-20 | 1.35-1.65 | 4.00-42.00 | 0.07-0.11 | 0.0-2.9 | 0.0-0.5 | .17 | .43 | 5 | 5 | 38 |
| | 4-28 | 10-45 | 30-75 | 7-25 | 1.35-1.65 | 4.00-42.00 | 0.04-0.13 | 0.0-2.9 | 0.0-0.1 | .10 | .43 | | | |
| | 28-64 | 10-45 | 30-75 | 7-25 | 1.35-1.65 | 4.00-42.00 | 0.06-0.15 | 0.0-2.9 | 0.0-0.1 | .10 | .43 | | | |
| 4C: | | | | | | | | | | | | | | |
| Cedarcreek------- | 0-3 | 25-50 | 30-50 | 15-27 | 1.35-1.65 | 4.00-42.00 | 0.07-0.11 | 0.0-2.9 | 0.0-0.5 | .10 | .28 | 5 | 6 | 0 |
| | 3-15 | 15-65 | 20-65 | 15-27 | 1.35-1.65 | 4.00-42.00 | 0.03-0.12 | 0.0-2.9 | 0.0-0.1 | .10 | .32 | | | |
| | 15-65 | 15-65 | 20-65 | 18-27 | 1.35-1.65 | 4.00-42.00 | 0.03-0.12 | 0.0-2.9 | 0.0-0.1 | .05 | .43 | | | |
| Sewell----------- | 0-4 | 55-75 | 5-40 | 5-18 | 1.35-1.65 | 14.00-42.00 | 0.08-0.10 | 0.0-2.9 | 0.0-0.5 | .10 | .15 | 5 | 3 | 56 |
| | 4-9 | 35-75 | 5-50 | 5-18 | 1.35-1.65 | 14.00-42.00 | 0.03-0.11 | 0.0-2.9 | 0.0-0.1 | .10 | .20 | | | |
| | 9-65 | 35-75 | 5-50 | 5-18 | 1.35-1.65 | 14.00-42.00 | 0.03-0.11 | 0.0-2.9 | 0.0-0.1 | .10 | .17 | | | |
| Rock outcrop. | | | | | | | | | | | | | | |

Table 15.—Physical Soil Properties—Continued

| Map symbol and soil name | Depth | Sand | Silt | Clay | Moist bulk density | Saturated hydraulic conductivity | Available water capacity | Linear extensi- bility | Organic matter | Erosion factors | | | Wind erodi- bility group | Wind erodi- bility index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Kw | Kf | T | | |
| | In | Pct | Pct | Pct | g/cc | um/sec | In/in | Pct | Pct | | | | | |
| 5F: | | | | | | | | | | | | | | |
| Cloverlick------- | 0-7 | --- | --- | 3-25 | 1.00-1.20 | 4.00-14.00 | 0.13-0.17 | 0.0-2.9 | 2.0-7.0 | .24 | .37 | 3 | 8 | 0 |
| | 7-10 | --- | --- | 3-25 | 1.10-1.30 | 4.00-14.00 | 0.10-0.17 | 0.0-2.9 | 0.5-2.0 | .37 | .55 | | | |
| | 10-44 | --- | --- | 7-25 | 1.30-1.50 | 14.00-42.00 | 0.09-0.17 | 0.0-2.9 | 0.1-0.5 | .17 | .43 | | | |
| | 44-63 | --- | --- | 5-25 | 1.30-1.60 | 14.00-42.00 | 0.01-0.13 | 0.0-2.9 | 0.0-0.2 | .10 | .32 | | | |
| Shelocta--------- | 0-4 | --- | --- | 7-25 | 1.15-1.25 | 4.00-14.00 | 0.10-0.15 | 0.0-2.9 | 1.0-4.0 | .17 | .28 | 4 | 8 | 0 |
| | 4-13 | --- | --- | 7-35 | 1.15-1.30 | 4.00-14.00 | 0.08-0.20 | 0.0-2.9 | 0.0-0.8 | .28 | .37 | | | |
| | 13-50 | --- | --- | 18-35 | 1.30-1.55 | 4.00-14.00 | 0.08-0.20 | 0.0-2.9 | 0.0-0.5 | .20 | .37 | | | |
| | 50-86 | --- | --- | 7-35 | 1.30-1.60 | 4.00-14.00 | 0.05-0.17 | 0.0-2.9 | 0.0-0.5 | .15 | .37 | | | |
| 6C: | | | | | | | | | | | | | | |
| Cotaco----------- | 0-12 | --- | --- | 7-27 | 1.20-1.40 | 4.00-42.00 | 0.15-0.21 | 0.0-2.9 | 1.0-3.0 | .28 | .28 | 3 | 6 | 48 |
| | 12-39 | --- | --- | 18-35 | 1.20-1.50 | 4.00-14.00 | 0.08-0.22 | 0.0-2.9 | 0.0-0.5 | .32 | .32 | | | |
| | 39-65 | --- | --- | 7-30 | 1.20-1.50 | 4.00-14.00 | 0.05-0.22 | 0.0-2.9 | 0.0-0.5 | .24 | .37 | | | |
| 7. | | | | | | | | | | | | | | |
| Dumps, mine-Urban land | | | | | | | | | | | | | | |
| 8C: | | | | | | | | | | | | | | |
| Fiveblock-------- | 0-6 | 55-75 | 10-35 | 5-18 | 1.35-1.65 | 14.00-42.00 | 0.05-0.07 | 0.0-2.9 | 0.0-0.5 | .10 | .15 | 5 | 3 | 48 |
| | 6-25 | 55-85 | 5-35 | 5-18 | 1.35-1.65 | 14.00-42.00 | 0.02-0.08 | 0.0-2.9 | 0.0-0.1 | .10 | .17 | | | |
| | 25-65 | 55-85 | 5-35 | 5-18 | 1.35-1.65 | 14.00-42.00 | 0.00-0.08 | 0.0-2.9 | 0.0-0.1 | .10 | .17 | | | |
| Sewell----------- | 0-4 | 55-75 | 5-40 | 5-18 | 1.35-1.65 | 14.00-42.00 | 0.08-0.10 | 0.0-2.9 | 0.0-0.5 | .10 | .15 | 5 | 3 | 56 |
| | 4-9 | 35-75 | 5-50 | 5-18 | 1.35-1.65 | 14.00-42.00 | 0.03-0.11 | 0.0-2.9 | 0.0-0.1 | .10 | .20 | | | |
| | 9-65 | 35-75 | 5-50 | 5-18 | 1.35-1.65 | 14.00-42.00 | 0.03-0.11 | 0.0-2.9 | 0.0-0.1 | .10 | .17 | | | |
| 9E: | | | | | | | | | | | | | | |
| Gilpin----------- | 0-3 | 5-45 | 50-80 | 2-25 | 1.20-1.40 | 4.00-14.00 | 0.11-0.20 | 0.0-2.9 | 0.5-4.0 | .43 | .43 | 3 | 2 | 134 |
| | 3-5 | 5-45 | 35-80 | 2-25 | 1.20-1.40 | 4.00-14.00 | 0.10-0.20 | 0.0-2.9 | 0.5-2.0 | .43 | .43 | | | |
| | 5-30 | 5-45 | 35-80 | 18-35 | 1.20-1.50 | 4.00-14.00 | 0.08-0.20 | 0.0-2.9 | 0.0-0.5 | .28 | .43 | | | |
| | 30-35 | 5-85 | 10-80 | 2-25 | 1.20-1.50 | 4.00-14.00 | 0.02-0.11 | 0.0-2.9 | 0.0-0.2 | .15 | .49 | | | |
| | 35-39 | --- | --- | --- | --- | 4.00-14.00 | --- | --- | --- | --- | --- | | | |
| | 39-49 | --- | --- | --- | --- | 1.40-14.00 | --- | --- | --- | --- | --- | | | |
| Berks------------ | 0-4 | 5-40 | 50-80 | 5-25 | 1.20-1.50 | 4.00-42.00 | 0.17-0.22 | 0.0-2.9 | 2.0-4.0 | .37 | .43 | 3 | 5 | 56 |
| | 4-8 | 5-45 | 35-80 | 5-30 | 1.20-1.60 | 4.00-42.00 | 0.05-0.17 | 0.0-2.9 | 0.0-0.5 | .37 | .55 | | | |
| | 8-23 | 5-45 | 35-80 | 5-30 | 1.20-1.60 | 4.00-42.00 | 0.05-0.11 | 0.0-2.9 | 0.0-0.5 | .20 | .55 | | | |
| | 23-34 | 10-50 | 35-75 | 5-20 | 1.20-1.60 | 14.00-42.00 | 0.04-0.11 | 0.0-2.9 | 0.0-0.5 | .10 | .64 | | | |
| | 34-36 | --- | --- | --- | --- | 1.40-14.00 | --- | --- | --- | --- | --- | | | |
| | 36-46 | --- | --- | --- | --- | 0.42-1.40 | --- | --- | --- | --- | --- | | | |

Table 15.—Physical Soil Properties—Continued

| Map symbol and soil name | Depth | Sand | Silt | Clay | Moist bulk density | Saturated hydraulic conductivity | Available water capacity | Linear extensi-bility | Organic matter | Erosion factors Kw | Erosion factors Kf | Erosion factors T | Wind erodi-bility group | Wind erodi-bility index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | Pct | Pct | g/cc | um/sec | In/in | Pct | Pct | | | | | |
| 9F: | | | | | | | | | | | | | | |
| Gilpin----------- | 0-3 | 5-45 | 50-80 | 2-25 | 1.20-1.40 | 4.00-14.00 | 0.11-0.20 | 0.0-2.9 | 0.5-4.0 | .43 | .43 | 3 | 2 | 134 |
| | 3-5 | 5-45 | 35-80 | 2-25 | 1.20-1.40 | 4.00-14.00 | 0.10-0.20 | 0.0-2.9 | 0.5-2.0 | .43 | .43 | | | |
| | 5-30 | 5-45 | 35-80 | 18-35 | 1.20-1.50 | 4.00-14.00 | 0.08-0.20 | 0.0-2.9 | 0.0-0.5 | .28 | .43 | | | |
| | 30-35 | 5-85 | 10-80 | 2-25 | 1.20-1.50 | 4.00-14.00 | 0.02-0.11 | 0.0-2.9 | 0.0-0.2 | .15 | .49 | | | |
| | 35-39 | --- | --- | --- | --- | 4.00-14.00 | --- | --- | --- | --- | --- | | | |
| | 39-49 | --- | --- | --- | --- | 1.40-14.00 | --- | --- | --- | --- | --- | | | |
| Berks------------ | 0-4 | 5-40 | 50-80 | 5-25 | 1.20-1.50 | 4.00-42.00 | 0.17-0.22 | 0.0-2.9 | 2.0-4.0 | .37 | .43 | 3 | 5 | 56 |
| | 4-8 | 5-45 | 35-80 | 5-30 | 1.20-1.60 | 4.00-42.00 | 0.05-0.17 | 0.0-2.9 | 0.0-0.5 | .37 | .55 | | | |
| | 8-23 | 5-45 | 35-80 | 5-30 | 1.20-1.60 | 4.00-42.00 | 0.05-0.11 | 0.0-2.9 | 0.0-0.5 | .20 | .55 | | | |
| | 23-34 | 10-50 | 35-75 | 5-20 | 1.20-1.60 | 14.00-42.00 | 0.04-0.11 | 0.0-2.9 | 0.0-0.5 | .10 | .64 | | | |
| | 34-36 | --- | --- | --- | --- | 1.40-14.00 | --- | --- | --- | --- | --- | | | |
| | 36-46 | --- | --- | --- | --- | 0.42-1.40 | --- | --- | --- | --- | --- | | | |
| 10A: | | | | | | | | | | | | | | |
| Grigsby---------- | 0-11 | --- | --- | 5-20 | 1.20-1.50 | 14.10-42.00 | 0.12-0.18 | 0.0-2.9 | 1.0-3.0 | .20 | .20 | 5 | 3 | 86 |
| | 11-32 | --- | --- | 5-18 | 1.20-1.50 | 14.10-42.00 | 0.10-0.19 | 0.0-2.9 | 0.2-1.0 | .32 | .32 | | | |
| | 32-53 | --- | --- | 2-10 | 1.20-1.50 | 14.10-42.00 | 0.03-0.16 | 0.0-2.9 | 0.0-0.2 | .28 | .28 | | | |
| | 53-61 | --- | --- | 1-10 | 1.20-1.50 | 14.10-141.00 | 0.01-0.15 | 0.0-2.9 | 0.0-0.1 | .05 | .10 | | | |
| 11F: | | | | | | | | | | | | | | |
| Highsplint------- | 0-3 | --- | --- | 5-20 | 1.20-1.40 | 4.00-14.00 | 0.13-0.20 | 0.0-2.9 | 0.5-3.0 | .24 | .37 | 5 | 8 | 0 |
| | 3-59 | --- | --- | 5-30 | 1.30-1.50 | 14.00-42.00 | 0.06-0.17 | 0.0-2.9 | 0.0-1.0 | .17 | .49 | | | |
| | 59-82 | --- | --- | 5-25 | 1.30-1.60 | 14.00-42.00 | 0.04-0.13 | 0.0-2.9 | 0.0-0.5 | .10 | .43 | | | |
| Shelocta--------- | 0-4 | --- | --- | 7-25 | 1.15-1.30 | 4.00-14.00 | 0.10-0.15 | 0.0-2.9 | 0.5-3.0 | .17 | .28 | 4 | 8 | 0 |
| | 4-13 | --- | --- | 7-35 | 1.15-1.30 | 4.00-14.00 | 0.08-0.20 | 0.0-2.9 | 0.0-0.5 | .28 | .37 | | | |
| | 13-50 | --- | --- | 18-35 | 1.30-1.55 | 4.00-14.00 | 0.08-0.20 | 0.0-2.9 | 0.0-0.5 | .20 | .37 | | | |
| | 50-86 | --- | --- | 7-35 | 1.30-1.60 | 4.00-14.00 | 0.05-0.17 | 0.0-2.9 | 0.0-0.5 | .15 | .37 | | | |
| 12F: | | | | | | | | | | | | | | |
| Itmann----------- | 0-4 | --- | --- | 5-14 | 1.00-1.30 | 42.40-141.00 | 0.10-0.15 | 0.0-2.9 | 0.0-0.5 | .28 | .37 | 5 | 8 | 0 |
| | 4-27 | --- | --- | 5-20 | 1.00-1.30 | 42.40-141.00 | 0.02-0.10 | 0.0-2.9 | 0.0-0.1 | .10 | .24 | | | |
| | 27-63 | --- | --- | 5-14 | 1.00-1.30 | 42.40-141.00 | 0.02-0.10 | 0.0-2.9 | 0.0-0.1 | .10 | .24 | | | |
| 13D: | | | | | | | | | | | | | | |
| Kaymine---------- | 0-4 | 10-40 | 50-75 | 7-20 | 1.35-1.65 | 4.00-42.00 | 0.07-0.11 | 0.0-2.9 | 0.0-0.5 | .17 | .43 | 5 | 5 | 38 |
| | 4-28 | 10-45 | 30-75 | 7-25 | 1.35-1.65 | 4.00-42.00 | 0.04-0.13 | 0.0-2.9 | 0.0-0.1 | .10 | .43 | | | |
| | 28-64 | 10-45 | 30-75 | 7-25 | 1.35-1.65 | 4.00-42.00 | 0.06-0.15 | 0.0-2.9 | 0.0-0.1 | .10 | .43 | | | |
| 14E: | | | | | | | | | | | | | | |
| Kaymine---------- | 0-4 | 10-40 | 50-75 | 7-20 | 1.35-1.65 | 4.00-42.00 | 0.07-0.11 | 0.0-2.9 | 0.0-0.5 | .17 | .43 | 5 | 5 | 38 |
| | 4-28 | 10-45 | 30-75 | 7-25 | 1.35-1.65 | 4.00-42.00 | 0.04-0.13 | 0.0-2.9 | 0.0-0.1 | .10 | .43 | | | |
| | 28-64 | 10-45 | 30-75 | 7-25 | 1.35-1.65 | 4.00-42.00 | 0.06-0.15 | 0.0-2.9 | 0.0-0.1 | .10 | .43 | | | |

Table 15.—Physical Soil Properties—Continued

| Map symbol and soil name | Depth | Sand | Silt | Clay | Moist bulk density | Saturated hydraulic conductivity | Available water capacity | Linear extensi- bility | Organic matter | Erosion factors | | | Wind erodi- bility group | Wind erodi- bility index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Kw | Kf | T | | |
| | In | Pct | Pct | Pct | g/cc | um/sec | In/in | Pct | Pct | | | | | |
| 14E: | | | | | | | | | | | | | | |
| Cedarcreek------- | 0-3 | 25-50 | 30-50 | 15-27 | 1.35-1.65 | 4.00-42.00 | 0.07-0.11 | 0.0-2.9 | 0.0-0.5 | .10 | .28 | 5 | 6 | 0 |
| | 3-15 | 15-65 | 20-65 | 15-27 | 1.35-1.65 | 4.00-42.00 | 0.03-0.12 | 0.0-2.9 | 0.0-0.1 | .10 | .32 | | | |
| | 15-65 | 15-65 | 20-65 | 18-27 | 1.35-1.65 | 4.00-42.00 | 0.03-0.12 | 0.0-2.9 | 0.0-0.1 | .05 | .43 | | | |
| 15C: | | | | | | | | | | | | | | |
| Kaymine---------- | 0-4 | 10-40 | 50-75 | 7-20 | 1.35-1.65 | 4.00-42.00 | 0.07-0.11 | 0.0-2.9 | 0.0-0.5 | .17 | .43 | 5 | 5 | 38 |
| | 4-28 | 10-45 | 30-75 | 7-25 | 1.35-1.65 | 4.00-42.00 | 0.04-0.13 | 0.0-2.9 | 0.0-0.1 | .10 | .43 | | | |
| | 28-64 | 10-45 | 30-75 | 7-25 | 1.35-1.65 | 4.00-42.00 | 0.06-0.15 | 0.0-2.9 | 0.0-0.1 | .10 | .43 | | | |
| Fiveblock-------- | 0-6 | 55-75 | 10-35 | 5-18 | 1.35-1.65 | 14.00-42.00 | 0.05-0.07 | 0.0-2.9 | 0.0-0.5 | .10 | .15 | 5 | 3 | 48 |
| | 6-25 | 55-85 | 5-35 | 5-18 | 1.35-1.65 | 14.00-42.00 | 0.02-0.08 | 0.0-2.9 | 0.0-0.1 | .10 | .17 | | | |
| | 25-65 | 55-85 | 5-35 | 5-18 | 1.35-1.65 | 14.00-42.00 | 0.00-0.08 | 0.0-2.9 | 0.0-0.1 | .10 | .17 | | | |
| Cedarcreek------- | 0-3 | 25-50 | 30-50 | 15-27 | 1.35-1.65 | 4.00-42.00 | 0.07-0.11 | 0.0-2.9 | 0.0-0.5 | .10 | .28 | 5 | 6 | 0 |
| | 3-15 | 15-65 | 20-65 | 15-27 | 1.35-1.65 | 4.00-42.00 | 0.03-0.12 | 0.0-2.9 | 0.0-0.1 | .10 | .32 | | | |
| | 15-65 | 15-65 | 20-65 | 18-27 | 1.35-1.65 | 4.00-42.00 | 0.03-0.12 | 0.0-2.9 | 0.0-0.1 | .05 | .43 | | | |
| 16C: | | | | | | | | | | | | | | |
| Lily------------- | 0-3 | 25-51 | 29-49 | 5-20 | 1.20-1.40 | 4.00-42.00 | 0.15-0.19 | 0.0-2.9 | 0.5-2.0 | .32 | .37 | 2 | 5 | 56 |
| | 3-7 | 25-82 | 5-49 | 5-20 | 1.25-1.35 | 14.00-42.00 | 0.10-0.19 | 0.0-2.9 | 0.0-1.0 | .37 | .43 | | | |
| | 7-24 | 21-78 | 5-49 | 18-35 | 1.25-1.55 | 14.00-42.00 | 0.11-0.19 | 0.0-2.9 | 0.0-0.5 | .37 | .43 | | | |
| | 24-28 | 25-82 | 5-49 | 15-35 | 1.25-1.55 | 14.00-42.00 | 0.09-0.19 | 0.0-2.9 | 0.0-0.5 | .20 | .32 | | | |
| | 28-38 | --- | --- | --- | --- | 0.00-4.00 | --- | --- | --- | --- | --- | | | |
| 16D: | | | | | | | | | | | | | | |
| Lily------------- | 0-3 | 25-51 | 29-49 | 5-20 | 1.20-1.40 | 4.00-42.00 | 0.15-0.19 | 0.0-2.9 | 0.5-2.0 | .32 | .37 | 2 | 5 | 56 |
| | 3-7 | 25-82 | 5-49 | 5-20 | 1.25-1.35 | 14.00-42.00 | 0.10-0.19 | 0.0-2.9 | 0.0-1.0 | .37 | .43 | | | |
| | 7-24 | 21-78 | 5-49 | 18-35 | 1.25-1.55 | 14.00-42.00 | 0.11-0.19 | 0.0-2.9 | 0.0-0.5 | .37 | .43 | | | |
| | 24-28 | 25-82 | 5-49 | 15-35 | 1.25-1.55 | 14.00-42.00 | 0.09-0.19 | 0.0-2.9 | 0.0-0.5 | .20 | .32 | | | |
| | 28-38 | --- | --- | --- | --- | 0.00-4.00 | --- | --- | --- | --- | --- | | | |
| 16E: | | | | | | | | | | | | | | |
| Lily------------- | 0-3 | 25-51 | 29-49 | 5-20 | 1.20-1.40 | 4.00-42.00 | 0.15-0.19 | 0.0-2.9 | 0.5-2.0 | .32 | .37 | 2 | 5 | 56 |
| | 3-7 | 25-82 | 5-49 | 5-20 | 1.25-1.35 | 14.00-42.00 | 0.10-0.19 | 0.0-2.9 | 0.0-1.0 | .37 | .43 | | | |
| | 7-24 | 21-78 | 5-49 | 18-35 | 1.25-1.55 | 14.00-42.00 | 0.11-0.19 | 0.0-2.9 | 0.0-0.5 | .37 | .43 | | | |
| | 24-28 | 25-82 | 5-49 | 15-35 | 1.25-1.55 | 14.00-42.00 | 0.09-0.19 | 0.0-2.9 | 0.0-0.5 | .20 | .32 | | | |
| | 28-38 | --- | --- | --- | --- | 0.00-4.00 | --- | --- | --- | --- | --- | | | |
| 17D: | | | | | | | | | | | | | | |
| Marrowbone------- | 0-5 | 55-75 | 10-40 | 4-18 | 1.20-1.60 | 14.00-42.00 | 0.12-0.16 | 0.0-2.9 | 0.5-5.0 | .24 | .28 | 2 | 3 | 86 |
| | 5-22 | 55-75 | 10-40 | 2-18 | 1.20-1.70 | 14.00-42.00 | 0.07-0.14 | 0.0-2.9 | 0.1-2.0 | .17 | .28 | | | |
| | 22-33 | 55-85 | 2-40 | 2-15 | 1.30-1.70 | 14.00-42.00 | 0.04-0.14 | 0.0-2.9 | 0.0-0.2 | .10 | .28 | | | |
| | 33-45 | --- | --- | --- | --- | 1.40-14.00 | --- | --- | --- | --- | --- | | | |
| | 45-55 | --- | --- | --- | --- | 0.00-1.40 | --- | --- | --- | --- | --- | | | |

Table 15.—Physical Soil Properties—Continued

| Map symbol and soil name | Depth | Sand | Silt | Clay | Moist bulk density | Saturated hydraulic conductivity | Available water capacity | Linear extensi-bility | Organic matter | Erosion factors Kw | Kf | T | Wind erodi-bility group | Wind erodi-bility index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | Pct | Pct | g/cc | um/sec | In/in | Pct | Pct | | | | | |
| 17D: | | | | | | | | | | | | | | |
| Gilpin----------- | 0-3 | 5-45 | 50-80 | 2-25 | 1.20-1.40 | 4.00-14.00 | 0.11-0.20 | 0.0-2.9 | 0.5-4.0 | .43 | .43 | 3 | 2 | 134 |
| | 3-5 | 5-45 | 35-80 | 2-25 | 1.20-1.40 | 4.00-14.00 | 0.10-0.20 | 0.0-2.9 | 0.5-2.0 | .43 | .43 | | | |
| | 5-30 | 5-45 | 35-80 | 18-35 | 1.20-1.50 | 4.00-14.00 | 0.08-0.20 | 0.0-2.9 | 0.0-0.5 | .28 | .43 | | | |
| | 30-35 | 5-85 | 10-80 | 2-25 | 1.20-1.50 | 4.00-14.00 | 0.02-0.11 | 0.0-2.9 | 0.0-0.2 | .15 | .49 | | | |
| | 35-39 | --- | --- | --- | --- | 4.00-14.00 | --- | --- | --- | --- | --- | | | |
| | 39-49 | --- | --- | --- | --- | 1.40-14.00 | --- | --- | --- | --- | --- | | | |
| 17E: | | | | | | | | | | | | | | |
| Marrowbone------- | 0-5 | 55-75 | 10-40 | 4-18 | 1.20-1.60 | 14.00-42.00 | 0.12-0.16 | 0.0-2.9 | 0.5-5.0 | .24 | .28 | 2 | 3 | 86 |
| | 5-22 | 55-75 | 10-40 | 2-18 | 1.20-1.70 | 14.00-42.00 | 0.07-0.14 | 0.0-2.9 | 0.1-2.0 | .17 | .28 | | | |
| | 22-33 | 55-85 | 2-40 | 2-15 | 1.30-1.70 | 14.00-42.00 | 0.04-0.14 | 0.0-2.9 | 0.0-0.2 | .10 | .28 | | | |
| | 33-45 | --- | --- | --- | --- | 1.40-14.00 | --- | --- | --- | --- | --- | | | |
| | 45-55 | --- | --- | --- | --- | 0.00-1.40 | --- | --- | --- | --- | --- | | | |
| Gilpin----------- | 0-3 | 5-45 | 50-80 | 2-25 | 1.20-1.40 | 4.00-14.00 | 0.11-0.20 | 0.0-2.9 | 0.5-4.0 | .43 | .43 | 3 | 2 | 134 |
| | 3-5 | 5-45 | 35-80 | 2-25 | 1.20-1.40 | 4.00-14.00 | 0.10-0.20 | 0.0-2.9 | 0.5-2.0 | .43 | .43 | | | |
| | 5-30 | 5-45 | 35-80 | 18-35 | 1.20-1.50 | 4.00-14.00 | 0.08-0.20 | 0.0-2.9 | 0.0-0.5 | .28 | .43 | | | |
| | 30-35 | 5-85 | 10-80 | 2-25 | 1.20-1.50 | 4.00-14.00 | 0.02-0.11 | 0.0-2.9 | 0.0-0.2 | .15 | .49 | | | |
| | 35-39 | --- | --- | --- | --- | 4.00-14.00 | --- | --- | --- | --- | --- | | | |
| | 39-49 | --- | --- | --- | --- | 1.40-14.00 | --- | --- | --- | --- | --- | | | |
| 17F: | | | | | | | | | | | | | | |
| Marrowbone------- | 0-5 | 55-75 | 10-40 | 4-18 | 1.20-1.60 | 14.00-42.00 | 0.12-0.16 | 0.0-2.9 | 0.5-5.0 | .24 | .28 | 2 | 3 | 86 |
| | 5-22 | 55-75 | 10-40 | 2-18 | 1.20-1.70 | 14.00-42.00 | 0.07-0.14 | 0.0-2.9 | 0.1-2.0 | .17 | .28 | | | |
| | 22-33 | 55-85 | 2-40 | 2-15 | 1.30-1.70 | 14.00-42.00 | 0.04-0.14 | 0.0-2.9 | 0.0-0.2 | .10 | .28 | | | |
| | 33-45 | --- | --- | --- | --- | 1.40-14.00 | --- | --- | --- | --- | --- | | | |
| | 45-55 | --- | --- | --- | --- | 0.00-1.40 | --- | --- | --- | --- | --- | | | |
| Gilpin----------- | 0-3 | 5-45 | 50-80 | 2-25 | 1.20-1.40 | 4.00-14.00 | 0.11-0.20 | 0.0-2.9 | 0.5-4.0 | .43 | .43 | 3 | 2 | 134 |
| | 3-5 | 5-45 | 35-80 | 2-25 | 1.20-1.40 | 4.00-14.00 | 0.10-0.20 | 0.0-2.9 | 0.5-2.0 | .43 | .43 | | | |
| | 5-30 | 5-45 | 35-80 | 18-35 | 1.20-1.50 | 4.00-14.00 | 0.08-0.20 | 0.0-2.9 | 0.0-0.5 | .28 | .43 | | | |
| | 30-35 | 5-85 | 10-80 | 2-25 | 1.20-1.50 | 4.00-14.00 | 0.02-0.11 | 0.0-2.9 | 0.0-0.2 | .15 | .49 | | | |
| | 35-39 | --- | --- | --- | --- | 4.00-14.00 | --- | --- | --- | --- | --- | | | |
| | 39-49 | --- | --- | --- | --- | 1.40-14.00 | --- | --- | --- | --- | --- | | | |
| 18F: | | | | | | | | | | | | | | |
| Matewan---------- | 0-4 | 55-70 | --- | 3-20 | 1.20-1.50 | 42.40-141.00 | 0.12-0.15 | 0.0-2.9 | 0.5-2.0 | .28 | .43 | 2 | 6 | 48 |
| | 4-21 | 45-80 | --- | 5-18 | 1.20-1.50 | 14.10-141.00 | 0.07-0.13 | 0.0-2.9 | 0.0-0.5 | .15 | .43 | | | |
| | 21-38 | 45-85 | --- | 3-15 | 1.20-1.50 | 42.40-141.00 | 0.02-0.10 | 0.0-2.9 | 0.0-0.5 | .17 | .49 | | | |
| | 38-48 | --- | --- | --- | --- | 0.00-1.40 | --- | --- | --- | --- | --- | | | |
| Gilpin----------- | 0-3 | 5-45 | 50-80 | 2-25 | 1.20-1.40 | 4.00-14.00 | 0.11-0.20 | 0.0-2.9 | 0.5-4.0 | .43 | .43 | 3 | 2 | 134 |
| | 3-5 | 5-45 | 35-80 | 2-25 | 1.20-1.40 | 4.00-14.00 | 0.10-0.20 | 0.0-2.9 | 0.5-2.0 | .43 | .43 | | | |
| | 5-30 | 5-45 | 35-80 | 18-35 | 1.20-1.50 | 4.00-14.00 | 0.08-0.20 | 0.0-2.9 | 0.0-0.5 | .28 | .43 | | | |
| | 30-35 | 5-85 | 10-80 | 2-25 | 1.20-1.50 | 4.00-14.00 | 0.02-0.11 | 0.0-2.9 | 0.0-0.2 | .15 | .49 | | | |
| | 35-39 | --- | --- | --- | --- | 4.00-14.00 | --- | --- | --- | --- | --- | | | |
| | 39-49 | --- | --- | --- | --- | 1.40-14.00 | --- | --- | --- | --- | --- | | | |

Table 15.—Physical Soil Properties—Continued

| Map symbol and soil name | Depth | Sand | Silt | Clay | Moist bulk density | Saturated hydraulic conductivity | Available water capacity | Linear extensi-bility | Organic matter | Erosion factors Kw | Kf | T | Wind erodi-bility group | Wind erodi-bility index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | Pct | Pct | g/cc | um/sec | In/in | Pct | Pct | | | | | |
| 18F: | | | | | | | | | | | | | | |
| Rock outcrop. | | | | | | | | | | | | | | |
| 19D: | | | | | | | | | | | | | | |
| Oriskany--------- | 0-6 | 52-80 | 5-50 | 5-20 | 1.20-1.40 | 14.00-42.00 | 0.06-0.09 | 0.0-2.9 | 0.5-3.0 | .10 | .20 | 5 | 3 | 56 |
| | 6-17 | 30-80 | 5-50 | 7-27 | 1.20-1.40 | 14.00-42.00 | 0.05-0.11 | 0.0-2.9 | 0.0-0.5 | .10 | .24 | | | |
| | 17-70 | 20-65 | 5-50 | 15-35 | 1.30-1.65 | 14.00-42.00 | 0.04-0.11 | 0.0-2.9 | 0.0-0.5 | .10 | .32 | | | |
| 19E: | | | | | | | | | | | | | | |
| Oriskany--------- | 0-6 | 52-80 | 5-50 | 5-20 | 1.20-1.40 | 14.00-42.00 | 0.06-0.09 | 0.0-2.9 | 0.5-3.0 | .10 | .20 | 5 | 3 | 56 |
| | 6-17 | 30-80 | 5-50 | 7-27 | 1.20-1.40 | 14.00-42.00 | 0.05-0.11 | 0.0-2.9 | 0.0-0.5 | .10 | .24 | | | |
| | 17-70 | 20-65 | 5-50 | 15-35 | 1.30-1.65 | 14.00-42.00 | 0.04-0.11 | 0.0-2.9 | 0.0-0.5 | .10 | .32 | | | |
| 20A: | | | | | | | | | | | | | | |
| Philo------------ | 0-8 | 50-80 | 5-35 | 10-18 | 1.20-1.40 | 4.00-42.00 | 0.13-0.16 | 0.0-2.9 | 1.0-4.0 | .17 | .17 | 5 | 3 | 86 |
| | 8-62 | 35-80 | 5-50 | 10-18 | 1.20-1.40 | 4.00-42.00 | 0.10-0.19 | 0.0-2.9 | 0.2-1.0 | .24 | .28 | | | |
| 21F: | | | | | | | | | | | | | | |
| Sewell----------- | 0-4 | 55-75 | 5-40 | 5-18 | 1.35-1.65 | 14.00-42.00 | 0.08-0.10 | 0.0-2.9 | 0.0-0.5 | .10 | .15 | 5 | 3 | 56 |
| | 4-9 | 35-75 | 5-50 | 5-18 | 1.35-1.65 | 14.00-42.00 | 0.03-0.11 | 0.0-2.9 | 0.0-0.1 | .10 | .20 | | | |
| | 9-65 | 35-75 | 5-50 | 5-18 | 1.35-1.65 | 14.00-42.00 | 0.03-0.11 | 0.0-2.9 | 0.0-0.1 | .10 | .17 | | | |
| Kaymine---------- | 0-4 | 10-40 | 50-75 | 7-20 | 1.35-1.65 | 4.00-42.00 | 0.07-0.11 | 0.0-2.9 | 0.0-0.5 | .17 | .43 | 5 | 5 | 38 |
| | 4-28 | 10-45 | 30-75 | 7-25 | 1.35-1.65 | 4.00-42.00 | 0.04-0.13 | 0.0-2.9 | 0.0-0.1 | .10 | .43 | | | |
| | 28-64 | 10-45 | 30-75 | 7-25 | 1.35-1.65 | 4.00-42.00 | 0.06-0.15 | 0.0-2.9 | 0.0-0.1 | .10 | .43 | | | |
| Rock outcrop. | | | | | | | | | | | | | | |
| 22E: | | | | | | | | | | | | | | |
| Shelocta--------- | 0-4 | --- | --- | 7-25 | 1.15-1.30 | 4.00-14.00 | 0.10-0.15 | 0.0-2.9 | 0.5-3.0 | .17 | .28 | 4 | 8 | 0 |
| | 4-13 | --- | --- | 7-35 | 1.15-1.30 | 4.00-14.00 | 0.08-0.20 | 0.0-2.9 | 0.0-0.5 | .28 | .37 | | | |
| | 13-50 | --- | --- | 18-35 | 1.30-1.55 | 4.00-14.00 | 0.08-0.20 | 0.0-2.9 | 0.0-0.5 | .20 | .37 | | | |
| | 50-86 | --- | --- | 7-35 | 1.30-1.60 | 4.00-14.00 | 0.05-0.17 | 0.0-2.9 | 0.0-0.5 | .15 | .37 | | | |
| Cedarcreek------- | 0-3 | 25-50 | 30-50 | 15-27 | 1.35-1.65 | 4.00-42.00 | 0.07-0.11 | 0.0-2.9 | 0.0-0.5 | .10 | .28 | 5 | 6 | 0 |
| | 3-15 | 15-65 | 20-65 | 15-27 | 1.35-1.65 | 4.00-42.00 | 0.03-0.12 | 0.0-2.9 | 0.0-0.1 | .10 | .32 | | | |
| | 15-65 | 15-65 | 20-65 | 18-27 | 1.35-1.65 | 4.00-42.00 | 0.03-0.12 | 0.0-2.9 | 0.0-0.1 | .05 | .43 | | | |
| 23E: | | | | | | | | | | | | | | |
| Shelocta--------- | 0-4 | --- | --- | 7-25 | 1.15-1.25 | 4.00-14.00 | 0.10-0.15 | 0.0-2.9 | 1.0-4.0 | .17 | .28 | 4 | 8 | 0 |
| | 4-13 | --- | --- | 7-35 | 1.15-1.30 | 4.00-14.00 | 0.08-0.20 | 0.0-2.9 | 0.0-0.8 | .28 | .37 | | | |
| | 13-50 | --- | --- | 18-35 | 1.30-1.55 | 4.00-14.00 | 0.08-0.20 | 0.0-2.9 | 0.0-0.5 | .20 | .37 | | | |
| | 50-86 | --- | --- | 7-35 | 1.30-1.60 | 4.00-14.00 | 0.05-0.17 | 0.0-2.9 | 0.0-0.5 | .15 | .37 | | | |
| Cloverlick------- | 0-7 | --- | --- | 3-25 | 1.00-1.20 | 4.00-14.00 | 0.13-0.17 | 0.0-2.9 | 2.0-7.0 | .24 | .37 | 3 | 8 | 0 |
| | 7-10 | --- | --- | 3-25 | 1.10-1.30 | 4.00-14.00 | 0.10-0.17 | 0.0-2.9 | 0.5-2.0 | .37 | .55 | | | |
| | 10-44 | --- | --- | 7-25 | 1.30-1.50 | 14.00-42.00 | 0.09-0.17 | 0.0-2.9 | 0.1-0.5 | .17 | .43 | | | |
| | 44-63 | --- | --- | 5-25 | 1.30-1.60 | 14.00-42.00 | 0.01-0.13 | 0.0-2.9 | 0.0-0.2 | .10 | .32 | | | |

Table 15.—Physical Soil Properties—Continued

| Map symbol and soil name | Depth | Sand | Silt | Clay | Moist bulk density | Saturated hydraulic conductivity | Available water capacity | Linear extensi-bility | Organic matter | Erosion factors Kw | Erosion factors Kf | Erosion factors T | Wind erodi-bility group | Wind erodi-bility index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In | Pct | Pct | Pct | g/cc | um/sec | In/in | Pct | Pct | | | | | |
| 24E: | | | | | | | | | | | | | | |
| Shelocta--------- | 0-4 | --- | --- | 7-25 | 1.15-1.30 | 4.00-14.00 | 0.10-0.15 | 0.0-2.9 | 0.5-3.0 | .17 | .28 | 4 | 8 | 0 |
| | 4-13 | --- | --- | 7-35 | 1.15-1.30 | 4.00-14.00 | 0.08-0.20 | 0.0-2.9 | 0.0-0.5 | .28 | .37 | | | |
| | 13-50 | --- | --- | 18-35 | 1.30-1.55 | 4.00-14.00 | 0.08-0.20 | 0.0-2.9 | 0.0-0.5 | .20 | .37 | | | |
| | 50-86 | --- | --- | 7-35 | 1.30-1.60 | 4.00-14.00 | 0.05-0.17 | 0.0-2.9 | 0.0-0.5 | .15 | .37 | | | |
| Highsplint------- | 0-3 | --- | --- | 5-20 | 1.20-1.40 | 4.00-14.00 | 0.13-0.20 | 0.0-2.9 | 0.5-3.0 | .24 | .37 | 5 | 8 | 0 |
| | 3-59 | --- | --- | 5-30 | 1.30-1.50 | 14.00-42.00 | 0.06-0.17 | 0.0-2.9 | 0.0-1.0 | .17 | .49 | | | |
| | 59-82 | --- | --- | 5-25 | 1.30-1.60 | 14.00-42.00 | 0.04-0.13 | 0.0-2.9 | 0.0-0.5 | .10 | .43 | | | |
| 25F: | | | | | | | | | | | | | | |
| Shelocta--------- | 0-4 | --- | --- | 7-25 | 1.15-1.30 | 4.00-14.00 | 0.10-0.15 | 0.0-2.9 | 0.5-3.0 | .17 | .28 | 4 | 8 | 0 |
| | 4-13 | --- | --- | 7-35 | 1.15-1.30 | 4.00-14.00 | 0.08-0.20 | 0.0-2.9 | 0.0-0.5 | .28 | .37 | | | |
| | 13-50 | --- | --- | 18-35 | 1.30-1.55 | 4.00-14.00 | 0.08-0.20 | 0.0-2.9 | 0.0-0.5 | .20 | .37 | | | |
| | 50-86 | --- | --- | 7-35 | 1.30-1.60 | 4.00-14.00 | 0.05-0.17 | 0.0-2.9 | 0.0-0.5 | .15 | .37 | | | |
| Kaymine---------- | 0-4 | 10-40 | 50-75 | 7-20 | 1.35-1.65 | 4.00-42.00 | 0.07-0.11 | 0.0-2.9 | 0.0-0.5 | .17 | .43 | 5 | 5 | 38 |
| | 4-28 | 10-45 | 30-75 | 7-25 | 1.35-1.65 | 4.00-42.00 | 0.04-0.13 | 0.0-2.9 | 0.0-0.1 | .10 | .43 | | | |
| | 28-64 | 10-45 | 30-75 | 7-25 | 1.35-1.65 | 4.00-42.00 | 0.06-0.15 | 0.0-2.9 | 0.0-0.1 | .10 | .43 | | | |
| 26F: | | | | | | | | | | | | | | |
| Stonecoal-------- | 0-31 | --- | --- | 4-10 | 1.00-1.30 | 14.00-141.00 | 0.02-0.09 | 0.0-2.0 | 0.0-0.5 | .10 | .24 | 5 | 8 | 0 |
| | 31-39 | --- | --- | 4-15 | 1.00-1.30 | 14.00-141.00 | 0.02-0.09 | 0.0-2.0 | 0.0-0.5 | .10 | .28 | | | |
| | 39-68 | --- | --- | 4-10 | 1.00-1.30 | 14.00-141.00 | 0.02-0.09 | 0.0-2.0 | 0.0-0.5 | .10 | .17 | | | |
| 27. | | | | | | | | | | | | | | |
| Udorthents-Urban land | | | | | | | | | | | | | | |
| 28. | | | | | | | | | | | | | | |
| Udorthents-Urban land | | | | | | | | | | | | | | |
| 29D: | | | | | | | | | | | | | | |
| Wallen----------- | 0-4 | --- | --- | 8-20 | 1.40-1.55 | 14.00-42.00 | 0.08-0.12 | 0.0-2.9 | 0.5-2.0 | .15 | .24 | 2 | 4 | 86 |
| | 4-24 | --- | --- | 8-20 | 1.40-1.55 | 14.00-42.00 | 0.05-0.10 | 0.0-2.9 | 0.0-0.5 | .10 | .32 | | | |
| | 24-34 | --- | --- | --- | --- | 0.00-4.00 | --- | --- | --- | --- | --- | | | |
| 29F: | | | | | | | | | | | | | | |
| Wallen----------- | 0-4 | --- | --- | 8-20 | 1.40-1.55 | 14.00-42.00 | 0.08-0.12 | 0.0-2.9 | 0.5-2.0 | .15 | .24 | 2 | 4 | 86 |
| | 4-24 | --- | --- | 8-20 | 1.40-1.55 | 14.00-42.00 | 0.05-0.10 | 0.0-2.9 | 0.0-0.5 | .10 | .32 | | | |
| | 24-34 | --- | --- | --- | --- | 0.00-4.00 | --- | --- | --- | --- | --- | | | |
| 30F: | | | | | | | | | | | | | | |
| Wallen----------- | 0-4 | --- | --- | 8-20 | 1.40-1.55 | 14.00-42.00 | 0.08-0.12 | 0.0-2.9 | 0.5-2.0 | .15 | .24 | 2 | 4 | 86 |
| | 4-24 | --- | --- | 8-20 | 1.40-1.55 | 14.00-42.00 | 0.05-0.10 | 0.0-2.9 | 0.0-0.5 | .10 | .32 | | | |
| | 24-34 | --- | --- | --- | --- | 0.00-4.00 | --- | --- | --- | --- | --- | | | |

Table 15.—Physical Soil Properties—Continued

| Map symbol and soil name | Depth | Sand | Silt | Clay | Moist bulk density | Saturated hydraulic conductivity | Available water capacity | Linear extensi-bility | Organic matter | Erosion factors | | | Wind erodi-bility group | Wind erodi-bility index |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Kw | Kf | T | | |
| | In | Pct | Pct | Pct | g/cc | um/sec | In/in | Pct | Pct | | | | | |
| 30F: | | | | | | | | | | | | | | |
| Rock outcrop. | | | | | | | | | | | | | | |
| 31D: | | | | | | | | | | | | | | |
| Wharton---------- | 0-2 | 5-35 | 50-80 | 10-25 | 1.20-1.40 | 0.42-4.00 | 0.19-0.22 | 0.0-2.9 | 1.0-4.0 | .43 | .43 | 3 | 5 | 56 |
| | 2-9 | 5-40 | 40-80 | 10-30 | 1.20-1.40 | 0.42-4.00 | 0.13-0.22 | 0.0-2.9 | 0.5-2.0 | .49 | .49 | | | |
| | 9-35 | 5-40 | 40-80 | 18-35 | 1.20-1.50 | 0.42-4.00 | 0.13-0.22 | 0.0-2.9 | 0.2-1.0 | .43 | .43 | | | |
| | 35-55 | 5-40 | 40-80 | 12-27 | 1.20-1.50 | 0.42-4.00 | 0.11-0.20 | 0.0-2.9 | 0.1-0.5 | .37 | .49 | | | |
| | 55-65 | 5-65 | 25-80 | 5-30 | 1.20-1.50 | 0.42-4.00 | 0.05-0.20 | 0.0-2.9 | 0.0-0.2 | .43 | .55 | | | |
| | 65-75 | --- | --- | --- | --- | 0.42-1.40 | --- | --- | --- | --- | --- | | | |
| Gilpin----------- | 0-3 | 5-45 | 50-80 | 2-25 | 1.20-1.40 | 4.00-14.00 | 0.11-0.20 | 0.0-2.9 | 0.5-4.0 | .43 | .43 | 3 | 2 | 134 |
| | 3-5 | 5-45 | 35-80 | 2-25 | 1.20-1.40 | 4.00-14.00 | 0.10-0.20 | 0.0-2.9 | 0.5-2.0 | .43 | .43 | | | |
| | 5-30 | 5-45 | 35-80 | 18-35 | 1.20-1.50 | 4.00-14.00 | 0.08-0.20 | 0.0-2.9 | 0.0-0.5 | .28 | .43 | | | |
| | 30-35 | 5-85 | 10-80 | 2-25 | 1.20-1.50 | 4.00-14.00 | 0.02-0.11 | 0.0-2.9 | 0.0-0.2 | .15 | .49 | | | |
| | 35-39 | --- | --- | --- | --- | 4.00-14.00 | --- | --- | --- | --- | --- | | | |
| | 39-49 | --- | --- | --- | --- | 1.40-14.00 | --- | --- | --- | --- | --- | | | |
| Berks------------ | 0-4 | 5-40 | 50-80 | 5-25 | 1.20-1.50 | 4.00-42.00 | 0.17-0.22 | 0.0-2.9 | 2.0-4.0 | .37 | .43 | 3 | 5 | 56 |
| | 4-8 | 5-45 | 35-80 | 5-30 | 1.20-1.60 | 4.00-42.00 | 0.05-0.17 | 0.0-2.9 | 0.0-0.5 | .37 | .55 | | | |
| | 8-23 | 5-45 | 35-80 | 5-30 | 1.20-1.60 | 4.00-42.00 | 0.05-0.11 | 0.0-2.9 | 0.0-0.5 | .20 | .55 | | | |
| | 23-34 | 10-50 | 35-75 | 5-20 | 1.20-1.60 | 14.00-42.00 | 0.04-0.11 | 0.0-2.9 | 0.0-0.5 | .10 | .64 | | | |
| | 34-36 | --- | --- | --- | --- | 1.40-14.00 | --- | --- | --- | --- | --- | | | |
| | 36-46 | --- | --- | --- | --- | 0.42-1.40 | --- | --- | --- | --- | --- | | | |
| 32C: | | | | | | | | | | | | | | |
| Wharton---------- | 0-2 | 5-35 | 50-80 | 10-25 | 1.20-1.40 | 0.42-4.00 | 0.19-0.22 | 0.0-2.9 | 1.0-4.0 | .43 | .43 | 3 | 5 | 56 |
| | 2-9 | 5-40 | 40-80 | 10-30 | 1.20-1.40 | 0.42-4.00 | 0.13-0.22 | 0.0-2.9 | 0.5-2.0 | .49 | .49 | | | |
| | 9-35 | 5-40 | 40-80 | 18-35 | 1.20-1.50 | 0.42-4.00 | 0.13-0.22 | 0.0-2.9 | 0.2-1.0 | .43 | .43 | | | |
| | 35-55 | 5-40 | 40-80 | 12-27 | 1.20-1.50 | 0.42-4.00 | 0.11-0.20 | 0.0-2.9 | 0.1-0.5 | .37 | .49 | | | |
| | 55-65 | 5-65 | 25-80 | 5-30 | 1.20-1.50 | 0.42-4.00 | 0.05-0.20 | 0.0-2.9 | 0.0-0.2 | .43 | .55 | | | |
| | 65-75 | --- | --- | --- | --- | 0.42-1.40 | --- | --- | --- | --- | --- | | | |
| Gilpin----------- | 0-3 | 5-45 | 50-80 | 2-25 | 1.20-1.40 | 4.00-14.00 | 0.11-0.20 | 0.0-2.9 | 0.5-4.0 | .43 | .43 | 3 | 2 | 134 |
| | 3-5 | 5-45 | 35-80 | 2-25 | 1.20-1.40 | 4.00-14.00 | 0.10-0.20 | 0.0-2.9 | 0.5-2.0 | .43 | .43 | | | |
| | 5-30 | 5-45 | 35-80 | 18-35 | 1.20-1.50 | 4.00-14.00 | 0.08-0.20 | 0.0-2.9 | 0.0-0.5 | .28 | .43 | | | |
| | 30-35 | 5-85 | 10-80 | 2-25 | 1.20-1.50 | 4.00-14.00 | 0.02-0.11 | 0.0-2.9 | 0.0-0.2 | .15 | .49 | | | |
| | 35-39 | --- | --- | --- | --- | 4.00-14.00 | --- | --- | --- | --- | --- | | | |
| | 39-49 | --- | --- | --- | --- | 1.40-14.00 | --- | --- | --- | --- | --- | | | |
| Marrowbone------- | 0-5 | 55-75 | 10-40 | 4-18 | 1.20-1.60 | 14.00-42.00 | 0.12-0.16 | 0.0-2.9 | 0.5-5.0 | .24 | .28 | 2 | 3 | 86 |
| | 5-22 | 55-75 | 10-40 | 2-18 | 1.20-1.70 | 14.00-42.00 | 0.07-0.14 | 0.0-2.9 | 0.1-2.0 | .17 | .28 | | | |
| | 22-33 | 55-85 | 2-40 | 2-15 | 1.30-1.70 | 14.00-42.00 | 0.04-0.14 | 0.0-2.9 | 0.0-0.2 | .10 | .28 | | | |
| | 33-45 | --- | --- | --- | --- | 1.40-14.00 | --- | --- | --- | --- | --- | | | |
| | 45-55 | --- | --- | --- | --- | 0.00-1.40 | --- | --- | --- | --- | --- | | | |
| W. | | | | | | | | | | | | | | |
| Water | | | | | | | | | | | | | | |

Table 16.—Chemical Soil Properties

(Absence of an entry indicates that data were not estimated)

| Map symbol and soil name | Depth | Cation-exchange capacity | Effective cation-exchange capacity | Soil reaction |
|---|---|---|---|---|
| | Inches | meq/100 g | meq/100 g | pH |
| 1D: | | | | |
| Calvin | 0-9 | 4.0-11 | 3.0-8.0 | 4.5-6.0 |
| | 9-25 | 3.0-7.0 | 2.0-6.0 | 4.5-6.0 |
| | 25-30 | 3.0-7.0 | 2.0-6.0 | 4.5-6.0 |
| | 30-40 | --- | --- | --- |
| 2F: | | | | |
| Calvin | 0-9 | 4.0-11 | 3.0-8.0 | 4.5-6.0 |
| | 9-25 | 3.0-7.0 | 2.0-6.0 | 4.5-6.0 |
| | 25-30 | 3.0-7.0 | 2.0-6.0 | 4.5-6.0 |
| | 30-40 | --- | --- | --- |
| Rough | 0-2 | 4.0-11 | 3.0-8.0 | 3.6-5.0 |
| | 2-8 | 3.0-8.0 | 2.0-6.0 | 3.6-5.0 |
| | 8-10 | 3.0-8.0 | 2.0-6.0 | 3.6-5.0 |
| | 10-20 | --- | --- | --- |
| 3F: | | | | |
| Cedarcreek | 0-3 | 4.0-8.0 | 3.0-6.0 | 3.5-5.5 |
| | 3-15 | 4.0-7.0 | 3.0-5.0 | 3.5-5.5 |
| | 15-65 | 5.0-7.0 | 3.0-5.0 | 3.5-5.5 |
| Fiveblock | 0-6 | 1.0-6.0 | 1.0-4.0 | 5.6-7.8 |
| | 6-25 | 1.0-5.0 | 1.0-4.0 | 5.6-7.8 |
| | 25-65 | 1.0-5.0 | 1.0-4.0 | 5.6-7.8 |
| Kaymine | 0-4 | 2.0-6.0 | 1.0-5.0 | 5.6-7.8 |
| | 4-28 | 2.0-7.0 | 1.0-5.0 | 5.6-7.8 |
| | 28-64 | 2.0-7.0 | 1.0-5.0 | 5.6-7.8 |
| 4C: | | | | |
| Cedarcreek | 0-3 | 4.0-8.0 | 3.0-6.0 | 3.5-5.5 |
| | 3-15 | 4.0-7.0 | 3.0-5.0 | 3.5-5.5 |
| | 15-65 | 5.0-7.0 | 3.0-5.0 | 3.5-5.5 |
| Sewell | 0-4 | 1.0-6.0 | 1.0-4.0 | 3.5-5.5 |
| | 4-9 | 1.0-5.0 | 1.0-4.0 | 3.5-5.5 |
| | 9-65 | 1.0-5.0 | 1.0-4.0 | 3.5-5.5 |
| Rock outcrop. | | | | |
| 5F: | | | | |
| Cloverlick | 0-7 | 5.0-22 | 4.0-17 | 3.5-5.5 |
| | 7-10 | 2.0-11 | 1.0-8.0 | 3.6-5.5 |
| | 10-44 | 2.0-7.0 | 2.0-6.0 | 3.6-5.5 |
| | 44-63 | 1.0-7.0 | 1.0-5.0 | 3.6-5.5 |
| Shelocta | 0-4 | 4.0-15 | 3.0-11 | 4.5-5.5 |
| | 4-13 | 2.0-10 | 1.0-8.0 | 4.5-5.5 |
| | 13-50 | 5.0-10 | 1.0-7.0 | 4.5-5.5 |
| | 50-86 | 2.0-10 | 1.0-7.0 | 4.5-5.5 |
| 6C: | | | | |
| Cotaco | 0-12 | 4.0-14 | 3.0-10 | 3.5-5.5 |
| | 12-39 | 5.0-10 | 3.0-7.0 | 3.5-5.5 |
| | 39-65 | 2.0-9.0 | 1.0-7.0 | 3.5-5.5 |

Table 16.—Chemical Soil Properties—Continued

| Map symbol and soil name | Depth | Cation-exchange capacity | Effective cation-exchange capacity | Soil reaction |
|---|---|---|---|---|
| | Inches | meq/100 g | meq/100 g | pH |
| 7. Dumps, mine-Urban land | | | | |
| 8C: | | | | |
| Fiveblock | 0-6 | 1.0-6.0 | 1.0-4.0 | 5.6-7.8 |
| | 6-25 | 1.0-5.0 | 1.0-4.0 | 5.6-7.8 |
| | 25-65 | 1.0-5.0 | 1.0-4.0 | 5.6-7.8 |
| Sewell | 0-4 | 1.0-6.0 | 1.0-4.0 | 3.5-5.5 |
| | 4-9 | 1.0-5.0 | 1.0-4.0 | 3.5-5.5 |
| | 9-65 | 1.0-5.0 | 1.0-4.0 | 3.5-5.5 |
| 9E: | | | | |
| Gilpin | 0-3 | 2.0-15 | 1.0-11 | 3.6-5.5 |
| | 3-5 | 2.0-11 | 1.0-8.0 | 3.6-5.5 |
| | 5-30 | 4.0-10 | 3.0-7.0 | 3.6-5.5 |
| | 30-35 | 1.0-7.0 | 1.0-5.0 | 3.6-5.5 |
| | 35-39 | --- | --- | --- |
| | 39-49 | --- | --- | --- |
| Berks | 0-4 | 6.0-15 | 4.0-11 | 4.5-6.5 |
| | 4-8 | 1.0-9.0 | 1.0-7.0 | 4.5-6.5 |
| | 8-23 | 1.0-9.0 | 1.0-7.0 | 4.5-6.5 |
| | 23-34 | 1.0-6.0 | 1.0-5.0 | 4.5-6.5 |
| | 34-36 | --- | --- | --- |
| | 36-46 | --- | --- | --- |
| 9F: | | | | |
| Gilpin | 0-3 | 2.0-15 | 1.0-11 | 3.6-5.5 |
| | 3-5 | 2.0-11 | 1.0-8.0 | 3.6-5.5 |
| | 5-30 | 4.0-10 | 3.0-7.0 | 3.6-5.5 |
| | 30-35 | 1.0-7.0 | 1.0-5.0 | 3.6-5.5 |
| | 35-39 | --- | --- | --- |
| | 39-49 | --- | --- | --- |
| Berks | 0-4 | 6.0-15 | 4.0-11 | 4.5-6.5 |
| | 4-8 | 1.0-9.0 | 1.0-7.0 | 4.5-6.5 |
| | 8-23 | 1.0-9.0 | 1.0-7.0 | 4.5-6.5 |
| | 23-34 | 1.0-6.0 | 1.0-5.0 | 4.5-6.5 |
| | 34-36 | --- | --- | --- |
| | 36-46 | --- | --- | --- |
| 10A: | | | | |
| Grigsby | 0-11 | 4.0-12 | 3.0-9.0 | 5.6-7.3 |
| | 11-32 | 2.0-7.0 | 1.0-5.0 | 5.6-7.3 |
| | 32-53 | 1.0-3.0 | 1.0-2.0 | 5.1-7.3 |
| | 53-61 | 1.0-3.0 | 1.0-2.0 | 5.1-7.3 |
| 11F: | | | | |
| Highsplint | 0-3 | 2.0-12 | 2.0-9.0 | 3.5-6.5 |
| | 3-59 | 1.0-10 | 1.0-7.0 | 3.5-5.5 |
| | 59-82 | 1.0-7.0 | 1.0-6.0 | 3.5-5.5 |
| Shelocta | 0-4 | 3.0-13 | 2.0-10 | 4.5-5.5 |
| | 4-13 | 2.0-10 | 1.0-7.0 | 4.5-5.5 |
| | 13-50 | 5.0-10 | 1.0-7.0 | 4.5-5.5 |
| | 50-86 | 2.0-10 | 1.0-7.0 | 4.5-5.5 |

Table 16.—Chemical Soil Properties—Continued

| Map symbol and soil name | Depth | Cation-exchange capacity | Effective cation-exchange capacity | Soil reaction |
|---|---|---|---|---|
| | Inches | meq/100 g | meq/100 g | pH |
| 12F: | | | | |
| Itmann--------------- | 0-4 | 2.0-5.0 | 1.0-4.0 | 3.5-5.5 |
| | 4-27 | 1.0-5.0 | 1.0-4.0 | 3.5-5.5 |
| | 27-63 | 1.0-4.0 | 1.0-3.0 | 3.5-5.5 |
| 13D: | | | | |
| Kaymine-------------- | 0-4 | 2.0-6.0 | 1.0-5.0 | 5.6-7.8 |
| | 4-28 | 2.0-7.0 | 1.0-5.0 | 5.6-7.8 |
| | 28-64 | 2.0-7.0 | 1.0-5.0 | 5.6-7.8 |
| 14E: | | | | |
| Kaymine-------------- | 0-4 | 2.0-6.0 | 1.0-5.0 | 5.6-7.8 |
| | 4-28 | 2.0-7.0 | 1.0-5.0 | 5.6-7.8 |
| | 28-64 | 2.0-7.0 | 1.0-5.0 | 5.6-7.8 |
| Cedarcreek----------- | 0-3 | 4.0-8.0 | 3.0-6.0 | 3.5-5.5 |
| | 3-15 | 4.0-7.0 | 3.0-5.0 | 3.5-5.5 |
| | 15-65 | 5.0-7.0 | 3.0-5.0 | 3.5-5.5 |
| 15C: | | | | |
| Kaymine-------------- | 0-4 | 2.0-6.0 | 1.0-5.0 | 5.6-7.8 |
| | 4-28 | 2.0-7.0 | 1.0-5.0 | 5.6-7.8 |
| | 28-64 | 2.0-7.0 | 1.0-5.0 | 5.6-7.8 |
| Fiveblock------------ | 0-6 | 1.0-6.0 | 1.0-4.0 | 5.6-7.8 |
| | 6-25 | 1.0-5.0 | 1.0-4.0 | 5.6-7.8 |
| | 25-65 | 1.0-5.0 | 1.0-4.0 | 5.6-7.8 |
| Cedarcreek----------- | 0-3 | 4.0-8.0 | 3.0-6.0 | 3.5-5.5 |
| | 3-15 | 4.0-7.0 | 3.0-5.0 | 3.5-5.5 |
| | 15-65 | 5.0-7.0 | 3.0-5.0 | 3.5-5.5 |
| 16C: | | | | |
| Lily----------------- | 0-3 | 2.0-10 | 2.0-7.0 | 4.5-5.5 |
| | 3-7 | 1.0-7.0 | 1.0-5.0 | 4.5-5.5 |
| | 7-24 | 5.0-10 | 3.0-7.0 | 4.5-5.5 |
| | 24-28 | 4.0-10 | 3.0-7.0 | 4.5-5.5 |
| | 28-38 | --- | --- | --- |
| 16D: | | | | |
| Lily----------------- | 0-3 | 2.0-10 | 2.0-7.0 | 4.5-5.5 |
| | 3-7 | 1.0-7.0 | 1.0-5.0 | 4.5-5.5 |
| | 7-24 | 5.0-10 | 3.0-7.0 | 4.5-5.5 |
| | 24-28 | 4.0-10 | 3.0-7.0 | 4.5-5.5 |
| | 28-38 | --- | --- | --- |
| 16E: | | | | |
| Lily----------------- | 0-3 | 2.0-10 | 2.0-7.0 | 4.5-5.5 |
| | 3-7 | 1.0-7.0 | 1.0-5.0 | 4.5-5.5 |
| | 7-24 | 5.0-10 | 3.0-7.0 | 4.5-5.5 |
| | 24-28 | 4.0-10 | 3.0-7.0 | 4.5-5.5 |
| | 28-38 | --- | --- | --- |
| 17D: | | | | |
| Marrowbone----------- | 0-5 | 2.0-16 | 2.0-12 | 4.5-6.0 |
| | 5-22 | 1.0-9.0 | 1.0-7.0 | 4.5-6.0 |
| | 22-33 | 1.0-4.0 | 1.0-3.0 | 4.5-6.0 |
| | 33-45 | --- | --- | --- |
| | 45-55 | --- | --- | --- |

Table 16.—Chemical Soil Properties—Continued

| Map symbol and soil name | Depth | Cation-exchange capacity | Effective cation-exchange capacity | Soil reaction |
|---|---|---|---|---|
| | Inches | meq/100 g | meq/100 g | pH |
| 17D: | | | | |
| Gilpin--------------- | 0-3 | 2.0-15 | 1.0-11 | 3.6-5.5 |
| | 3-5 | 2.0-11 | 1.0-8.0 | 3.6-5.5 |
| | 5-30 | 4.0-10 | 3.0-7.0 | 3.6-5.5 |
| | 30-35 | 1.0-7.0 | 1.0-5.0 | 3.6-5.5 |
| | 35-39 | --- | --- | --- |
| | 39-49 | --- | --- | --- |
| 17E: | | | | |
| Marrowbone----------- | 0-5 | 2.0-16 | 2.0-12 | 4.5-6.0 |
| | 5-22 | 1.0-9.0 | 1.0-7.0 | 4.5-6.0 |
| | 22-33 | 1.0-4.0 | 1.0-3.0 | 4.5-6.0 |
| | 33-45 | --- | --- | --- |
| | 45-55 | --- | --- | --- |
| Gilpin--------------- | 0-3 | 2.0-15 | 1.0-11 | 3.6-5.5 |
| | 3-5 | 2.0-11 | 1.0-8.0 | 3.6-5.5 |
| | 5-30 | 4.0-10 | 3.0-7.0 | 3.6-5.5 |
| | 30-35 | 1.0-7.0 | 1.0-5.0 | 3.6-5.5 |
| | 35-39 | --- | --- | --- |
| | 39-49 | --- | --- | --- |
| 17F: | | | | |
| Marrowbone----------- | 0-5 | 2.0-16 | 2.0-12 | 4.5-6.0 |
| | 5-22 | 1.0-9.0 | 1.0-7.0 | 4.5-6.0 |
| | 22-33 | 1.0-4.0 | 1.0-3.0 | 4.5-6.0 |
| | 33-45 | --- | --- | --- |
| | 45-55 | --- | --- | --- |
| Gilpin--------------- | 0-3 | 2.0-15 | 1.0-11 | 3.6-5.5 |
| | 3-5 | 2.0-11 | 1.0-8.0 | 3.6-5.5 |
| | 5-30 | 4.0-10 | 3.0-7.0 | 3.6-5.5 |
| | 30-35 | 1.0-7.0 | 1.0-5.0 | 3.6-5.5 |
| | 35-39 | --- | --- | --- |
| | 39-49 | --- | --- | --- |
| 18F: | | | | |
| Matewan-------------- | 0-4 | 2.0-10 | 1.0-7.0 | 3.5-6.0 |
| | 4-21 | 1.0-6.0 | 1.0-4.0 | 3.5-5.5 |
| | 21-38 | 1.0-5.0 | 1.0-4.0 | 3.5-5.5 |
| | 38-48 | --- | --- | --- |
| Gilpin--------------- | 0-3 | 2.0-15 | 1.0-11 | 3.6-5.5 |
| | 3-5 | 2.0-11 | 1.0-8.0 | 3.6-5.5 |
| | 5-30 | 4.0-10 | 3.0-7.0 | 3.6-5.5 |
| | 30-35 | 1.0-7.0 | 1.0-5.0 | 3.6-5.5 |
| | 35-39 | --- | --- | --- |
| | 39-49 | --- | --- | --- |
| Rock outcrop. | | | | |
| 19D: | | | | |
| Oriskany------------- | 0-6 | 2.4-12 | 1.8-8.8 | 4.5-5.5 |
| | 6-17 | 1.8-7.9 | 1.3-5.9 | 4.5-5.5 |
| | 17-70 | 3.8-9.9 | 2.8-7.4 | 4.5-5.5 |

Table 16.—Chemical Soil Properties—Continued

| Map symbol and soil name | Depth | Cation-exchange capacity | Effective cation-exchange capacity | Soil reaction |
|---|---|---|---|---|
| | Inches | meq/100 g | meq/100 g | pH |
| 19E: | | | | |
| Oriskany------------- | 0-6 | 2.4-12 | 1.8-8.8 | 4.5-5.5 |
| | 6-17 | 1.8-7.9 | 1.3-5.9 | 4.5-5.5 |
| | 17-70 | 3.8-9.9 | 2.8-7.4 | 4.5-5.5 |
| 20A: | | | | |
| Philo---------------- | 0-8 | 5.0-14 | 4.0-10 | 4.5-6.0 |
| | 8-62 | 3.0-7.0 | 2.0-5.0 | 4.5-6.0 |
| 21F: | | | | |
| Sewell--------------- | 0-4 | 1.0-6.0 | 1.0-4.0 | 3.5-5.5 |
| | 4-9 | 1.0-5.0 | 1.0-4.0 | 3.5-5.5 |
| | 9-65 | 1.0-5.0 | 1.0-4.0 | 3.5-5.5 |
| Kaymine-------------- | 0-4 | 2.0-6.0 | 1.0-5.0 | 5.6-7.8 |
| | 4-28 | 2.0-7.0 | 1.0-5.0 | 5.6-7.8 |
| | 28-64 | 2.0-7.0 | 1.0-5.0 | 5.6-7.8 |
| Rock outcrop. | | | | |
| 22E: | | | | |
| Shelocta------------- | 0-4 | 3.0-13 | 2.0-10 | 4.5-5.5 |
| | 4-13 | 2.0-10 | 1.0-7.0 | 4.5-5.5 |
| | 13-50 | 5.0-10 | 1.0-7.0 | 4.5-5.5 |
| | 50-86 | 2.0-10 | 1.0-7.0 | 4.5-5.5 |
| Cedarcreek----------- | 0-3 | 4.0-8.0 | 3.0-6.0 | 3.5-5.5 |
| | 3-15 | 4.0-7.0 | 3.0-5.0 | 3.5-5.5 |
| | 15-65 | 5.0-7.0 | 3.0-5.0 | 3.5-5.5 |
| 23E: | | | | |
| Shelocta------------- | 0-4 | 4.0-15 | 3.0-11 | 4.5-5.5 |
| | 4-13 | 2.0-10 | 1.0-8.0 | 4.5-5.5 |
| | 13-50 | 5.0-10 | 1.0-7.0 | 4.5-5.5 |
| | 50-86 | 2.0-10 | 1.0-7.0 | 4.5-5.5 |
| Cloverlick----------- | 0-7 | 5.0-22 | 4.0-17 | 3.5-5.5 |
| | 7-10 | 2.0-11 | 1.0-8.0 | 3.6-5.5 |
| | 10-44 | 2.0-7.0 | 2.0-6.0 | 3.6-5.5 |
| | 44-63 | 1.0-7.0 | 1.0-5.0 | 3.6-5.5 |
| 24E: | | | | |
| Shelocta------------- | 0-4 | 3.0-13 | 2.0-10 | 4.5-5.5 |
| | 4-13 | 2.0-10 | 1.0-7.0 | 4.5-5.5 |
| | 13-50 | 5.0-10 | 1.0-7.0 | 4.5-5.5 |
| | 50-86 | 2.0-10 | 1.0-7.0 | 4.5-5.5 |
| Highsplint----------- | 0-3 | 2.0-12 | 2.0-9.0 | 3.5-6.5 |
| | 3-59 | 1.0-10 | 1.0-7.0 | 3.5-5.5 |
| | 59-82 | 1.0-7.0 | 1.0-6.0 | 3.5-5.5 |
| 25F: | | | | |
| Shelocta------------- | 0-4 | 3.0-13 | 2.0-10 | 4.5-5.5 |
| | 4-13 | 2.0-10 | 1.0-7.0 | 4.5-5.5 |
| | 13-50 | 5.0-10 | 1.0-7.0 | 4.5-5.5 |
| | 50-86 | 2.0-10 | 1.0-7.0 | 4.5-5.5 |
| Kaymine-------------- | 0-4 | 2.0-6.0 | 1.0-5.0 | 5.6-7.8 |
| | 4-28 | 2.0-7.0 | 1.0-5.0 | 5.6-7.8 |
| | 28-64 | 2.0-7.0 | 1.0-5.0 | 5.6-7.8 |

Table 16.—Chemical Soil Properties—Continued

| Map symbol and soil name | Depth | Cation-exchange capacity | Effective cation-exchange capacity | Soil reaction |
|---|---|---|---|---|
| | Inches | meq/100 g | meq/100 g | pH |
| 26F: | | | | |
| Stonecoal------------ | 0-31 | 1.0-3.6 | 0.8-2.7 | 5.6-9.0 |
| | 31-39 | 1.0-4.9 | 0.8-3.7 | 5.6-9.0 |
| | 39-68 | 1.0-3.6 | 0.8-2.7 | 5.6-9.0 |
| 27. | | | | |
| Udorthents-Urban land | | | | |
| 28. | | | | |
| Udorthents-Urban land | | | | |
| 29D: | | | | |
| Wallen--------------- | 0-4 | 5.0-12 | 3.8-8.6 | 4.5-6.0 |
| | 4-24 | 2.8-8.1 | 2.1-6.1 | 4.5-6.0 |
| | 24-34 | --- | --- | --- |
| 29F: | | | | |
| Wallen--------------- | 0-4 | 5.0-12 | 3.8-8.6 | 4.5-6.0 |
| | 4-24 | 2.8-8.1 | 2.1-6.1 | 4.5-6.0 |
| | 24-34 | --- | --- | --- |
| 30F: | | | | |
| Wallen--------------- | 0-4 | 5.0-12 | 3.8-8.6 | 4.5-6.0 |
| | 4-24 | 2.8-8.1 | 2.1-6.1 | 4.5-6.0 |
| | 24-34 | --- | --- | --- |
| Rock outcrop. | | | | |
| 31D: | | | | |
| Wharton-------------- | 0-2 | 5.0-15 | 4.0-11 | 3.5-5.5 |
| | 2-9 | 4.0-12 | 3.0-9.0 | 3.5-5.5 |
| | 9-35 | 5.0-11 | 4.0-8.0 | 3.5-5.5 |
| | 35-55 | 3.0-8.0 | 2.0-6.0 | 3.5-5.5 |
| | 55-65 | 1.0-8.0 | 1.0-6.0 | 3.5-5.5 |
| | 65-75 | --- | --- | --- |
| Gilpin--------------- | 0-3 | 2.0-15 | 1.0-11 | 3.6-5.5 |
| | 3-5 | 2.0-11 | 1.0-8.0 | 3.6-5.5 |
| | 5-30 | 4.0-10 | 3.0-7.0 | 3.6-5.5 |
| | 30-35 | 1.0-7.0 | 1.0-5.0 | 3.6-5.5 |
| | 35-39 | --- | --- | --- |
| | 39-49 | --- | --- | --- |
| Berks---------------- | 0-4 | 6.0-15 | 4.0-11 | 4.5-6.5 |
| | 4-8 | 1.0-9.0 | 1.0-7.0 | 4.5-6.5 |
| | 8-23 | 1.0-9.0 | 1.0-7.0 | 4.5-6.5 |
| | 23-34 | 1.0-6.0 | 1.0-5.0 | 4.5-6.5 |
| | 34-36 | --- | --- | --- |
| | 36-46 | --- | --- | --- |
| 32C: | | | | |
| Wharton-------------- | 0-2 | 5.0-15 | 4.0-11 | 3.5-5.5 |
| | 2-9 | 4.0-12 | 3.0-9.0 | 3.5-5.5 |
| | 9-35 | 5.0-11 | 4.0-8.0 | 3.5-5.5 |
| | 35-55 | 3.0-8.0 | 2.0-6.0 | 3.5-5.5 |
| | 55-65 | 1.0-8.0 | 1.0-6.0 | 3.5-5.5 |
| | 65-75 | --- | --- | --- |

Table 16.—Chemical Soil Properties—Continued

| Map symbol and soil name | Depth | Cation-exchange capacity | Effective cation-exchange capacity | Soil reaction |
|---|---|---|---|---|
| | Inches | meq/100 g | meq/100 g | pH |
| 32C: | | | | |
| Gilpin--------------- | 0-3 | 2.0-15 | 1.0-11 | 3.6-5.5 |
| | 3-5 | 2.0-11 | 1.0-8.0 | 3.6-5.5 |
| | 5-30 | 4.0-10 | 3.0-7.0 | 3.6-5.5 |
| | 30-35 | 1.0-7.0 | 1.0-5.0 | 3.6-5.5 |
| | 35-39 | --- | --- | --- |
| | 39-49 | --- | --- | --- |
| Marrowbone----------- | 0-5 | 2.0-16 | 2.0-12 | 4.5-6.0 |
| | 5-22 | 1.0-9.0 | 1.0-7.0 | 4.5-6.0 |
| | 22-33 | 1.0-4.0 | 1.0-3.0 | 4.5-6.0 |
| | 33-45 | --- | --- | --- |
| | 45-55 | --- | --- | --- |
| W. | | | | |
| Water | | | | |

Table 17.—Water Features

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

| Map symbol and soil name | Hydrologic group | Surface runoff | Month | Water table: Upper limit | Water table: Lower limit | Ponding: Surface water depth | Ponding: Duration | Ponding: Frequency | Flooding: Duration | Flooding: Frequency |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ft | Ft | Ft | | | | |
| 1D: | | | | | | | | | | |
| Calvin | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 2F: | | | | | | | | | | |
| Calvin | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Rough | D | Very high | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 3F: | | | | | | | | | | |
| Cedarcreek | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Fiveblock | C | Medium | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Kaymine | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 4C: | | | | | | | | | | |
| Cedarcreek | C | Medium | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Sewell | C | Low | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Rock outcrop. | | | | | | | | | | |
| 5F: | | | | | | | | | | |
| Cloverlick | B | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Shelocta | B | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 6C: | | | | | | | | | | |
| Cotaco | C | Medium | Jan-May | 1.5-2.5 | >6.0 | --- | --- | None | --- | None |
| | | | June | 2.5-6.6 | >6.0 | --- | --- | None | --- | None |
| | | | July-Sept | --- | --- | --- | --- | None | --- | None |
| | | | October | 2.5-6.6 | >6.0 | --- | --- | None | --- | None |
| | | | Nov-Dec | 1.5-2.5 | >6.0 | --- | --- | None | --- | None |
| 7. | | | | | | | | | | |
| Dumps, mine-Urban land | | | | | | | | | | |
| 8C: | | | | | | | | | | |
| Fiveblock | C | Low | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Sewell | C | Low | Jan-Dec | --- | --- | --- | --- | None | --- | None |

Table 17.—Water Features—Continued

| Map symbol and soil name | Hydro-logic group | Surface runoff | Month | Water table: Upper limit | Water table: Lower limit | Ponding: Surface water depth | Ponding: Duration | Ponding: Frequency | Flooding: Duration | Flooding: Frequency |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ft | Ft | Ft | | | | |
| 9E: | | | | | | | | | | |
| Gilpin | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Berks | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 9F: | | | | | | | | | | |
| Gilpin | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Berks | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 10A: | | | | | | | | | | |
| Grigsby | B | Very low | Jan-April | 3.5-6.6 | >6.0 | --- | --- | None | Very brief | Occasional |
| | | | May | 4.3-6.6 | >6.0 | --- | --- | None | Very brief | Occasional |
| | | | June-Oct | --- | --- | --- | --- | None | Very brief | Rare |
| | | | November | 4.3-6.6 | >6.0 | --- | --- | None | Very brief | Occasional |
| | | | December | 3.5-6.6 | >6.0 | --- | --- | None | Very brief | Occasional |
| 11F: | | | | | | | | | | |
| Highsplint | B | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Shelocta | B | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 12F: | | | | | | | | | | |
| Itmann | C | Medium | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 13D: | | | | | | | | | | |
| Kaymine | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 14E: | | | | | | | | | | |
| Kaymine | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Cedarcreek | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 15C: | | | | | | | | | | |
| Kaymine | C | Medium | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Fiveblock | C | Low | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Cedarcreek | C | Medium | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 16C: | | | | | | | | | | |
| Lily | B | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 16D: | | | | | | | | | | |
| Lily | B | Very high | Jan-Dec | --- | --- | --- | --- | None | --- | None |

Table 17.—Water Features—Continued

| Map symbol and soil name | Hydro-logic group | Surface runoff | Month | Water table | | Ponding | | | Flooding | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Upper limit | Lower limit | Surface water depth | Duration | Frequency | Duration | Frequency |
| | | | | Ft | Ft | Ft | | | | |
| 16E: | | | | | | | | | | |
| Lily | B | Very high | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 17D: | | | | | | | | | | |
| Marrowbone | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Gilpin | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 17E: | | | | | | | | | | |
| Marrowbone | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Gilpin | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 17F: | | | | | | | | | | |
| Marrowbone | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Gilpin | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 18F: | | | | | | | | | | |
| Matewan | B | Very high | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Gilpin | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Rock outcrop. | | | | | | | | | | |
| 19D: | | | | | | | | | | |
| Oriskany | B | Medium | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 19E: | | | | | | | | | | |
| Oriskany | B | Medium | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 20A: | | | | | | | | | | |
| Philo | B | Very low | Jan-May | 1.5-3.0 | >6.0 | --- | --- | None | Very brief | Occasional |
| | | | June | 3.0-6.6 | >6.0 | --- | --- | None | Very brief | Rare |
| | | | July-Sept | --- | --- | --- | --- | None | Very brief | Rare |
| | | | October | 3.0-6.6 | >6.0 | --- | --- | None | Very brief | Rare |
| | | | Nov-Dec | 1.5-3.0 | >6.0 | --- | --- | None | Very brief | Occasional |
| 21F: | | | | | | | | | | |
| Sewell | C | Medium | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Kaymine | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Rock outcrop. | | | | | | | | | | |
| 22E: | | | | | | | | | | |
| Shelocta | B | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Cedarcreek | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |

Table 17.—Water Features—Continued

| Map symbol and soil name | Hydro-logic group | Surface runoff | Month | Water table: Upper limit | Water table: Lower limit | Ponding: Surface water depth | Ponding: Duration | Ponding: Frequency | Flooding: Duration | Flooding: Frequency |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ft | Ft | Ft | | | | |
| 23E: | | | | | | | | | | |
| Shelocta | B | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Cloverlick | B | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 24E: | | | | | | | | | | |
| Shelocta | B | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Highsplint | B | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 25F: | | | | | | | | | | |
| Shelocta | B | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Kaymine | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 26F: | | | | | | | | | | |
| Stonecoal | C | Medium | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 27. Udorthents-Urban land | | | | | | | | | | |
| 28. Udorthents-Urban land | | | | | | | | | | |
| | | | | Ft | Ft | Ft | | | | |
| 29D: | | | | | | | | | | |
| Wallen | B | Very high | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 29F: | | | | | | | | | | |
| Wallen | B | Very high | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| 30F: | | | | | | | | | | |
| Wallen | B | Very high | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Rock outcrop. | | | | | | | | | | |
| 31D: | | | | | | | | | | |
| Wharton | C | Very high | Jan-March | 1.5-3.0 | 3.3-6.0 | --- | --- | None | --- | None |
| | | | April | 3.0-3.3 | 3.3-6.0 | --- | --- | None | --- | None |
| | | | May-Sept | --- | --- | --- | --- | None | --- | None |
| | | | October | 3.0-3.3 | 3.3-6.0 | --- | --- | None | --- | None |
| | | | Nov-Dec | 1.5-3.0 | 3.3-6.0 | --- | --- | None | --- | None |
| Gilpin | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Berks | C | High | Jan-Dec | --- | --- | --- | --- | None | --- | None |

Table 17.—Water Features—Continued

| Map symbol and soil name | Hydro-logic group | Surface runoff | Month | Water table | | Ponding | | | Flooding | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Upper limit | Lower limit | Surface water depth | Duration | Frequency | Duration | Frequency |
| | | | | Ft | Ft | Ft | | | | |
| 32C: | | | | | | | | | | |
| Wharton------------------- | C | Very high | Jan-March | 1.5-3.0 | 3.3-6.0 | --- | --- | None | --- | None |
| | | | April | 3.0-3.3 | 3.3-6.0 | --- | --- | None | --- | None |
| | | | May-Sept | --- | --- | --- | --- | None | --- | None |
| | | | October | 3.0-3.3 | 3.3-6.0 | --- | --- | None | --- | None |
| | | | Nov-Dec | 1.5-3.0 | 3.3-6.0 | --- | --- | None | --- | None |
| Gilpin-------------------- | C | Medium | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| Marrowbone---------------- | C | Medium | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| W. | | | | | | | | | | |
| Water | | | | | | | | | | |

Table 18.—Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

| Map symbol and soil name | Restrictive layer | | | Potential for frost action | Risk of corrosion | |
|---|---|---|---|---|---|---|
| | Kind | Depth to top | Hardness | | Uncoated steel | Concrete |
| | | In | | | | |
| 1D: | | | | | | |
| Calvin | Lithic bedrock | 20-40 | Very strongly cemented | Moderate | Low | Moderate |
| 2F: | | | | | | |
| Calvin | Lithic bedrock | 20-40 | Very strongly cemented | Moderate | Low | Moderate |
| Rough | Lithic bedrock | 4-10 | Indurated | Moderate | High | High |
| 3F: | | | | | | |
| Cedarcreek | --- | --- | --- | Moderate | Moderate | High |
| Fiveblock | --- | --- | --- | Moderate | Low | Low |
| Kaymine | --- | --- | --- | Moderate | Low | Low |
| 4C: | | | | | | |
| Cedarcreek | --- | --- | --- | Moderate | Moderate | High |
| Sewell | --- | --- | --- | Moderate | Moderate | High |
| Rock outcrop. | | | | | | |
| 5F: | | | | | | |
| Cloverlick | --- | --- | --- | Moderate | Low | High |
| Shelocta | --- | --- | --- | Moderate | Low | High |
| 6C: | | | | | | |
| Cotaco | --- | --- | --- | High | Moderate | High |
| 7. | | | | | | |
| Dumps, mine-Urban land | | | | | | |
| 8C: | | | | | | |
| Fiveblock | --- | --- | --- | Moderate | Low | Low |
| Sewell | --- | --- | --- | Moderate | Moderate | High |
| 9E: | | | | | | |
| Gilpin | Paralithic bedrock | 20-40 | Moderately cemented | Moderate | Low | High |
| | Lithic bedrock | 20-40 | Very strongly cemented | | | |
| Berks | Paralithic bedrock | 20-40 | Moderately cemented | Moderate | Low | High |
| | Lithic bedrock | 20-40 | Very strongly cemented | | | |

Table 18.—Soil Features—Continued

| Map symbol and soil name | Restrictive layer | | | Potential for frost action | Risk of corrosion | |
|---|---|---|---|---|---|---|
| | Kind | Depth to top | Hardness | | Uncoated steel | Concrete |
| | | In | | | | |
| 9F: | | | | | | |
| Gilpin | Paralithic bedrock | 20-40 | Moderately cemented | Moderate | Low | High |
| | Lithic bedrock | 20-40 | Very strongly cemented | | | |
| Berks | Paralithic bedrock | 20-40 | Moderately cemented | Moderate | Low | High |
| | Lithic bedrock | 20-40 | Very strongly cemented | | | |
| 10A: | | | | | | |
| Grigsby | --- | --- | --- | None | Low | Low |
| 11F: | | | | | | |
| Highsplint | --- | --- | --- | Moderate | Low | High |
| Shelocta | --- | --- | --- | Moderate | Low | High |
| 12F: | | | | | | |
| Itmann | --- | --- | --- | Moderate | High | High |
| 13D: | | | | | | |
| Kaymine | --- | --- | --- | Moderate | Low | Low |
| 14E: | | | | | | |
| Kaymine | --- | --- | --- | Moderate | Low | Low |
| Cedarcreek | --- | --- | --- | Moderate | Moderate | High |
| 15C: | | | | | | |
| Kaymine | --- | --- | --- | Moderate | Low | Low |
| Fiveblock | --- | --- | --- | Moderate | Low | Low |
| Cedarcreek | --- | --- | --- | Moderate | Moderate | High |
| 16C: | | | | | | |
| Lily | Lithic bedrock | 20-40 | Indurated | Moderate | Moderate | High |
| 16D: | | | | | | |
| Lily | Lithic bedrock | 20-40 | Indurated | Moderate | Moderate | High |
| 16E: | | | | | | |
| Lily | Lithic bedrock | 20-40 | Indurated | Moderate | Moderate | High |
| 17D: | | | | | | |
| Marrowbone | Paralithic bedrock | 20-40 | Moderately cemented | Low | Low | Moderate |
| | Lithic bedrock | 20-50 | Indurated | | | |
| Gilpin | Paralithic bedrock | 20-40 | Moderately cemented | Moderate | Low | High |
| | Lithic bedrock | 20-40 | Very strongly cemented | | | |
| 17E: | | | | | | |
| Marrowbone | Paralithic bedrock | 20-40 | Moderately cemented | Low | Low | Moderate |
| | Lithic bedrock | 20-50 | Indurated | | | |

Table 18.—Soil Features—Continued

| Map symbol and soil name | Restrictive layer: Kind | Restrictive layer: Depth to top | Restrictive layer: Hardness | Potential for frost action | Risk of corrosion: Uncoated steel | Risk of corrosion: Concrete |
|---|---|---|---|---|---|---|
| | | In | | | | |
| 17E: | | | | | | |
| Gilpin | Paralithic bedrock | 20-40 | Moderately cemented | Moderate | Low | High |
| | Lithic bedrock | 20-40 | Very strongly cemented | | | |
| 17F: | | | | | | |
| Marrowbone | Paralithic bedrock | 20-40 | Moderately cemented | Low | Low | Moderate |
| | Lithic bedrock | 20-50 | Indurated | | | |
| Gilpin | Paralithic bedrock | 20-40 | Moderately cemented | Moderate | Low | High |
| | Lithic bedrock | 20-40 | Very strongly cemented | | | |
| 18F: | | | | | | |
| Matewan | Lithic bedrock | 20-40 | Indurated | Low | Low | High |
| Gilpin | Paralithic bedrock | 20-40 | Moderately cemented | Moderate | Low | High |
| | Lithic bedrock | 20-40 | Very strongly cemented | | | |
| Rock outcrop. | | | | | | |
| 19D: | | | | | | |
| Oriskany | --- | --- | --- | Moderate | Moderate | High |
| 19E: | | | | | | |
| Oriskany | --- | --- | --- | Moderate | Moderate | High |
| 20A: | | | | | | |
| Philo | --- | --- | --- | High | Low | High |
| 21F: | | | | | | |
| Sewell | --- | --- | --- | Moderate | Moderate | High |
| Kaymine | --- | --- | --- | Moderate | Low | Low |
| Rock outcrop. | | | | | | |
| 22E: | | | | | | |
| Shelocta | --- | --- | --- | Moderate | Low | High |
| Cedarcreek | --- | --- | --- | Moderate | Moderate | High |
| 23E: | | | | | | |
| Shelocta | --- | --- | --- | Moderate | Low | High |
| Cloverlick | --- | --- | --- | Moderate | Low | High |
| 24E: | | | | | | |
| Shelocta | --- | --- | --- | Moderate | Low | High |
| Highsplint | --- | --- | --- | Moderate | Low | High |

Table 18.—Soil Features—Continued

| Map symbol and soil name | Restrictive layer | | | Potential for frost action | Risk of corrosion | |
|---|---|---|---|---|---|---|
| | Kind | Depth to top | Hardness | | Uncoated steel | Concrete |
| | | In | | | | |
| 25F: | | | | | | |
| Shelocta | --- | --- | --- | Moderate | Low | High |
| Kaymine | --- | --- | --- | Moderate | Low | Low |
| 26F: | | | | | | |
| Stonecoal | --- | --- | --- | Moderate | High | High |
| 27. Udorthents-Urban land | | | | | | |
| 28. Udorthents-Urban land | | | | | | |
| 29D: | | | | | | |
| Wallen | Lithic bedrock | 20-40 | Indurated | Low | Low | High |
| 29F: | | | | | | |
| Wallen | Lithic bedrock | 20-40 | Indurated | Low | Low | High |
| 30F: | | | | | | |
| Wallen | Lithic bedrock | 20-40 | Indurated | Low | Low | High |
| Rock outcrop. | | | | | | |
| 31D: | | | | | | |
| Wharton | Lithic bedrock | 40-70 | Very strongly cemented | High | High | High |
| Gilpin | Paralithic bedrock | 20-40 | Moderately cemented | Moderate | Low | High |
| | Lithic bedrock | 20-40 | Very strongly cemented | | | |
| Berks | Paralithic bedrock | 20-40 | Moderately cemented | Moderate | Low | High |
| | Lithic bedrock | 20-40 | Very strongly cemented | | | |
| 32C: | | | | | | |
| Wharton | Lithic bedrock | 40-70 | Very strongly cemented | High | High | High |
| Gilpin | Paralithic bedrock | 20-40 | Moderately cemented | Moderate | Low | High |
| | Lithic bedrock | 20-40 | Very strongly cemented | | | |
| Marrowbone | Paralithic bedrock | 20-40 | Moderately cemented | Low | Low | Moderate |
| | Lithic bedrock | 20-50 | Indurated | | | |
| W. Water | | | | | | |

Table 19.—Classification of the Soils

| Soil name | Family or higher taxonomic class |
|---|---|
| Berks | Loamy-skeletal, mixed, active, mesic Typic Dystrudepts |
| Calvin | Loamy-skeletal, mixed, active, mesic Typic Dystrudepts |
| Cedarcreek | Loamy-skeletal, mixed, active, acid, mesic Typic Udorthents |
| Cloverlick | Loamy-skeletal, mixed, active, mesic Typic Dystrudepts |
| Cotaco | Fine-loamy, mixed, semiactive, mesic Aquic Hapludults |
| Fiveblock | Loamy-skeletal, mixed, semiactive, nonacid, mesic Typic Udorthents |
| Gilpin | Fine-loamy, mixed, active, mesic Typic Hapludults |
| Grigsby | Coarse-loamy, mixed, active, mesic Dystric Fluventic Eutrudepts |
| Highsplint | Loamy-skeletal, mixed, active, mesic Typic Dystrudepts |
| Itmann | Loamy-skeletal, mixed, semiactive, acid, mesic Typic Udorthents |
| Kaymine | Loamy-skeletal, mixed, active, nonacid, mesic Typic Udorthents |
| Lily | Fine-loamy, siliceous, semiactive, mesic Typic Hapludults |
| Marrowbone | Coarse-loamy, mixed, semiactive, mesic Typic Dystrudepts |
| Matewan | Loamy-skeletal, mixed, active, mesic Typic Dystrudepts |
| Oriskany | Loamy-skeletal, siliceous, semiactive, mesic Typic Hapludults |
| Philo | Coarse-loamy, mixed, active, mesic Fluvaquentic Dystrudepts |
| Rough | Loamy, mixed, active, acid, mesic Lithic Udorthents |
| Sewell | Loamy-skeletal, mixed, semiactive, acid, mesic Typic Udorthents |
| Shelocta | Fine-loamy, mixed, active, mesic Typic Hapludults |
| Stonecoal | Loamy-skeletal, mixed, semiactive, nonacid, mesic Typic Udorthents |
| Udorthents | Udorthents |
| Wallen | Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts |
| Wharton | Fine-loamy, mixed, active, mesic Aquic Hapludults |

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