United States
Department of
Agriculture

Natural
Resources
Conservation
Service

In cooperation with
Kentucky Agricultural
Experiment Station,
Warren County Soil
Conservation District, and
University of Kentucky

Soil Survey of Warren County, Kentucky

How To Use This Soil Survey

General Soil Map

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

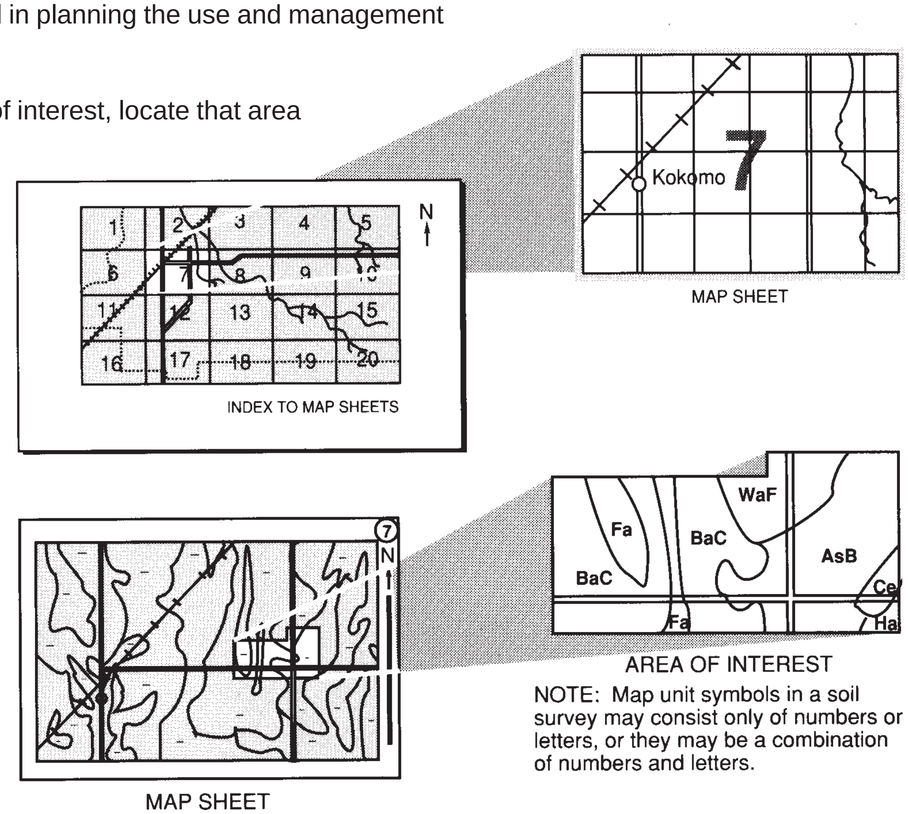
Detailed Soil Maps

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

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

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

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



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

Major fieldwork for this soil survey was completed in August 2001. Soil names and descriptions were approved in January 2004. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2001. This survey was made cooperatively by the Natural Resources Conservation Service, the Kentucky Agricultural Experiment Station, the Warren County Soil Conservation District, and the University of Kentucky. It is part of the technical assistance furnished to the Warren County Soil Conservation District.

Cover: An area of Crider silt loam, 6 to 12 percent slopes. This soil is well suited to hay production. Livestock management is an important agricultural enterprise in Warren County.

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

Contents

Issued 2004

Foreword

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

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

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

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

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

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Soil Survey of
Warren County, Kentucky

By Michael J. Mitchell, Natural Resources Conservation Service

Fieldwork by Michael J. Mitchell, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service,
in cooperation with
Kentucky Agricultural Experiment Station, Warren County Soil Conservation District,
and University of Kentucky

WARREN COUNTY is in the south-central part of Kentucky (fig. 1). It has a total area of about 547 square miles, or 350,496 acres. In 2000, according to the U.S. Census, the county had a population of 92,522 *(4).* Bowling Green, the county seat, is near the center of the county and has a population of about 48,300.

This soil survey updates the survey of Warren County published in 1981 *(5)*. It provides additional information and has larger maps, which show the soils in greater detail.

Figure 1.—Location of Warren County in Kentucky.

General Nature of the Survey Area

This section contains information on the climate of Warren County. Information about the history of the survey area can be accessed at http://www.wku.edu/Library/200Years/cntyhist.htm *(3)*.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Bowling Green, Kentucky, 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 length of the growing season.

In winter, the average temperature is 35.9 degrees F and the average daily minimum temperature is 26.4 degrees. The lowest temperature on record, which occurred at Bowling Green on January 23, 1963, is -21 degrees. In summer, the average temperature is 76.1 degrees and the average daily maximum temperature is 87.1 degrees. The highest recorded temperature, which occurred at Bowling Green on June 29, 1936, is 108 degrees.

Growing degree days are shown in table 1. They are equivalent to “heat units.” During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The average annual precipitation is 50.95 inches. Of this, 28.4 inches, or about 56 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 11.02 inches on April 29, 1937. Thunderstorms occur on about 53 days each year, and most occur between May and August.

The average seasonal snowfall is 12.8 inches. The greatest snow depth at any one time during the period of record was 13 inches on January 20, 1978. On the average, 12 days of the year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was more than 18 inches.

The average relative humidity in midafternoon is about 57 percent. Humidity is higher at night, and the average at dawn is about 84 percent. The sun shines 64 percent of the time possible in summer and 43 percent in winter. The prevailing wind is from the south. Average windspeed is highest, 10 miles per hour, in March.

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.

General Soil Map Units

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

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

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management. The individual soil phases and characteristics are described in the "Detailed Soil Map Units" section.

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, Baxter gravelly silty clay loam, 6 to 12 percent slopes, severely eroded, is a phase of the Baxter series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes. A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Crider-Urban land complex, 6 to 12 percent slopes, is an example.

This survey includes *miscellaneous areas*. These areas have little or no soil material and support little or no vegetation, or they define unique soil characteristics in the survey area that are relevant to the process of urbanization. Urban land-Udorthents complex, clayey substratum, hard bedrock 0-5 feet, 0 to 12 percent slopes, is an example.

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

BaB—Baxter gravelly silt loam, 2 to 6 percent slopes

Setting

Landscape position: Undulating ridges
Size of areas: 3 to 51 acres
Slope range: 2 to 6 percent
Parent material: Residuum from limestone

Composition

Baxter soil and similar inclusions: 90 percent

Contrasting Inclusions

• Nicholson, Hammack, Crider, Caneyville, and Fredonia soils

Typical Profile

Surface layer:
0 to 8 inches—brown gravelly silt loam

Subsoil:
8 to 15 inches—yellowish red gravelly silty clay loam
15 to 61 inches—red gravelly clay
61 to 81 inches—red gravelly clay

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate or high
Soil reaction: Strongly acid or very strongly acid
High water table: None
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Well suited
Management measures and considerations:
• Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Suited
Management measures and considerations:
• Structures should be designed so that they conform to the natural slope.
• Topsoil should be stockpiled and used to reclaim areas that are disturbed during construction.
• Design modifications that overcome the shrink-swell potential are needed in areas of deep excavations.
• Careful use of equipment and good design practices prevent the runoff of off-site sediments.

Septic tank absorption fields

Suitability: Suited
Management measures and considerations:
• This soil is limited for septic systems because of the moderately slow permeability and the moderate shrink-swell potential in the lower part of the subsoil.
• An onsite investigation is needed to determine a suitable site.

Interpretive Groups

Land capability classification: 2e

BaC—Baxter gravelly silt loam, 6 to 12 percent slopes

Setting

Landscape position: Rolling ridgetops and side slopes of depressions
Size of areas: 3 to 400 acres
Slope range: 6 to 12 percent
Parent material: Residuum from limestone

Composition

Baxter soil and similar inclusions: 85 percent

Contrasting Inclusions

- Nicholson, Hammack, Crider, Caneyville, and Fredonia soils

Typical Profile

Surface layer:
0 to 8 inches—brown gravelly silt loam

Subsoil:
8 to 15 inches—yellowish red gravelly silty clay loam
15 to 61 inches—red gravelly clay
61 to 81 inches—red gravelly clay

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate or high
Soil reaction: Strongly acid or very strongly acid
High water table: None
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Suited
Management measures and considerations:
- Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
- Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
- Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
- Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
- See the tables on forest productivity and forestland management.

Dwellings

Suitability: Suited
Management measures and considerations:
- Structures should be designed so that they conform to the natural slope.
- Topsoil should be stockpiled and used to reclaim areas that are disturbed during construction.
- Design modifications that overcome the shrink-swell potential are needed in areas of deep excavations.
- Careful use of equipment and good design practices prevent the runoff of off-site sediments.

Septic tank absorption fields

Suitability: Suited
Management measures and considerations:
- This soil is limited for septic systems because of the moderately slow permeability, the slope, and the moderate shrink-swell potential in the lower part of the subsoil.
- An onsite investigation is needed to determine a suitable site.

Interpretive Groups

Land capability classification: 3e

BaD—Baxter gravelly silt loam, 12 to 20 percent slopes

Setting

Landscape position: Hillsides and side slopes of depressions
Size of areas: 3 to 261 acres
Slope range: 12 to 20 percent
Parent material: Residuum from limestone

Composition

Baxter soil and similar inclusions: 85 percent

Contrasting Inclusions

- Caneyville and Fredonia soils
- Areas that have rock outcrop at the surface

Typical Profile

Surface layer:
0 to 8 inches—brown gravelly silt loam

Subsoil:
8 to 15 inches—yellowish red gravelly silty clay loam
15 to 61 inches—red gravelly clay
61 to 81 inches—red gravelly clay

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Soil reaction: Strongly acid or very strongly acid
High water table: None
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Poorly suited
Management measures and considerations:
• A management plan that includes long rotations in grass and legumes is needed to reduce the effects of erosion.
• Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops are necessary in areas used as cropland.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Suited
Management measures and considerations:
• The slope limits some management practices.
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Suited
Management measures and considerations:
• Some equipment use may be limited because of the slope.
• Chemical or mechanical treatments may be needed to decrease plant competition.
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Poorly suited
Management measures and considerations:
• Structures should be designed so that they conform to the natural slope.
• Topsoil should be stockpiled and used to reclaim areas that are disturbed during construction.
• Design modifications that overcome the shrink-swell potential are needed in areas of deep excavations.
• Careful use of equipment and good design practices prevent the runoff of off-site sediments.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
• Increasing the size of the septic tank filter field helps to overcome the permeability limitation.
• Trench walls of filter fields may be smeared and sealed off if the system is constructed when soil is too wet.
• An onsite investigation is needed to determine a suitable site.

Interpretive Groups

Land capability classification: 4e

BaE—Baxter gravelly silt loam, 20 to 30 percent slopes

Setting

Landscape position: Hillsides and steep walls around depressions
Size of areas: 3 to 22 acres
Slope range: 20 to 30 percent
Parent material: Residuum from limestone

Composition

Baxter soil and similar inclusions: 80 percent

Contrasting Inclusions

• Caneyville and Fredonia soils
• Areas that have rock outcrop at the surface, in sinkholes

Typical Profile

Surface layer:
0 to 8 inches—brown gravelly silt loam

Subsoil:
8 to 15 inches—yellowish red gravelly silty clay loam
15 to 61 inches—red gravelly clay
61 to 81 inches—red gravelly clay

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Soil reaction: Strongly acid or very strongly acid
High water table: None
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Unsuited
Management measures and considerations:
• Because of the slope, erosion hazard, and other soil properties, this soil should not be used as cropland.

Pasture and hay

Suitability for pasture: Suited

Suitability for hay: Poorly suited
Management measures and considerations:
• Because of the slope, this soil is unsafe for the operation of farm equipment in harvesting operations.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Suited
Management measures and considerations:
• The slope limits the use of forestry equipment in many timber operations.
• Chemical or mechanical treatments may be needed to decrease plant competition.
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Unsuited
Management measures and considerations:
• The slope severely limits road designs and commercial and residential uses.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
• The slope limits commercial and residential uses.
• An onsite investigation is needed to determine a suitable site.

Interpretive Groups

Land capability classification: 6e

BbC3—Baxter gravelly silty clay loam, 6 to 12 percent slopes, severely eroded

Setting

Landscape position: Side slopes and areas around the rims of depressions
Size of areas: 3 to 15 acres
Slope range: 6 to 12 percent
Parent material: Residuum from limestone

Composition

Baxter soil and similar inclusions: 85 percent

Contrasting Inclusions

• Crider, Caneyville, Nicholson, Hammack, and Fredonia soils

Typical Profile

Surface layer:
0 to 3 inches—dark yellowish brown gravelly silty clay loam

Subsoil:
3 to 61 inches—red gravelly clay
61 to 81 inches—red gravelly clay

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Soil reaction: Strongly acid or very strongly acid
High water table: None
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Suited
Management measures and considerations:
• Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Suited
Management measures and considerations:
• Areas around sinkholes are unstable and have a considerable risk of collapse if used for dwellings.
• Structures should be designed so that they conform to the natural slope.
• Topsoil should be stockpiled and used to reclaim areas that are disturbed during construction.

• Design modifications that overcome the shrink-swell potential are needed in areas of deep excavations.
• An onsite investigation is needed to determine site suitability.

Septic tank absorption fields

Suitability: Suited
Management measures and considerations:
• This soil is limited for septic systems because of the moderately slow permeability, the slope, and the moderate shrink-swell potential in the lower part of the subsoil.
• An onsite investigation is needed to determine site suitability and design.

Interpretive Groups

Land capability classification: 4e

BbD3—Baxter gravelly silty clay loam, 12 to 20 percent slopes, severely eroded

Setting

Landscape position: Side slopes and areas around the rims of depressions
Size of areas: 3 to 30 acres
Slope range: 12 to 20 percent
Parent material: Residuum from limestone

Composition

Baxter soil and similar inclusions: 85 percent

Contrasting Inclusions

• Caneyville and Fredonia soils
• Areas that have rock outcrop on the surface

Typical Profile

Surface layer:
0 to 3 inches—dark yellowish brown gravelly silty clay loam

Subsoil:
3 to 61 inches—red gravelly clay
61 to 81 inches—red gravelly clay

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Soil reaction: Strongly acid or very strongly acid
High water table: None
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Poorly suited
Management measures and considerations:
• Because of the slope, the past effects of erosion, and the shape and size of the map unit, this soil is poorly suited to cropland.

Pasture and hay

Suitability: Suited
Management measures and considerations:
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Poorly suited
Management measures and considerations:
• Areas around sinkholes are unstable and have a considerable risk of collapse if used for dwellings.
• Structures should be designed so that they conform to the natural slope.
• Topsoil should be stockpiled and used to reclaim areas that are disturbed during construction.
• Design modifications that overcome the shrink-swell potential are needed in areas of deep excavations.
• An onsite investigation is needed to determine site suitability.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
• This soil is limited for septic systems because of the moderately slow permeability, the slope, and the moderate shrink-swell potential in the lower part of the subsoil.
• An onsite investigation is needed to determine site suitability and design.

Interpretive Groups

Land capability classification: 6e

BrB—Baxter-Urban land complex, 2 to 6 percent slopes

Setting

Location: In and around the city of Bowling Green

Composition

Baxter soil and similar inclusions: 60 percent
Urban land: 30 percent

Contrasting Inclusions

• Nicholson, Crider, Caneyville, Nolin, Pembroke, Newark, and Fredonia soils; Udorthents; and areas of rock outcrop

Typical Profile

Baxter

Surface layer:
0 to 8 inches—brown gravelly silt loam

Subsoil:
8 to 15 inches—yellowish red gravelly silty clay loam
15 to 61 inches—red gravelly clay
61 to 81 inches—red gravelly clay

Urban land

Most of the Urban land consists of areas where 85 to 90 percent of the surface is covered by streets, buildings, parking lots, driveways, railroad yards, or airports. The remainder consists of cut and fill areas of soil material imported onto the site or disturbed in the process of urbanization.

Soil Properties and Qualities

• See the interpretations tables for map units in urban areas.

Use and Management

Residential and commercial structures

Suitability: Suited
Management measures and considerations:
• Designing structures that conform to the natural slope reduces the amount of cutting or filling needed.
• Topsoil may need to be stockpiled and used to reclaim areas that are disturbed during construction.
• Careful use of equipment and good site conservation measures prevent the discharge of sediment onto adjacent property or into streams.
• Soil compaction is a problem around construction sites. Sites may require aeration or deep tillage and reseeding.
• Yards may be subject to periods of flooding if the soil is compacted. Shallow diversions may be needed to remove surface runoff or ponding in low areas.
• Modifications in the design of footings and basements that overcome the shrink-swell potential are needed in areas of deep excavations.
• Diverting runoff from gutters and driveways away from structures reduces the chance of differential settling or cracking of foundations caused by the shrink-swell potential.

Septic tank absorption fields

Suitability: Suited
Management measures and considerations:
• The Baxter soil is limited for septic systems because of the moderately slow permeability and the moderate shrink-swell potential in the lower part of the subsoil.
• Lot design for structures and driveways needs to allow sufficient area for a septic field.
• An onsite investigation is needed to determine a suitable site.

Interpretive Groups

Land capability classification: None assigned

BrC—Baxter-Urban land complex, 6 to 12 percent slopes

Setting

Location: In and around the city of Bowling Green (fig. 2)

Composition

Baxter soil and similar inclusions: 55 percent
Urban land: 30 percent

Contrasting Inclusions

• Nicholson, Crider, Caneyville, Nolin, Newark, and Fredonia soils; Udorthents; and areas of rock outcrop

Typical Profile

Baxter

Surface layer:
0 to 8 inches—brown gravelly silt loam

Subsoil:
8 to 15 inches—yellowish red gravelly silty clay loam
15 to 61 inches—red gravelly clay
61 to 81 inches—red gravelly clay

Urban land

Most of the Urban land consists of areas where 85 to 90 percent of the surface is covered by streets, buildings, parking lots, driveways, railroad yards, or

Figure 2.—An area of Baxter-Urban land complex, 6 to 12 percent slopes. This map unit is predominantly used for subdivision development.

airports. The remainder consists of cut and fill areas of soil material imported onto the site or disturbed in the process of urbanization.

Soil Properties and Qualities

• See the interpretations tables for map units in urban areas.

Use and Management

Residential and commercial structures

Suitability: Suited
Management measures and considerations:
• Designing structures that conform to the natural slope reduces the amount of cutting or filling needed.
• Topsoil may need to be stockpiled and used to reclaim areas that are disturbed during construction.
• Careful use of equipment and good site conservation measures prevent the discharge of sediment onto adjacent property or into streams.
• Soil compaction is a problem around construction sites. Sites may require aeration or deep tillage and reseeding.
• Yards may be subject to rill and gully erosion if the soil is compacted. Shallow diversions may be needed to remove surface runoff.
• Modifications in the design of footings and basements that overcome the shrink-swell potential are needed in areas of deep excavations.
• Diverting runoff from gutters and driveways away from structures reduces the chance of differential settling or cracking of foundations caused by the shrink-swell potential.

Septic tank absorption fields

Suitability: Suited
Management measures and considerations:
• The Baxter soil is limited for septic systems because of the moderately slow permeability and the moderate shrink-swell potential in the lower part of the subsoil.

• Lot design for structures and driveways needs to allow sufficient area for a septic field and conform to the slope.
• An onsite investigation is needed to determine a suitable site.

Interpretive Groups

Land capability classification: None assigned

BrD—Baxter-Urban land complex, 12 to 20 percent slopes

Setting

Location: In and around the city of Bowling Green

Composition

Baxter soil and similar inclusions: 60 percent
Urban land: 25 percent

Contrasting Inclusions

• Crider, Caneyville, and Fredonia soils; Udorthents; and areas of rock outcrop

Typical Profile

Baxter

Surface layer:
0 to 8 inches—brown gravelly silt loam

Subsoil:
8 to 15 inches—yellowish red gravelly silty clay loam
15 to 61 inches—red gravelly clay
61 to 81 inches—red gravelly clay

Urban land

Most of the Urban land consists of areas where 85 to 90 percent of the surface is covered by streets, buildings, parking lots, driveways, railroad yards, or airports. The remainder consists of cut and fill areas of soil material imported onto the site or disturbed in the process of urbanization.

Soil Properties and Qualities

• See the interpretations tables for map units in urban areas.

Use and Management

Residential and commercial structures

Suitability: Poorly suited
Management measures and considerations:
• The slope is a limitation affecting residential and commercial structures.
• Designing structures that conform to the natural slope reduces the amount of cutting or filling needed.
• Topsoil may need to be stockpiled and used to reclaim areas that are disturbed during construction.
• Careful use of equipment and good site conservation measures are needed to prevent the discharge of sediment onto adjacent property or into streams.
• Soil compaction is a problem around construction sites. Sites may require aeration or deep tillage and reseeding.
• Yards are subject to rill and gully erosion if the soil is compacted. Shallow diversions may be needed to remove surface runoff.
• Modifications in the design of footings and basements that overcome the shrink-swell potential are needed in areas of deep excavations.
• Diverting runoff from gutters and driveways away from structures reduces the chance of differential settling or cracking of foundations caused by the shrink-swell potential.

Septic tank absorption fields

Suitability: Suited
Management measures and considerations:
• The Baxter soil is limited for septic systems because of the slope, the moderately slow permeability, and the moderate shrink-swell potential in the lower part of the subsoil.
• Lot design for structures and driveways needs to allow sufficient area for a septic field and conform to the slope.
• An onsite investigation is needed to determine a suitable site.

Interpretive Groups

Land capability classification: None assigned

CaB—Caneyville silt loam, 2 to 6 percent slopes

Setting

Landscape position: Undulating ridges
Size of areas: 5 to 15 acres
Slope range: 2 to 6 percent
Parent material: Residuum from limestone

Composition

Caneyville soil and similar inclusions: 85 percent

Contrasting Inclusions

• Nicholson, Pembroke, Crider, and Vertrees soils

Typical Profile

Surface layer:
0 to 6 inches—brown silt loam

Subsoil:
6 to 11 inches—yellowish red silty clay
11 to 21 inches—yellowish red clay
21 to 27 inches—dark reddish brown clay
27 inches—limestone bedrock

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Slow or very slow
Available water capacity: Moderate or low
Soil reaction: Strongly acid or moderately acid
High water table: None
Depth to bedrock: 20 to 40 inches

Use and Management

Cropland

Suitability: Suited
Management measures and considerations:
• Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Suited
Management measures and considerations:
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Hay yields may be reduced in dry years because of a limited available water capacity.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Unsuited
Management measures and considerations:
• This soil is severely limited for dwellings because of the depth to bedrock, slow permeability, and shrink-swell potential.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
• This soil is severely limited for septic systems because of the depth to bedrock, slow permeability, and shrink-swell potential in the lower part of the subsoil.

Interpretive Groups

Land capability classification: 3e

CaC—Caneyville silt loam, 6 to 12 percent slopes

Setting

Landscape position: Rolling ridges
Size of areas: 5 to 20 acres
Slope range: 6 to 12 percent
Parent material: Residuum from limestone

Composition

Caneyville soil and similar inclusions: 85 percent

Contrasting Inclusions

• Crider, Baxter, and Vertrees soils

Typical Profile

Surface layer:
0 to 6 inches—brown silt loam

Subsoil:
6 to 11 inches—yellowish red silty clay
11 to 21 inches—yellowish red clay
21 to 27 inches—dark reddish brown clay
27 inches—limestone bedrock

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Slow or very slow
Available water capacity: Moderate or low
Soil reaction: Strongly acid or moderately acid
High water table: None
Depth to bedrock: 20 to 40 inches

Use and Management

Cropland

Suitability: Poorly suited
Management measures and considerations:
• This soil is not suited to use as continuous cropland. It should be managed in a long rotation in which the soil is kept in vegetative cover for several seasons following cultivation.

• Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Suited
Management measures and considerations:
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Hay yields may be reduced in dry years because of a limited available water capacity.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Unsuited
Management measures and considerations:
• This soil is severely limited for dwellings because of the depth to bedrock, slow permeability, and shrink-swell potential.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
• This soil is severely limited for septic systems because of the depth to bedrock, slow permeability, and shrink-swell potential in the lower part of the subsoil.

Interpretive Groups

Land capability classification: 4e

CaC3—Caneyville silty clay, 6 to 12 percent slopes, severely eroded

Setting

Landscape position: Rolling ridges
Size of areas: 5 to 20 acres
Slope range: 6 to 12 percent
Parent material: Residuum from limestone

Composition

Caneyville soil and similar inclusions: 85 percent

Contrasting Inclusions

• Crider, Baxter, and Vertrees soils

Typical Profile

Surface layer:
0 to 3 inches—brown silty clay

Subsoil:
3 to 27 inches—yellowish red clay
27 inches—limestone bedrock

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Slow or very slow
Available water capacity: Low
Soil reaction: Strongly acid or moderately acid
High water table: None
Depth to bedrock: 20 to 40 inches

Use and Management

Cropland

Suitability: Unsuited
Management measures and considerations:
• Because of the past effects of erosion, this soil is unsuited to cropland.

Pasture and hay

Suitability: Suited
Management measures and considerations:
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Hay yields may be reduced in dry years because of a limited available water capacity.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Unsuited
Management measures and considerations:
• This soil is severely limited for dwellings because of the depth to bedrock, slow permeability, and shrink-swell potential.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
• This soil is severely limited for septic systems because of the depth to bedrock, slow permeability, and shrink-swell potential in the lower part of the subsoil.

Interpretive Groups

Land capability classification: 6e

CnD—Caneyville-Rock outcrop complex, 6 to 20 percent slopes

Setting

Landscape position: Hillsides
Size of areas: 10 to 40 acres
Slope range: 6 to 20 percent
Parent material: Residuum from limestone

Composition

Caneyville soil and similar inclusions: 65 percent
Rock outcrop: 25 percent

Contrasting Inclusions

• Crider, Baxter, and Vertrees soils

Typical Profile

Caneyville

Surface layer:
0 to 6 inches—brown silt loam

Subsoil:
6 to 11 inches—yellowish red silty clay
11 to 21 inches—yellowish red clay
21 to 27 inches—dark reddish brown clay
27 inches—limestone bedrock

Rock outcrop

This part of the map unit consists of large outcrops of limestone that extend from several inches to 3 feet above the soil surface in horizontal bands, or it occurs as individual blocks of limestone protruding from the surface.

Properties and Qualities of the Caneyville Soil

Drainage class: Well drained
Permeability: Slow or very slow
Available water capacity: Moderate or low
Soil reaction: Strongly acid or moderately acid
High water table: None
Depth to bedrock: 20 to 40 inches

Use and Management

Cropland

Suitability: Unsuited
Management measures and considerations:
• This map unit is unsuited to cropland because of the numerous rock outcrops, slope, and low available water capacity.

Pasture and hay

Suitability for pasture: Suited
Suitability for hay: Poorly suited
Management measures and considerations:
• This map unit is poorly suited to hay production because of the slope and numerous rock outcrops.
• The use of farm equipment in pasture management is limited in most areas.

Woodland

Suitability: Suited (fig. 3)
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Unsuited
Management measures and considerations:
• This map unit is severely limited for dwellings because of the areas of rock outcrop, depth to bedrock, slow permeability, and shrink-swell potential.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
• This map unit is severely limited for septic systems because of the numerous rock outcrops, depth to bedrock, slow permeability, and shrink-swell potential in the lower part of the subsoil.

Interpretive Groups

Land capability classification: 6s

CnF—Caneyville-Rock outcrop complex, 20 to 60 percent slopes

Setting

Landscape position: Steep hillsides
Size of areas: 10 to 40 acres
Slope range: 20 to 60 percent
Parent material: Residuum from limestone

Figure 3.—An area of Caneyville-Rock outcrop complex, 6 to 20 percent slopes. This map unit is suited to woodland. Soil depth and rock outcrops extremely limit most other uses.

Composition

Caneyville soil and similar inclusions: 65 percent
Rock outcrop: 25 percent

Contrasting Inclusions

- Baxter and Vertrees soils

Typical Profile

Caneyville

Surface layer:
0 to 6 inches—brown silt loam

Subsoil:
6 to 11 inches—yellowish red silty clay
11 to 21 inches—yellowish red clay
21 to 27 inches—dark reddish brown clay
27 inches—limestone bedrock

Rock outcrop

This part of the map unit consists of large outcrops of limestone that extend from several inches to 3 feet above the soil surface in horizontal bands, or it occurs as individual blocks of limestone protruding from the surface.

Properties and Qualities of the Caneyville Soil

Drainage class: Well drained
Permeability: Slow or very slow
Available water capacity: Moderate or low
Soil reaction: Strongly acid or moderately acid
High water table: None
Depth to bedrock: 20 to 40 inches

Use and Management

Cropland

Suitability: Unsuited
Management measures and considerations:
• This map unit is unsuited to cropland because of the numerous rock outcrops, slope, and low available water capacity.

Pasture and hay

Suitability: Unsuited
Management measures and considerations:
• Because of the slope and numerous rock outcrops, the operation of farm equipment in pasture management is difficult and unsafe.

Woodland

Suitability: Poorly suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Unsuited
Management measures and considerations:
• This map unit is severely limited for dwellings because of the slope, areas of rock outcrop, depth to bedrock, slow permeability, and shrink-swell potential.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
• This map unit is severely limited for septic systems because of the slope, numerous rock outcrops, depth to bedrock, slow permeability, and shrink-swell potential in the lower part of the subsoil.

Interpretive Groups

Land capability classification: 7s

CoD—Caneyville-Urban land-Rock outcrop complex, 6 to 20 percent slopes

Setting

Location: Hillsides in and around the city of Bowling Green

Composition

Caneyville soil and similar inclusions: 40 percent
Urban land: 25 percent
Rock outcrop: 20 percent

Contrasting Inclusions

• Baxter and Vertrees soils

Typical Profile

Caneyville

Surface layer:
0 to 6 inches—brown silt loam

Subsoil:
6 to 11 inches—yellowish red silty clay
11 to 21 inches—yellowish red clay
21 to 27 inches—dark reddish brown clay
27 inches—limestone bedrock

Urban land

Most of the Urban land consists of areas where 85 to 90 percent of the surface is covered by streets, buildings, parking lots, driveways, railroad yards, or airports. The remainder consists of cut and fill areas of soil material imported onto the site or disturbed in the process of urbanization.

Rock outcrop

This part of the map unit consists of large outcrops of limestone that extend from several inches to 3 feet above the soil surface in horizontal bands, or it occurs as individual blocks of limestone protruding from the surface.

Soil Properties and Qualities

• See the interpretations tables for map units in urban areas.

Use and Management

Residential and commercial structures

Suitability: Poorly suited
Management measures and considerations:
• Deep excavations for structures and driveways are difficult to make because of the depth to bedrock and rock outcrops.
• Modifications in the design of footings that overcome the shrink-swell potential are needed for excavations.
• Rock outcrops interfere with construction and excavation in most areas of the map unit.
• Diverting runoff from gutters and driveways away from structures reduces the chance of differential settling or cracking of foundations caused by the shrink-swell potential.
• Soil compaction is a problem around construction sites. Sites may require aeration or deep tillage and reseeding.
• Subsurface sewerage pipes and utility lines may be

subject to settling or cracking because of the shrink-swell potential.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
• This map unit is severely limited for septic systems because of the numerous rock outcrops, depth to bedrock, slow permeability, and shrink-swell potential in the lower part of the subsoil.

Interpretive Groups

Land capability classification: None assigned

CoE—Caneyville-Urban land-Rock outcrop complex, 20 to 30 percent slopes

Setting

Location: Hillsides in and around the city of Bowling Green

Composition

Caneyville soil and similar inclusions: 40 percent
Urban land: 25 percent
Rock outcrop: 20 percent

Contrasting Inclusions

• Baxter and Vertrees soils

Typical Profile

Caneyville

Surface layer:
0 to 6 inches—brown silt loam

Subsoil:
6 to 11 inches—yellowish red silty clay
11 to 21 inches—yellowish red clay
21 to 27 inches—dark reddish brown clay
27 inches—limestone bedrock

Urban land

Most of the Urban land consists of areas where 85 to 90 percent of the surface is covered by streets, buildings, parking lots, driveways, railroad yards, or airports. The remainder consists of cut and fill areas of soil material imported onto the site or disturbed in the process of urbanization.

Rock outcrop

This part of the map unit consists of large outcrops of limestone that extend from several inches to 3 feet above the soil surface in horizontal bands, or it occurs as individual blocks of limestone protruding from the surface.

Soil Properties and Qualities

• See the interpretations tables for map units in urban areas.

Use and Management

Residential and commercial structures

Suitability: Poorly suited
Management measures and considerations:
• Deep excavations for structures and driveways are difficult to make because of the slope, depth to bedrock, and rock outcrops.
• Modifications in the design of footings that overcome the shrink-swell potential are needed for excavations.
• Rock outcrops interfere with construction and excavation in most areas of the map unit.
• Diverting runoff from gutters and driveways away from structures reduces the chance of differential settling or cracking of foundations caused by the shrink-swell potential.
• Soil compaction is a problem around construction sites. Sites may require aeration or deep tillage and reseeding.
• Subsurface sewerage pipes and utility lines may be subject to settling or cracking because of the shrink-swell potential.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
• This map unit is severely limited for septic systems because of the numerous rock outcrops, slope, depth to bedrock, slow permeability, and shrink-swell potential in the lower part of the subsoil.

Interpretive Groups

Land capability classification: None assigned

CrB—Crider silt loam, 2 to 6 percent slopes

Setting

Landscape position: Undulating ridges
Size of areas: 5 to 150 acres
Slope range: 2 to 6 percent
Parent material: Loess and residuum from limestone

Composition

Crider soil and similar inclusions: 90 percent

Figure 4.—An area of Crider silt loam, 2 to 6 percent slopes. This soil is well suited to most agronomic crops. High yields can be expected if management reduces the risk of erosion.

Contrasting Inclusions

- Nicholson, Baxter, Caneyville, and Fredonia soils

Typical Profile

Surface layer:
0 to 9 inches—brown silt loam

Subsoil:
9 to 28 inches—strong brown and yellowish red silty clay loam
28 to 50 inches—red silty clay loam
50 to 80 inches—dark red clay

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Soil reaction: Neutral to very strongly acid
High water table: None
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Well suited (fig. 4)
Management measures and considerations:
- Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
- Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited

Management measures and considerations:
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Well suited
Management measures and considerations:
• Careful use of equipment and good design practices prevent the runoff of off-site sediments.

Septic tank absorption fields

Suitability: Well suited
Management measures and considerations:
• An onsite investigation is needed in eroded areas to determine a suitable site.

Interpretive Groups

Land capability classification: 2e

CrC—Crider silt loam, 6 to 12 percent slopes

Setting

Landscape position: Rolling ridges
Size of areas: 5 to 30 acres
Slope range: 6 to 12 percent
Parent material: Loess and residuum from limestone

Composition

Crider soil and similar inclusions: 85 percent

Contrasting Inclusions

• Nicholson, Baxter, Caneyville, and Fredonia soils

Typical Profile

Surface layer:
0 to 9 inches—brown silt loam

Subsoil:
9 to 28 inches—strong brown and yellowish red silty clay loam
28 to 50 inches—red silty clay loam
50 to 80 inches—dark red clay

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Soil reaction: Neutral to very strongly acid
High water table: None
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Well suited
Management measures and considerations:
• Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Well suited
Management measures and considerations:
• Structures should be designed so that they conform to the natural slope.
• Topsoil should be stockpiled and used to reclaim areas that are disturbed during construction.
• Careful use of equipment and good design practices prevent the runoff of off-site sediments.

Septic tank absorption fields

Suitability: Well suited
Management measures and considerations:
• Filter lines should be installed on the contour and conform to the slope.
• An onsite investigation is needed in eroded areas to determine a suitable site.

Interpretive Groups

Land capability classification: 3e

CuB—Crider-Urban land complex, 2 to 6 percent slopes

Setting

Location: In and around the city of Bowling Green

Composition

Crider soil and similar inclusions: 55 percent
Urban land: 35 percent

Contrasting Inclusions

- Nicholson, Caneyville, Nolin, Newark, Fredonia, and Vertrees soils and Udorthents

Typical Profile

Crider

Surface layer:
0 to 9 inches—brown silt loam

Subsoil:
9 to 28 inches—strong brown and yellowish red silty clay loam
28 to 50 inches—red silty clay loam
50 to 80 inches—dark red clay

Urban land

Most of the Urban land consists of areas where 85 to 90 percent of the surface is covered by streets, buildings, parking lots, driveways, railroad yards, or airports. The remainder consists of cut and fill areas of soil material imported onto the site or disturbed in the process of urbanization.

Soil Properties and Qualities

- See the interpretations tables for map units in urban areas.

Use and Management

Residential and commercial structures

Suitability: Well suited
Management measures and considerations:
- Designing structures that conform to the natural slope reduces the amount of cutting or filling needed.
- Topsoil may need to be stockpiled and used to reclaim areas that are disturbed during construction.
- Careful use of equipment and good site conservation measures prevent the discharge of sediment onto adjacent property or into streams.
- Soil compaction is a problem around construction sites. Sites may require aeration or deep tillage and reseeding.
- Yards may be subject to periods of flooding if the soil is compacted. Shallow diversions may be needed to remove surface runoff and ponding in low areas.
- Diverting runoff from gutters and driveways away from structures reduces the chance of differential settling.

Septic tank absorption fields

Suitability: Well suited
Management measures and considerations:
- Most areas of this map unit can be used for septic tank filter fields.

Interpretive Groups

Land capability classification: None assigned

CuC—Crider-Urban land complex, 6 to 12 percent slopes

Setting

Location: In and around the city of Bowling Green

Composition

Crider soil and similar inclusions: 55 percent
Urban land: 35 percent

Contrasting Inclusions

- Nicholson, Caneyville, Nolin, Newark, and Fredonia soils and Udorthents

Typical Profile

Crider

Surface layer:
0 to 9 inches—brown silt loam

Subsoil:
9 to 28 inches—strong brown and yellowish red silty clay loam
28 to 50 inches—red silty clay loam
50 to 80 inches—dark red clay

Urban land

Most of the Urban land consists of areas where 85 to 90 percent of the surface is covered by streets, buildings, parking lots, driveways, railroad yards, or airports. The remainder consists of cut and fill areas of soil material imported onto the site or disturbed in the process of urbanization.

Soil Properties and Qualities

• See the interpretations tables for map units in urban areas.

Use and Management

Residential and commercial structures

Suitability: Well suited
Management measures and considerations:
• Designing structures that conform to the natural slope reduces the amount of cutting or filling needed.
• Topsoil may need to be stockpiled and used to reclaim areas that are disturbed during construction.
• Careful use of equipment and good site conservation measures prevent the discharge of sediment onto adjacent property or into streams.
• Soil compaction is a problem around construction sites. Sites may require aeration or deep tillage and reseeding.
• Yards may be subject to rill and gully erosion if the soil is compacted. Shallow diversions may be needed to remove surface runoff.
• Diverting runoff from gutters and driveways away from structures reduces the chance of differential settling.

Septic tank absorption fields

Suitability: Well suited
Management measures and considerations:
• The slope is a limitation affecting septic systems. Care is needed in layout and design in order to make the system conform to the natural slope of the lot.
• An onsite investigation is recommended to determine a suitable site.

Interpretive Groups

Land capability classification: None assigned

DAM—Dam, large

Setting

Shape of areas: Linear to parabolic
Size of areas: 3 to 18 acres

Composition

This map unit consists of earthen embankments or berms that are constructed across natural drainage channels to impound water. The embankments or berms are made up of soil and rock materials excavated from the site or adjacent areas. The materials are shaped and compacted by earthmoving equipment. The embankments are vegetated, and some are protected with large stones or riprap. These small watershed dams average 30 to 40 feet in height and width.

Use and Management

This map unit is in several small watersheds across the county, mostly in the northern part. These impoundments are used for flood prevention and control, as municipal water supplies, for fire protection, as wildlife habitat, and for fishing and recreational uses.

Interpretive Groups

Land capability classification: None assigned

Du—Dunning silty clay loam, ponded

Setting

Landscape position: Flood plains and depressions
Size of areas: 3 to 65 acres
Slope range: 0 to 2 percent
Parent material: Fine textured alluvium

Composition

Dunning soil and similar inclusions: 85 percent

Contrasting Inclusions

• Lawrence, Newark, Robertsville, and Melvin soils

Typical Profile

Surface layer:
0 to 10 inches—very dark gray silty clay loam

Subsoil:
10 to 25 inches—dark gray silty clay
25 to 43 inches—dark gray clay
43 to 71 inches—dark gray clay

Soil Properties and Qualities

Drainage class: Very poorly drained or poorly drained
Permeability: Slow or very slow
Available water capacity: High
Soil reaction: Moderately acid to slightly alkaline
High water table: At or above the surface from December through May
Ponding: Frequent for long to brief periods from December through May
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Poorly suited

Management measures and considerations:
• In previously drained areas, planting and harvesting operations can be hindered by wetness or ponding.
• This soil is subject to crusting and clodding if tilled when the moisture content is high.

Pasture and hay

Suitability: Suited
Management measures and considerations:
• Selecting forage plants that can tolerate saturated conditions for extended periods is recommended.
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Deferring livestock grazing until early summer minimizes compaction of the soil surface and prevents damage to forages.

Woodland

Suitability: Poorly suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Unsuited
Management measures and considerations:
• Because of the seasonal wetness and ponding, this soil is unsuited to residential and commercial structures.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
• Because of the seasonal high water table and ponding, this soil is unsuited to septic tank filter fields.

Interpretive Groups

Land capability classification: 4w

EkB—Elk silt loam, 2 to 6 percent slopes, rarely flooded

Setting

Landscape position: Undulating stream terraces
Size of areas: 3 to 15 acres
Slope range: 2 to 6 percent
Parent material: Alluvium

Composition

Elk soil and similar inclusions: 80 percent

Contrasting Inclusions

• Newark, Nolin, and Otwood soils

Typical Profile

Surface layer:
0 to 10 inches—brown silt loam

Subsoil:
10 to 20 inches—brown silt loam
20 to 32 inches—brown silty clay loam
32 to 42 inches—strong brown silty clay loam
42 to 65 inches—yellowish brown silty clay loam

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Soil reaction: Strongly acid or moderately acid
High water table: None
Flooding: Rare from January through April
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Well suited
Management measures and considerations:
• Planting operations may be delayed in some years because of the flooding.
• Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Poorly suited
Management measures and considerations:
• This soil is subject to flooding in some years.

• Locating structures in the higher areas is recommended.

Septic tank absorption fields

Suitability: Suited
Management measures and considerations:
• An onsite investigation is needed to locate a suitable site and determine if the site is subject to flooding.

Interpretive Groups

Land capability classification: 2e

EpB—Epley silt loam, 2 to 6 percent slopes

Setting

Landscape position: Undulating ridges and stream terraces
Size of areas: 8 to 25 acres
Slope range: 2 to 6 percent
Parent material: Silty alluvium and residuum from shale

Composition

Epley soil and similar inclusions: 85 percent

Contrasting Inclusions

• Caneyville, Lawrence, Zanesville, and Otwood soils

Typical Profile

Surface layer:
0 to 9 inches—brown silt loam

Subsoil:
9 to 24 inches—yellowish brown silt loam
24 to 41 inches—brown and dark yellowish brown silty clay that has gray and brown mottles

Substratum:
41 to 65 inches—yellowish brown clay that has brown mottles

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Slow or very slow
Available water capacity: High
Soil reaction: Very strongly acid to moderately acid
High water table: At a depth of 1.5 to 2.0 feet from December through April
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Suited
Management measures and considerations:
• Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
• Planting later in spring, when the water table has receded, helps to prevent crusting and rutting of the soil surface.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Deferring grazing until later in spring, when the water table has receded, helps to prevent soil compaction and improve forage growth.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Unsuited
Management measures and considerations:
• This soil is unsuited to dwellings because of the seasonal wetness and shrink-swell potential.
• Other sites in the survey area should be considered for dwellings.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
• This soil is unsuited to septic tank filter fields because of the high water table, very slow permeability, and shrink-swell potential.

Interpretive Groups

Land capability classification: 2e

FeB—Fredonia-Vertrees complex, 2 to 6 percent slopes, rocky

Setting

Landscape position: Undulating ridges
Size of areas: 2 to 20 acres
Slope range: 2 to 6 percent
Parent material: Residuum from limestone

Composition

Fredonia soil: 50 percent
Vertrees soil: 35 percent

Inclusions

- Nicholson, Pembroke, and Crider soils and rock outcrop

Typical Profile

Fredonia

Surface layer:
0 to 5 inches—brown silt loam

Subsoil:
5 to 22 inches—dark red silty clay
22 to 37 inches—dusky red clay
37 inches—limestone bedrock

Vertrees

Surface layer:
0 to 4 inches—brown silt loam

Subsurface layer:
4 to 6 inches—yellowish brown silt loam

Subsoil:
6 to 15 inches—red silty clay
15 to 80 inches—red and dark red clay

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately slow or slow
Available water capacity: Fredonia—moderate or low; Vertrees—high
Soil reaction: Fredonia—strongly acid to slightly acid; Vertrees—strongly acid or moderately acid
High water table: None
Depth to bedrock: Fredonia—20 to 40 inches; Vertrees—more than 60 inches

Use and Management

Cropland

Suitability: Suited
Management measures and considerations:
- Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
- The numerous rock outcrops can hinder cultivation and harvesting operations.
- The depth to bedrock limits rooting depth in most areas.
- Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Suited
Management measures and considerations:
- Rock outcrops can hinder management operations for pasture and hay in some areas.
- Because of the limited available water capacity and depth to bedrock, hay yields may be reduced in dry years.
- Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
- Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
- See the tables on forest productivity and forestland management.

Dwellings

Suitability: Poorly suited
Management measures and considerations:
- The depth to bedrock, areas of rock outcrop, and shrink-swell potential are limitations affecting dwellings.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
- These soils are limited for septic tank filter fields because of the depth to bedrock, areas of rock outcrop, slow permeability, and shrink-swell potential.

Interpretive Groups

Land capability classification: 3e

FeC—Fredonia-Vertrees complex, 6 to 12 percent slopes, very rocky

Setting

Landscape position: Rolling ridges and side slopes
Size of areas: 5 to 200 acres
Slope range: 6 to 12 percent
Parent material: Residuum from limestone

Composition

Fredonia soil: 50 percent
Vertrees soil: 30 percent

Inclusions

- Crider, Baxter, and Caneyville soils and rock outcrop

Typical Profile

Fredonia

Surface layer:
0 to 5 inches—brown silt loam

Subsoil:
5 to 22 inches—dark red silty clay
22 to 37 inches—dusky red clay
37 inches—limestone bedrock

Vertrees

Surface layer:
0 to 4 inches—brown silt loam

Subsurface layer:
4 to 6 inches—yellowish brown silt loam

Subsoil:
6 to 15 inches—red silty clay
15 to 80 inches—red and dark red clay

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately slow or slow
Available water capacity: Fredonia—moderate or low; Vertrees—high
Soil reaction: Fredonia—strongly acid to slightly acid; Vertrees—strongly acid or moderately acid
High water table: None
Depth to bedrock: Fredonia—20 to 40 inches; Vertrees—more than 60 inches

Use and Management

Cropland

Suitability: Poorly suited
Management measures and considerations:
- The numerous rock outcrops hinder cultivation and harvesting operations.
- The depth to bedrock limits rooting depth in most areas.
- Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Suited
Management measures and considerations:
- Rock outcrops can hinder management operations for pasture and hay in some areas.
- Because of the limited available water capacity and depth to bedrock, hay yields may be reduced in dry years.
- Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
- Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
- See the tables on forest productivity and forestland management.

Dwellings

Suitability: Poorly suited
Management measures and considerations:
- The depth to bedrock, slope, areas of rock outcrop, and shrink-swell potential are severe limitations affecting structures.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
- These soils are limited for septic tank filter fields because of the depth to bedrock, slope, areas of rock outcrop, slow permeability, and shrink-swell potential.

Interpretive Groups

Land capability classification: 4e

FnB—Fredonia-Vertrees-Urban land complex, 2 to 6 percent slopes, rocky

Setting

Landscape position: Undulating ridges
Size of areas: 2 to 20 acres
Slope range: 2 to 6 percent
Parent material: Residuum from limestone

Composition

Fredonia soil: 37 percent
Vertrees soil: 30 percent
Urban land: 25 percent

Inclusions

- Nicholson, Pembroke, and Crider soils and rock outcrop

Typical Profile

Fredonia

Surface layer:
0 to 5 inches—brown silt loam

Subsoil:
5 to 22 inches—dark red silty clay
22 to 37 inches—dusky red clay
37 inches—limestone bedrock

Vertrees

Surface layer:
0 to 4 inches—brown silt loam

Subsurface layer:
4 to 6 inches—yellowish brown silt loam

Subsoil:
6 to 15 inches—red silty clay
15 to 80 inches—red and dark red clay

Urban land

Most of the Urban land consists of areas where 85 to 90 percent of the surface is covered by streets, buildings, parking lots, driveways, railroad yards, or airports. The remainder consists of cut and fill areas of soil material imported onto the site or disturbed in the process of urbanization.

Soil Properties and Qualities

- See the interpretations tables for map units in urban areas.

Use and Management

Residential and commercial structures

Suitability: Suited
Management measures and considerations:
- Designing structures that conform to the natural slope reduces the amount of cutting or filling needed and helps to overcome the depth to bedrock limitation.
- Topsoil may need to be stockpiled and used to reclaim areas that are disturbed during construction.
- Careful use of equipment and good site conservation measures prevent the discharge of sediment onto adjacent property or into streams.
- Soil compaction is a problem around construction sites. Sites may require aeration or deep tillage and reseeding.
- Yards may be subject to periods of flooding or ponding where the soil is compacted. Shallow diversions may be needed to remove surface runoff or ponding in low areas.
- Modifications in the design of footings and basements that overcome the shrink-swell potential and depth to bedrock limitation are needed in areas of deep excavations.
- Diverting runoff from gutters and driveways away from structures reduces the chance of differential settling or cracking of foundations caused by the shrink-swell potential.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
- These soils are limited for septic systems because of the depth to bedrock, areas of rock outcrop, slow permeability, and moderate shrink-swell potential in the lower part of the subsoil.
- In the lot design for structures and cuts for driveways, the depth to bedrock needs to be considered and a sufficient area for a septic field needs to be allowed.
- An onsite investigation is needed to determine if a site is suitable.

Interpretive Groups

Land capability classification: None assigned

FnC—Fredonia-Vertrees-Urban land complex, 6 to 12 percent slopes, very rocky

Setting

Landscape position: Rolling ridges
Size of areas: 5 to 200 acres
Slope range: 6 to 12 percent
Parent material: Residuum from limestone

Composition

Fredonia soil: 37 percent
Vertrees soil: 27 percent
Urban land: 25 percent

Contrasting Inclusions

- Baxter and Crider soils and rock outcrop

Typical Profile

Fredonia

Surface layer:
0 to 5 inches—brown silt loam

Subsoil:
5 to 22 inches—dark red silty clay
22 to 37 inches—dusky red clay
37 inches—limestone bedrock

Vertrees

Surface layer:
0 to 4 inches—brown silt loam

Subsurface layer:
4 to 6 inches—yellowish brown silt loam

Subsoil:
6 to 15 inches—red silty clay
15 to 80 inches—red and dark red clay

Urban land

Most of the Urban land consists of areas where 85 to 90 percent of the surface is covered by streets, buildings, parking lots, driveways, railroad yards, or airports. The remainder consists of cut and fill areas of soil material imported onto the site or disturbed in the process of urbanization.

Soil Properties and Qualities

- See the interpretations tables for map units in urban areas.

Use and Management

Residential and commercial structures

Suitability: Poorly suited
Management measures and considerations:
- Designing structures that conform to the natural slope reduces the amount of cutting or filling needed and helps to overcome the depth to bedrock limitation.
- Topsoil may need to be stockpiled and used to reclaim areas that are disturbed during construction.
- Careful use of equipment and good site conservation measures prevent the discharge of sediment onto adjacent property or into streams.
- Soil compaction is a problem around construction sites. Sites may require aeration or deep tillage and reseeding.
- Yards may be subject to rill and gully erosion if the soil is compacted. Shallow diversions may be needed to remove surface runoff.
- Modifications in the design of footings and basements that overcome the limitations caused by the shrink-swell potential, areas of rock outcrop, and depth to bedrock are needed for deep excavations.
- Diverting runoff from gutters and driveways away from structures reduces the chance of differential settling or cracking of foundations caused by the shrink-swell potential.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
- These soils are limited for septic systems because of the slope, depth to bedrock, areas of rock outcrop, slow permeability, and shrink-swell potential in the lower part of the subsoil.
- In the lot design for structures and cuts for driveways, the slope and depth to bedrock need to be considered and a sufficient area for a septic field needs to be allowed.
- An onsite investigation is needed to determine if a site is suitable.

Interpretive Groups

Land capability classification: None assigned

FnC2—Fredonia-Vertrees-Urban land complex, 6 to 12 percent slopes, eroded, rocky

Setting

Landscape position: Rolling ridges
Size of areas: 5 to 100 acres
Slope range: 6 to 12 percent
Parent material: Residuum from limestone

Composition

Fredonia soil: 37 percent
Vertrees soil: 30 percent
Urban land: 25 percent

Inclusions

- Baxter and Crider soils and rock outcrop

Typical Profile

Fredonia

Surface layer:
0 to 3 inches—brown silt loam

Subsoil:
3 to 22 inches—dark red silty clay
22 to 37 inches—dusky red clay
37 inches—limestone bedrock

Vertrees

Surface layer:
0 to 3 inches—brown silt loam

Subsoil:
3 to 15 inches—red silty clay
15 to 80 inches—red and dark red clay

Urban land

Most of the Urban land consists of areas where 85 to 90 percent of the surface is covered by streets, buildings, parking lots, driveways, railroad yards, or airports. The remainder consists of cut and fill areas of soil material imported onto the site or disturbed in the process of urbanization.

Soil Properties and Qualities

• See the interpretations tables for map units in urban areas.

Use and Management

Residential and commercial structures

Suitability: Poorly suited
Management measures and considerations:
• Designing structures that conform to the natural slope reduces the amount of cutting or filling needed and helps to overcome the depth to bedrock limitation.
• Stockpiling topsoil is critical in reclaiming areas disturbed during construction.
• Careful use of equipment and good site conservation measures prevent the discharge of sediment onto adjacent property or into streams.
• Soil compaction is a problem around construction sites because of the past effects of erosion. Sites require aeration or deep tillage and reseeding.
• Yards are subject to rill and gully erosion if the soil is compacted. Shallow diversions may be needed to remove surface runoff.
• Modifications in the design of footings and basements that overcome the limitations caused by the shrink-swell potential, areas of rock outcrop, and depth to bedrock are needed for deep excavations.
• Diverting runoff from gutters and driveways away from structures reduces the chance of differential settling or cracking of foundations caused by the shrink-swell potential.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
• These soils are limited for septic systems because of the slope, depth to bedrock, areas of rock outcrop, slow permeability, and shrink-swell potential in the lower part of the subsoil.
• In the lot design for structures and cuts for driveways, the slope and depth to bedrock need to be considered and a sufficient area for a septic field needs to be allowed.
• An onsite investigation is needed to determine if a site is suitable.

Interpretive Groups

Land capability classification: None assigned

FrC—Frondorf silt loam, 6 to 12 percent slopes

Setting

Landscape position: Rolling ridgetops
Size of areas: 5 to 40 acres
Slope range: 6 to 12 percent
Parent material: Residuum from sandstone and siltstone

Composition

Frondorf soil and similar inclusions: 85 percent

Contrasting Inclusions

• Wellston, Sadler, Zanesville, and Ramsey soils

Typical Profile

Surface layer:
0 to 5 inches—brown silt loam

Subsoil:
5 to 18 inches—strong brown and yellowish brown silty clay loam
18 to 26 inches—very channery silty clay loam
26 inches—hard sandstone

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Moderate or low

Soil reaction: Strongly acid or very strongly acid
High water table: None
Depth to bedrock: 20 to 40 inches

Use and Management

Cropland

Suitability: Suited
Management measures and considerations:
• Practices that include minimum tillage or no-till planting and winter cover crops reduce the risk of soil erosion and increase the available moisture.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Suited
Management measures and considerations:
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Hay yields may be low in dry years because of a limited available water capacity.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Suited
Management measures and considerations:
• Structures should be designed so that they conform to the natural slope.
• Topsoil should be stockpiled and used to reclaim areas that are disturbed during construction.
• Deep excavations are impractical because of the limited depth to bedrock.
• Careful use of equipment and good design practices prevent the runoff of off-site sediments.

Septic tank absorption fields

Suitability: Suited
Management measures and considerations:
• This soil is limited for septic tank filter fields by the depth to bedrock.
• An onsite investigation is needed to determine a suitable site.

Interpretive Groups

Land capability classification: 3e

FrD—Frondorf silt loam, 12 to 20 percent slopes

Setting

Landscape position: Hillsides
Size of areas: 10 to 55 acres
Slope range: 12 to 20 percent
Parent material: Residuum from sandstone and siltstone

Composition

Frondorf soil and similar inclusions: 85 percent

Contrasting Inclusions

• Wellston, Zanesville, and Ramsey soils

Typical Profile

Surface layer:
0 to 5 inches—brown silt loam

Subsoil:
5 to 18 inches—strong brown and yellowish brown silty clay loam
18 to 26 inches—very channery silty clay loam
26 inches—hard sandstone

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: Moderate or low
Soil reaction: Strongly acid or very strongly acid
High water table: None
Depth to bedrock: 20 to 40 inches

Use and Management

Cropland

Suitability: Poorly suited
Management measures and considerations:
• A management plan that includes long rotations in grass and legumes is needed to reduce the effects of erosion and help increase moisture storage.
• Practices that include minimum tillage or no-till planting and winter cover crops reduce the risk of soil erosion and increase the available moisture capacity. These practices are necessary in areas used as cropland.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of

fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Suited
Management measures and considerations:
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Hay yields may be low in dry years because of a limited available water capacity.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Suited
Management measures and considerations:
• Structures should be designed so that they conform to the natural slope.
• Topsoil should be stockpiled and used to reclaim areas that are disturbed during construction.
• Deep excavations are impractical because of the limited depth to bedrock.
• Careful use of equipment and good design practices prevent the runoff of off-site sediments.

Septic tank absorption fields

Suitability: Suited
Management measures and considerations:
• This soil is limited for septic tank filter fields by the depth to bedrock and slope.
• An onsite investigation is needed to determine a suitable site.

Interpretive Groups

Land capability classification: 4e

Gr—Grigsby sandy loam, frequently flooded

Setting

Landscape position: Flood plains of the Barren and Green Rivers
Size of areas: 10 to 30 acres
Slope range: 0 to 2 percent
Parent material: Loamy alluvium

Composition

Grigsby soil and similar inclusions: 90 percent

Contrasting Inclusions

• Newark, Lindside, and Nolin soils

Typical Profile

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

Subsoil:
9 to 21 inches—dark yellowish brown sandy loam
21 to 26 inches—brown sandy loam
26 to 41 inches—yellowish brown sandy loam
41 to 80 inches—dark yellowish brown loam

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate or moderately rapid
Available water capacity: High
Soil reaction: Moderately acid to neutral
High water table: At a depth of more than 6 feet
Flooding: Frequent for brief periods from December through May
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Suited
Management measures and considerations:
• The frequent flooding is a management concern.
• Planting later in spring, when the risk of flooding has receded, helps to prevent damage to young plants.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Grazing should be deferred until later in spring when the risk of flooding has receded.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited

Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Unsuited
Management measures and considerations:
• This soil is unsuited to dwellings because of the risk of flooding.
• Other sites in the survey area should be considered for dwellings.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
• This soil is unsuited to septic tank filter fields because of the risk of flooding.

Interpretive Groups

Land capability classification: 2w

HaB—Hammack silt loam, 2 to 6 percent slopes

Setting

Landscape position: Undulating ridges
Size of areas: 20 to 200 acres
Slope range: 2 to 6 percent
Parent material: Loess and residuum from limestone

Composition

Hammack soil and similar inclusions: 85 percent

Contrasting Inclusions

• Nicholson, Baxter, Crider, Caneyville, and Fredonia soils

Typical Profile

Surface layer:
0 to 9 inches—brown silt loam

Subsoil:
9 to 17 inches—brown silt loam
17 to 30 inches—yellowish red silty clay loam
30 to 41 inches—yellowish red, light brownish gray, and pale brown very gravelly silt loam
41 to 84 inches—dark red gravelly clay and clay

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Soil reaction: Very strongly acid to moderately acid
High water table: None
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Well suited
Management measures and considerations:
• Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Well suited
Management measures and considerations:
• Structures should be designed so that they conform to the natural slope.
• Topsoil should be stockpiled and used to reclaim areas that are disturbed during construction.
• Design modifications that overcome the shrink-swell potential are needed in areas of deep excavations.
• Careful use of equipment and good design practices prevent the runoff of off-site sediments.

Septic tank absorption fields

Suitability: Suited
Management measures and considerations:
• This soil is limited for septic systems because of the moderately slow permeability and the moderate shrink-swell potential in the lower part of the subsoil.
• An onsite investigation is needed to determine a suitable site.

Interpretive Groups

Land capability classification: 2e

La—Lawrence silt loam, rarely flooded

Setting

Landscape position: Nearly level stream terraces
Size of areas: 8 to 25 acres
Slope range: 0 to 2 percent
Parent material: Silty alluvium

Composition

Lawrence soil and similar inclusions: 90 percent

Contrasting Inclusions

• Otwood, Melvin, Newark, Nolin, Elk, and Robertsville soils

Typical Profile

Surface layer:
0 to 7 inches—grayish brown silt loam

Subsoil:
7 to 14 inches—yellowish brown silty clay loam that has light yellowish brown mottles
14 to 18 inches—yellowish brown silty clay loam that has gray and brown mottles
18 to 65 inches—gray and yellowish brown silty clay loam fragipan

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate above the fragipan and slow or very slow in the fragipan
Available water capacity: High
Soil reaction: Very strongly acid or strongly acid
High water table: At a depth of 1.0 to 1.5 feet from December through April
Flooding: Rare
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Suited
Management measures and considerations:
• The seasonal wetness limits the planting and harvesting of some crops.
• Because of the wetness in early spring, planting short-season annuals, such as soybeans, is recommended.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
• Selecting forage plants that can tolerate short periods of wetness, such as tall fescue and ladino clover, is recommended.
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Deferring livestock grazing until later in spring or until early summer, when the water table has receded, helps to prevent soil compaction and improve forage growth.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Unsuited
Management measures and considerations:
• This soil is unsuited to dwellings because of the seasonal wetness caused by the perched water table, the slow permeability in the subsoil, and the risk of flooding.
• Other sites in the survey area should be considered for dwellings.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
• This soil is unsuited to septic tank filter fields because of the high water table, very slow permeability, and risk of flooding.

Interpretive Groups

Land capability classification: 3w

Ld—Lindside silt loam, frequently flooded

Setting

Landscape position: Flood plains
Size of areas: 3 to 40 acres
Slope range: 0 to 2 percent
Parent material: Silty alluvium

Composition

Lindside soil and similar inclusions: 90 percent

Contrasting Inclusions

• Melvin, Newark, and Nolin soils

Figure 5.—An area of Lindside silt loam, frequently flooded. Seasonal wetness and flooding limit the planting and harvesting of some crops.

Typical Profile

Surface layer:
0 to 10 inches—brown silt loam

Subsoil:
10 to 16 inches—brown silt loam
16 to 42 inches—brown silty clay loam that has gray and yellowish brown mottles

Substratum:
42 to 65 inches—light brownish gray, light gray, dark brown, and light yellowish brown silt loam

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate
Available water capacity: High
Soil reaction: Very strongly acid or strongly acid
High water table: At a depth of 1.5 to 2.0 feet from December through April
Flooding: Frequent for very brief periods from December through May
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Suited
Management measures and considerations:
• The flooding and seasonal wetness limit the planting and harvesting of some crops (fig. 5).
• Because of the risk of flooding, planting short-season annuals, such as soybeans, later in spring is recommended.

Pasture and hay

Suitability: Suited
Management measures and considerations:
• Selecting forage plants that can tolerate short

periods of wetness, such as tall fescue and ladino clover, is recommended.
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Deferring livestock grazing until later in spring or until early summer, when the risk of flooding is lesser, helps to prevent loss of livestock and improve forage growth.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Unsuited
Management measures and considerations:
• This soil is unsuited to dwellings because of the risk of flooding and seasonal wetness.
• Other sites in the survey area should be considered for dwellings.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
• This soil is unsuited to septic tank filter fields because of the high water table and risk of flooding.

Interpretive Groups

Land capability classification: 3w

Me—Melvin silt loam, frequently flooded

Setting

Landscape position: Flood plains
Size of areas: 5 to 70 acres
Slope range: 0 to 2 percent
Parent material: Silty alluvium

Composition

Melvin soil and similar inclusions: 80 percent

Contrasting Inclusions

• Newark, Lindside, and Nolin soils

Typical Profile

Surface layer:
0 to 9 inches—grayish brown silt loam that has brown mottles

Subsoil:
9 to 33 inches—light brownish gray silty clay loam that has brown mottles

Substratum:
33 to 62 inches—light brownish gray silty clay loam that has brown mottles

Soil Properties and Qualities

Drainage class: Poorly drained
Permeability: Moderate
Available water capacity: High
Soil reaction: Moderately acid to moderately alkaline
High water table: At the surface from December through April
Flooding: Frequent for long periods from December through April
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Poorly suited
Management measures and considerations:
• The flooding and seasonal wetness limit the planting and harvesting of most crops.

Pasture and hay

Suitability: Poorly suited
Management measures and considerations:
• Selecting forage plants that can tolerate long periods of wetness, such as tall fescue and ladino clover, is recommended.

Woodland

Suitability: Suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Unsuited
Management measures and considerations:
• This soil is unsuited to dwellings because of the risk of flooding and seasonal wetness.
• Other sites in the survey area should be considered for dwellings.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
• This soil is unsuited to septic tank filter fields because of the high water table and risk of flooding.

Interpretive Groups

Land capability classification: 4w

Ne—Newark silt loam, frequently flooded

Setting

Landscape position: Flood plains
Size of areas: 4 to 80 acres
Slope range: 0 to 2 percent
Parent material: Silty alluvium

Composition

Newark soil and similar inclusions: 90 percent

Contrasting Inclusions

- Lindside, Melvin, Nolin, Grigsby, and Lawrence soils

Typical Profile

Surface layer:
0 to 11 inches—brown silt loam

Subsoil:
11 to 18 inches—yellowish brown silt loam that has gray mottles
18 to 28 inches—light brownish gray silt loam that has brown mottles

Substratum:
28 to 65 inches—light brownish gray silt loam that has brown and black mottles

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate
Available water capacity: High
Soil reaction: Moderately acid to slightly alkaline
High water table: At a depth of 1.0 to 1.5 feet from December through May
Flooding: Frequent for brief periods from December through May
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Suited
Management measures and considerations:
- The flooding and seasonal wetness limit the planting and harvesting of some crops.
- Because of the wetness in spring, planting short-season annuals, such as soybeans, is recommended.

Pasture and hay

Suitability: Suited
Management measures and considerations:
- Selecting forage plants that can tolerate short periods of wetness, such as tall fescue and ladino clover, is recommended.
- Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
- Deferring livestock grazing until later in spring or until early summer, when the water table has receded, helps to prevent soil compaction and improve forage growth.
- Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
- See the tables on forest productivity and forestland management.

Dwellings

Suitability: Unsuited
Management measures and considerations:
- This soil is unsuited to dwellings because of the risk of flooding and seasonal wetness.
- Other sites in the survey area should be considered for dwelllings.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
- This soil is unsuited to septic tank filter fields because of the high water table and risk of flooding.

Interpretive Groups

Land capability classification: 3w

Nf—Newark silt loam, ponded

Setting

Landscape position: Depressions
Size of areas: 3 to 18 acres
Slope range: 0 to 2 percent
Parent material: Silty alluvium

Composition

Newark soil and similar inclusions: 90 percent

Contrasting Inclusions

- Lindside, Melvin, and Dunning soils

Typical Profile

Surface layer:
0 to 11 inches—brown silt loam

Subsoil:
11 to 18 inches—yellowish brown silt loam that has gray mottles
18 to 28 inches—light brownish gray silt loam that has brown mottles

Substratum:
28 to 65 inches—light brownish gray silt loam that has brown and black mottles

Soil Properties and Qualities

Drainage class: Somewhat poorly drained
Permeability: Moderate
Available water capacity: High
Soil reaction: Moderately acid to slightly alkaline
High water table: At the surface to a depth of 1.5 feet from December through May
Ponding: Frequent for brief to long periods from December through May
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Poorly suited
Management measures and considerations:
• The ponding and seasonal wetness limit the planting and harvesting of most crops.
• Because of the risk of ponding in spring, planting short-season annuals, such as soybeans, is recommended.

Pasture and hay

Suitability: Suited
Management measures and considerations:
• Selecting forage plants that can tolerate periods of wetness, such as tall fescue and ladino clover, is recommended.
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Deferring livestock grazing until early summer, when the water table has receded and the risk of ponding is lesser, helps to prevent soil compaction and improve forage growth.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Unsuited
Management measures and considerations:
• This soil is unsuited to dwellings because of the risk of ponding and seasonal wetness.
• Other sites in the survey area should be considered for dwellings.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
• This soil is unsuited to septic tank filter fields because of the high water table and risk of ponding.

Interpretive Groups

Land capability classification: 4w

NhA—Nicholson silt loam, 0 to 2 percent slopes

Setting

Landscape position: Nearly level ridgetops
Size of areas: 2 to 60 acres
Slope range: 0 to 2 percent
Parent material: Loess and residuum of limestone

Composition

Nicholson soil and similar inclusions: 80 percent

Contrasting Inclusions

• Crider, Lawrence, Newark, Pembroke, Nolin, and Robertsville soils

Typical Profile

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

Subsoil:
6 to 19 inches—yellowish brown silty clay loam
19 to 25 inches—yellowish brown silty clay loam that has red and brown mottles
25 to 37 inches—yellowish brown silt loam fragipan that has gray and brown mottles
37 to 57 inches—red clay that has gray, brown, and black mottles

Substratum:
57 to 62 inches—yellowish brown clay that has gray mottles

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and slow or very slow in the fragipan
Available water capacity: High
Soil reaction: Strongly acid to slightly acid
High water table: At a depth of 1.5 to 2.0 feet from December through April
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Well suited
Management measures and considerations:
• Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
• Planting later in spring, when the water table has receded, helps to prevent crusting and rutting of the soil surface.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
• Selecting forage plants that can tolerate short periods of wetness, such as tall fescue and ladino clover, is recommended.
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Deferring livestock grazing until later in spring or until early summer, when the water table has receded, helps to prevent soil compaction and improve forage growth.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Poorly suited
Management measures and considerations:
• This soil is poorly suited to dwellings because of the seasonal wetness caused by the perched water table and slow permeability in the subsoil.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
• This soil is poorly suited to septic tank filter fields because of the high water table and very slow permeability.

Interpretive Groups

Land capability classification: 2w

NhB—Nicholson silt loam, 2 to 6 percent slopes

Setting

Landscape position: Undulating ridges
Size of areas: 2 to 300 acres
Slope range: 2 to 6 percent
Parent material: Loess and residuum of limestone

Composition

Nicholson soil and similar inclusions: 80 percent

Contrasting Inclusions

• Crider, Lawrence, Newark, Nolin, Lindside, and Robertsville soils

Typical Profile

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

Subsoil:
6 to 19 inches—yellowish brown silty clay loam
19 to 25 inches—yellowish brown silty clay loam that has red and brown mottles
25 to 37 inches—yellowish brown silt loam fragipan that has gray and brown mottles
37 to 57 inches—red clay that has gray, brown, and black mottles

Substratum:
57 to 62 inches—yellowish brown clay that has gray mottles

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and slow or very slow in the fragipan
Available water capacity: High
Soil reaction: Strongly acid to slightly acid
High water table: At a depth of 1.5 to 2.0 feet from December through April
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Well suited
Management measures and considerations:
• Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
• Planting later in spring, when the water table has receded, helps to prevent crusting and rutting of the soil surface.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
• Selecting forage plants that can tolerate short periods of wetness, such as tall fescue and ladino clover, is recommended.
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Deferring livestock grazing until later in spring or until early summer, when the water table has receded, helps to prevent soil compaction and improve forage growth.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Poorly suited
Management measures and considerations:
• This soil is poorly suited to dwellings because of the seasonal wetness caused by the perched water table and slow permeability in the subsoil.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
• This soil is poorly suited to septic tank filter fields because of the high water table and very slow permeability.

Interpretive Groups

Land capability classification: 2e

NhC—Nicholson silt loam, 6 to 12 percent slopes

Setting

Landscape position: Rolling ridges and side slopes
Size of areas: 5 to 15 acres
Slope range: 6 to 12 percent
Parent material: Loess and residuum of limestone

Composition

Nicholson soil and similar inclusions: 80 percent

Contrasting Inclusions

• Crider, Lawrence, Newark, Nolin, Lindside, and Robertsville soils

Typical Profile

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

Subsoil:
6 to 19 inches—yellowish brown silty clay loam
19 to 25 inches—yellowish brown silty clay loam that has red and brown mottles
25 to 37 inches—yellowish brown silt loam fragipan that has gray and brown mottles
37 to 57 inches—red clay that has gray, brown, and black mottles

Substratum:
57 to 62 inches—yellowish brown clay that has gray mottles

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and slow or very slow in the fragipan
Available water capacity: High
Soil reaction: Strongly acid to slightly acid
High water table: At a depth of 1.5 to 2.0 feet from December through April
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Suited
Management measures and considerations:
• Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
• Planting later in spring, when the water table has receded, helps to prevent crusting and rutting of the soil surface.

• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
• Selecting forage plants that can tolerate short periods of wetness, such as tall fescue and ladino clover, is recommended.
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Deferring livestock grazing until later in spring or until early summer, when the water table has receded, helps to prevent soil compaction and improve forage growth.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Poorly suited
Management measures and considerations:
• This soil is poorly suited to dwellings because of the slope, seasonal wetness caused by the perched water table, and slow permeability in the subsoil.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
• This soil is poorly suited to septic tank filter fields because of the slope, high water table, and very slow permeability.

Interpretive Groups

Land capability classification: 3e

No—Nolin silt loam, frequently flooded

Setting

Landscape position: Flood plains
Size of areas: 10 to 30 acres
Slope range: 0 to 2 percent
Parent material: Silty alluvium

Composition

Nolin soil and similar inclusions: 90 percent

Contrasting Inclusions

• Newark, Lindside, Melvin, Grigsby, and Elk soils

Typical Profile

Surface layer:
0 to 9 inches—brown silt loam

Subsoil:
9 to 65 inches—dark yellowish brown silt loam

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Soil reaction: Strongly acid to moderately alkaline
High water table: At a depth of more than 6 feet
Flooding: Frequent for brief periods from December through May
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Suited
Management measures and considerations:
• The frequent flooding is the major management concern.
• Planting later in spring, when the risk of flooding has receded, helps to prevent damage to young plants.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Grazing should be deferred until later in spring when the risk of flooding has receded.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Unsuited
Management measures and considerations:
• This soil is unsuited to dwellings because of the risk of flooding.
• Other sites in the survey area should be considered for dwellings.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
• This soil is unsuited to septic tank filter fields because of the risk of flooding.

Interpretive Groups

Land capability classification: 2w

Np—Nolin silt loam, ponded

Setting

Landscape position: Depressions
Size of areas: 2 to 8 acres
Slope range: 0 to 2 percent
Parent material: Silty alluvium

Composition

Nolin soil and similar inclusions: 90 percent

Contrasting Inclusions

• Newark and Lindside soils

Typical Profile

Surface layer:
0 to 9 inches—brown silt loam

Subsoil:
9 to 65 inches—dark yellowish brown silt loam

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Soil reaction: Strongly acid to moderately alkaline
High water table: At the surface to a depth of more than 6 feet
Ponding: Frequent for brief periods from December through May
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Poorly suited
Management measures and considerations:
• The ponding limits the planting and harvesting of many early season crops and small grains.
• Because of the risk of ponding, planting short-season annuals, such as soybeans, later in spring is recommended.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Suited
Management measures and considerations:
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Grazing should be deferred until later in spring or until early summer, when the risk of ponding has receded.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Unsuited
Management measures and considerations:
• This soil is unsuited to dwellings because of the instability of sinkholes and the risk of ponding.
• Other sites in the survey area should be considered for dwellings.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
• This soil is unsuited to septic tank filter fields because of the risk of ponding and the possibility of collapse into ground-water aquifers.

Interpretive Groups

Land capability classification: 3w

OtA—Otwood silt loam, 0 to 2 percent slopes, rarely flooded

Setting

Landscape position: Nearly level stream terraces
Size of areas: 4 to 18 acres

Slope range: 0 to 2 percent
Parent material: Silty alluvium

Composition

Otwood soil and similar inclusions: 90 percent

Contrasting Inclusions

• Lawrence, Lindside, Newark, Nolin, and Elk soils

Typical Profile

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

Subsoil:
6 to 20 inches—yellowish brown and brown silt loam that has pale brown and yellowish brown mottles
20 to 28 inches—pale brown silt loam that has gray and yellowish brown mottles
28 to 37 inches—light brownish gray and pale brown silt loam fragipan that has brown and yellowish brown mottles
37 to 44 inches—light brownish gray silt loam that has pale brown and very pale brown mottles
44 to 80 inches—brown silt loam that has brown and black mottles

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and slow or very slow in the fragipan
Available water capacity: High
Soil reaction: Strongly acid to slightly acid
High water table: At a depth of 1.5 to 2.0 feet from December through April
Flooding: Rare
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Well suited
Management measures and considerations:
• Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
• Planting later in spring, when the water table has receded, helps to prevent crusting and rutting of the soil surface.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
• Selecting forage plants that can tolerate short periods of wetness, such as tall fescue and ladino clover, is recommended.
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Deferring livestock grazing until later in spring or until early summer, when the water table has receded, helps to prevent soil compaction and improve forage growth.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Unsuited
Management measures and considerations:
• This soil is poorly suited to dwellings because of the risk of flooding, seasonal wetness caused by the perched water table, and slow permeability in the subsoil.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
• This soil is poorly suited to septic tank filter fields because of the risk of flooding, high water table, and very slow permeability.

Interpretive Groups

Land capability classification: 2w

OtB—Otwood silt loam, 2 to 6 percent slopes, rarely flooded

Setting

Landscape position: Undulating stream terraces
Size of areas: 2 to 30 acres
Slope range: 2 to 6 percent
Parent material: Silty alluvium

Composition

Otwood soil and similar inclusions: 90 percent

Contrasting Inclusions

• Lawrence, Lindside, Newark, Nolin, and Elk soils

Figure 6.—Corn residue on Otwood silt loam, 2 to 6 percent slopes, rarely flooded. This soil is well suited to most crops if they are planted later in spring, after the risk of flooding has passed.

Typical Profile

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

Subsoil:
6 to 20 inches—yellowish brown and brown silt loam that has pale brown and yellowish brown mottles
20 to 28 inches—pale brown silt loam that has gray and yellowish brown mottles
28 to 37 inches—light brownish gray and pale brown silt loam fragipan that has brown and yellowish brown mottles
37 to 44 inches—light brownish gray silt loam that has pale brown and very pale brown mottles
44 to 80 inches—brown silt loam that has brown and black mottles

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and slow or very slow in the fragipan
Available water capacity: High
Soil reaction: Strongly acid to slightly acid
High water table: At a depth of 1.5 to 2.0 feet from December through April
Flooding: Rare
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Well suited (fig. 6)

Management measures and considerations:
• Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
• Planting later in spring, when the water table has receded, helps to prevent crusting and rutting of the soil surface.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
• Selecting forage plants that can tolerate short periods of wetness, such as tall fescue and ladino clover, is recommended.
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Deferring livestock grazing until later in spring or until early summer, when the water table has receded, helps to prevent soil compaction and improve forage growth.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Unsuited
Management measures and considerations:
• This soil is poorly suited to dwellings because of the risk of flooding, seasonal wetness caused by the perched water table, and slow permeability in the subsoil.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
• This soil is poorly suited to septic tank filter fields because of the risk of flooding, high water table, and very slow permeability.

Interpretive Groups

Land capability classification: 2e

PbA—Pembroke silt loam, 0 to 2 percent slopes

Setting

Landscape position: Nearly level ridges
Size of areas: 3 to 15 acres
Slope range: 0 to 2 percent
Parent material: Loess and residuum from limestone

Composition

Pembroke soil and similar inclusions: 90 percent

Contrasting Inclusions

• Nicholson, Vertrees, and Fredonia soils

Typical Profile

Surface layer:
0 to 9 inches—dark brown silt loam

Subsoil:
9 to 18 inches—reddish brown silt loam
18 to 62 inches—yellowish red, red, and dark red silty clay loam
62 to 80 inches—dark red silty clay

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate or moderately slow
Available water capacity: High
Soil reaction: Moderately acid to very strongly acid
High water table: None
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Well suited
Management measures and considerations:
• Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Well suited
Management measures and considerations:
• Careful use of equipment and good design practices prevent the runoff of off-site sediments.

Septic tank absorption fields

Suitability: Well suited
Management measures and considerations:
• An onsite investigation is needed in eroded areas to determine a suitable site.

Interpretive Groups

Land capability classification: 1

PeA—Pembroke-Urban land complex, 0 to 2 percent slopes

Setting

Location: In and around the city of Bowling Green

Composition

Pembroke soil and similar inclusions: 65 percent
Urban land: 25 percent

Contrasting Inclusions

• Nolin, Crider, Nicholson, and Vertrees soils and Udorthents

Typical Profile

Pembroke

Surface layer:
0 to 9 inches—dark brown silt loam

Subsoil:
9 to 18 inches—reddish brown silt loam
18 to 62 inches—yellowish red, red, and dark red silty clay loam
62 to 80 inches—dark red silty clay

Urban land

Most of the Urban land consists of areas where 85 to 90 percent of the surface is covered by streets, buildings, parking lots, driveways, railroad yards, or airports. The remainder consists of cut and fill areas of soil material imported onto the site or disturbed in the process of urbanization.

Soil Properties and Qualities

• See the interpretations tables for map units in urban areas.

Use and Management

Residential and commercial structures

Suitability: Well suited
Management measures and considerations:
• Designing structures that conform to the natural slope reduces the amount of cutting or filling needed.
• Topsoil may need to be stockpiled and used to reclaim areas that are disturbed during construction.
• Careful use of equipment and good site conservation measures prevent the discharge of sediment onto adjacent property or into streams.
• Soil compaction is a problem around construction sites. Sites may require aeration or deep tillage and reseeding.
• Yards may be subject to periods of flooding if the soil is compacted. Shallow diversions may be needed to remove surface runoff and ponding in low areas.
• Diverting runoff from gutters and driveways away from structures reduces the chance of differential settling.

Septic tank absorption fields

Suitability: Well suited
Management measures and considerations:
• Most areas of this map unit can be used for septic tank filter fields.

Interpretive Groups

Land capability classification: None assigned

Pm—Pits, loamy, frequently flooded

Setting

Location: In and around the city of Bowling Green on flood plains
Size of areas: 3 to 19 acres

Composition

Approximately 95 percent of this map unit consists of excavated loamy material that was deposited by streams or rivers. Approximately 5 percent of the map unit consists of areas that have not been disturbed and piles of loamy alluvial material that has been exposed.

Use and Management

This map unit has one active pit and several pits that have been abandoned. The soil is excavated for use as fill cover, topsoil, daily cover for landfill, and other landscaping needs. Most pits are rough and difficult to traverse, and some are 20 feet deep or more.

Interpretive Groups

Land capability classification: None assigned

Pq—Pits, quarry

Setting

Location: In and around the city of Bowling Green
Size of areas: 2 to 10 acres

Composition

Approximately 90 percent of this map unit consists of excavated pits with exposed limestone walls. Most pits have vertical walls extending to a depth of 50 feet or more. Some pits are filled with water. Approximately 10 percent of the map unit consists of areas of spoil material made up of limestone rock and soil material.

Use and Management

This map unit has one active quarry and several quarries that have been abandoned. The soil is excavated and set aside for reclamation or sold as topsoil or fill material. The pits consist of nearly vertical walls of limestone rock and are 50 feet or more deep. The rock material is removed and processed into various sizes for commercial use. The processed and graded rock is used in the construction and highway industries.

Interpretive Groups

Land capability classification: None assigned

RaF—Ramsey-Frondorf complex, 20 to 60 percent slopes

Setting

Landscape position: Steep hillsides
Size of areas: 15 to 500 acres
Slope range: 20 to 60 percent
Parent material: Residuum from sandstone

Composition

Ramsey soil: 75 percent
Frondorf soil: 20 percent

Inclusions

- Wellston soils and areas of rock outcrop

Typical Profile

Ramsey

Surface layer:
0 to 1 inch—dark grayish brown loam

Subsurface layer:
1 to 4 inches—brown channery loam

Subsoil:
4 to 12 inches—yellowish brown channery loam
12 to 19 inches—light yellowish brown channery loam
19 inches—sandstone bedrock

Frondorf

Surface layer:
0 to 5 inches—brown silt loam

Subsoil:
5 to 18 inches—strong brown and yellowish brown silty clay loam
18 to 26 inches—very channery silty clay loam
26 inches—hard sandstone

Soil Properties and Qualities

Drainage class: Ramsey—somewhat excessively drained; Frondorf—well drained
Permeability: Ramsey—rapid; Frondorf—moderately rapid
Available water capacity: Low
Soil reaction: Strongly acid or very strongly acid
High water table: None
Depth to bedrock: Ramsey—less than 20 inches; Frondorf—20 to 40 inches

Use and Management

Cropland

Suitability: Unsuited
Management measures and considerations:
- These soils are unsuited to cropland because of the slope, low available water capacity, and depth to bedrock.

Pasture and hay

Suitability: Unsuited
Management measures and considerations:
- These soils are unsuited to pasture and hay because of the slope, low available water capacity, and difficulty in operating farm machinery.

Woodland

Suitability: Poorly suited

Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Unsuited
Management measures and considerations:
• These soils are unsuited to dwellings and commercial structures because of the slope and depth to bedrock.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
• These soils are unsuited to septic tank filter fields because of the depth to bedrock and slope.

Interpretive Groups

Land capability classification: 7s

Ro—Robertsville silt loam, ponded

Setting

Landscape position: Nearly level stream terraces and flood plain depressions
Size of areas: 3 to 90 acres
Slope range: 0 to 2 percent
Parent material: Silty alluvium

Composition

Robertsville soil and similar inclusions: 90 percent

Contrasting Inclusions

• Lawrence, Newark, Melvin, and Dunning soils

Typical Profile

Surface layer:
0 to 10 inches—dark grayish brown silt loam that has brown mottles

Subsoil:
10 to 28 inches—light gray silt loam that has brown mottles
28 to 40 inches—gray silty clay loam fragipan that has brown and black mottles

Substratum:
40 to 71 inches—gray, red, and yellowish red silty clay

Soil Properties and Qualities

Drainage class: Poorly drained
Permeability: Moderate above the fragipan and slow or very slow in the fragipan
Available water capacity: High
Soil reaction: Strongly acid to extremely acid
High water table: At or above the surface from December through May
Ponding: Frequent for long to brief periods from December through May
Flooding: Frequent for brief periods from December through April
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Poorly suited
Management measures and considerations:
• In previously drained areas, planting and harvesting operations can be hindered by wetness or ponding.
• This soil is subject to crusting and clodding if tilled when the moisture content is high.

Pasture and hay

Suitability: Suited
Management measures and considerations:
• Selecting forage plants that can tolerate saturated conditions for extended periods is recommended.
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Deferring livestock grazing until early summer helps to minimize compaction of the soil surface and prevent damage to forages.

Woodland

Suitability: Poorly suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Unsuited
Management measures and considerations:
• Because of the seasonal wetness, flooding, and ponding, this soil is unsuited to residential and commercial structures.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
• Because of the seasonal high water table, flooding, and ponding, this soil is unsuited to septic tank filter fields.

Interpretive Groups

Land capability classification: 4w

RxF—Rock outcrop-Caneyville complex, 20 to 60 percent slopes

Setting

Landscape position: Steep hillsides
Size of areas: 7 to 100 acres
Slope range: 20 to 60 percent
Parent material: Limestone bedrock and residuum from limestone

Composition

Rock outcrop: 55 percent
Caneyville soil: 33 percent

Inclusions

- Fredonia and Vertrees soils

Typical Profile

Rock outcrop

This part of the map unit consists of large outcrops of limestone that extend from several inches to 3 feet above the soil surface in horizontal bands, or it occurs as individual blocks of limestone protruding from the surface. Also included are nearly vertical bluffs of limestone that extend from 25 to more than 100 feet in height.

Caneyville

Surface layer:
0 to 6 inches—brown silt loam

Subsoil:
6 to 11 inches—yellowish red silty clay
11 to 21 inches—yellowish red clay
21 to 27 inches—dark reddish brown clay
27 inches—limestone bedrock

Properties and Qualities of the Caneyville Soil

Drainage class: Well drained
Permeability: Slow or very slow
Available water capacity: Low
Soil reaction: Strongly acid or moderately acid
High water table: None
Depth to bedrock: 20 to 40 inches

Use and Management

Cropland

Suitability: Unsuited
Management measures and considerations:
- This map unit is unsuited to cropland because of the numerous rock outcrops, slope, low available water capacity, and depth to bedrock.

Pasture and hay

Suitability: Unsuited
Management measures and considerations:
- This map unit is unsuited to pasture and hay because of the numerous rock outcrops, slope, low available water capacity, and difficulty in operating farm machinery.

Woodland

Suitability: Poorly suited
Management measures and considerations:
- See the tables on forest productivity and forestland management.

Dwellings

Suitability: Unsuited
Management measures and considerations:
- This map unit is unsuited to dwellings and commercial structures because of the numerous rock outcrops, slope, and depth to bedrock.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
- This map unit is unsuited to septic tank filter fields because of the numerous rock outcrops, depth to bedrock, and slope.

Interpretive Groups

Land capability classification: 7s

SaA—Sadler silt loam, 0 to 2 percent slopes

Setting

Landscape position: Nearly level ridgetops
Size of areas: 2 to 20 acres
Slope range: 0 to 2 percent
Parent material: Loess and residuum of sandstone

Composition

Sadler soil and similar inclusions: 85 percent

Contrasting Inclusions

- Zanesville, Frondorf, Wellston, and Newark soils

Typical Profile

Surface layer:
0 to 9 inches—brown silt loam

Subsoil:
9 to 23 inches—brownish yellow silty clay loam that has yellowish brown and brown mottles

23 to 26 inches—brown and yellowish brown silt loam that has pale brown and light brownish gray mottles
26 to 56 inches—brownish yellow, grayish brown, and yellowish brown silty clay loam fragipan that has light yellowish brown, brown, and black mottles
56 to 65 inches—light brownish gray silt loam that has gray, strong brown, and black mottles
65 inches—hard sandstone bedrock

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and slow or very slow in the fragipan
Available water capacity: High
Soil reaction: Strongly acid or very strongly acid
High water table: At a depth of 1.5 to 2.0 feet from December through April
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Well suited
Management measures and considerations:
• Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
• Planting later in spring, when the water table has receded, helps to prevent crusting and rutting of the soil surface.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
• Selecting forage plants that can tolerate short periods of wetness, such as tall fescue and ladino clover, is recommended.
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Deferring livestock grazing until later in spring or until early summer, when the water table has receded, helps to prevent soil compaction and improve forage growth.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Poorly suited
Management measures and considerations:
• This soil is poorly suited to dwellings because of the seasonal wetness caused by the perched water table and slow permeability in the subsoil.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
• This soil is poorly suited to septic tank filter fields because of the high water table and very slow permeability.

Interpretive Groups

Land capability classification: 2w

SaB—Sadler silt loam, 2 to 6 percent slopes

Setting

Landscape position: Undulating ridges
Size of areas: 4 to 90 acres
Slope range: 2 to 6 percent
Parent material: Loess and residuum of sandstone

Composition

Sadler soil and similar inclusions: 85 percent

Contrasting Inclusions

• Zanesville, Frondorf, Lawrence, Newark, and Wellston soils

Typical Profile

Surface layer:
0 to 9 inches—brown silt loam

Subsoil:
9 to 23 inches—brownish yellow silty clay loam that has yellowish brown and brown mottles
23 to 26 inches—brown and yellowish brown silt loam that has pale brown and light brownish gray mottles
26 to 56 inches—brownish yellow, grayish brown, and yellowish brown silty clay loam fragipan that has light yellowish brown, brown, and black mottles
56 to 65 inches—light brownish gray silt loam that has gray, strong brown, and black mottles
65 inches—hard sandstone bedrock

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and slow or very slow in the fragipan
Available water capacity: High
Soil reaction: Strongly acid or very strongly acid
High water table: At a depth of 1.5 to 2.0 feet from December through April
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Well suited
Management measures and considerations:
• Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
• Planting later in spring, when the water table has receded, helps to prevent crusting and rutting of the soil surface.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
• Selecting forage plants that can tolerate short periods of wetness, such as tall fescue and ladino clover, is recommended.
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Deferring livestock grazing until later in spring or until early summer, when the water table has receded, helps to prevent soil compaction and improve forage growth.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Poorly suited
Management measures and considerations:
• This soil is poorly suited to dwellings because of the seasonal wetness caused by the perched water table and slow permeability in the subsoil.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
• This soil is poorly suited to septic tank filter fields because of the high water table and very slow permeability.

Interpretive Groups

Land capability classification: 2e

UaC—Udorthents, 0 to 20 percent slopes

Setting

Location: In and around the city of Bowling Green

Composition

Udorthents: 95 percent

Inclusions

• Crider, Vertrees, and Pembroke soils

Typical Profile

This map unit consists of nearly level to moderately steep areas of soils and rock material that have been cut, graded, and filled during the process of urbanization. Most of the natural soil has been removed or altered to the extent that it no longer can be classified at the series level.

Soil Properties and Qualities

In most areas of the map unit, the surface is covered with broken bits of concrete, bricks, limestone rock, debris from construction, and clay or other fill materials (fig. 7). These materials are more than 8 feet deep in some areas.

Use and Management

All intended uses require an onsite investigation and careful examination of existing materials at the site.

Interpretive Groups

Land capability classification: None assigned

UaD—Udorthents, refuse substratum, 0 to 25 percent slopes

Setting

Location: In and around the city of Bowling Green

Figure 7.—An area of Udorthents, 0 to 20 percent slopes. Most areas of this map unit are covered with broken bits of concrete, bricks, limestone rock, debris from construction, and clay or other fill materials.

Composition

Udorthents: 95 percent

Inclusions

- Crider, Vertrees, and Pembroke soils

Typical Profile

This map unit is made up of reclaimed areas that were previously used as solid waste landfills. It consists of nearly level to moderately steep areas of soils and rock material that have been filled during the process of solid waste disposal. The natural soil has been removed and redeposited in alternating layers with solid waste material at varying depths.

Soil Properties and Qualities

In most areas of the map unit, the surface has been smoothed and graded and planted in grass and legumes.

Use and Management

The primary uses of this map unit are athletic fields, picnic areas, and small parks. Most areas are established in stands of grass and legumes. Some areas have been planted in small shrubs and trees.

Interpretive Groups

Land capability classification: None assigned

Ub—Urban land-Udorthents complex, 0 to 12 percent slopes

Setting

Location: In and around the city of Bowling Green

Composition

Urban land: 75 percent
Udorthents: 22 percent

Inclusions

- Crider, Nicholson, and Baxter soils

Typical Profile

Urban land

Most of the Urban land consists of areas where 85 to 90 percent of the surface is covered by streets, buildings, parking lots, driveways, railroad yards, or airports. The remainder consists of cut and fill areas of soil material imported onto the site or disturbed in the process of urbanization.

Udorthents

This part of the map unit consists of nearly level and rolling areas of soils and rock material that have been cut, graded, and filled during the process of urbanization. Most of the natural soil has been removed or altered to the extent that it no longer can be classified at the series level.

Soil Properties and Qualities

- See the interpretations tables for map units in urban areas.

Use and Management

Residential and commercial structures

Suitability: Suited
Management measures and considerations:
- Designing structures that conform to the natural slope reduces the amount of cutting or filling needed.
- Topsoil may need to be stockpiled and used to reclaim areas that are disturbed during construction.
- Careful use of equipment and good site conservation measures prevent the discharge of sediment onto adjacent property or into streams.
- Soil compaction is a problem around construction sites. Sites may require aeration or deep tillage and reseeding.
- Yards may be subject to periods of flooding if the soil is compacted. Shallow diversions may be needed to remove surface runoff and ponding in low areas.
- Diverting runoff from gutters and driveways away from structures reduces the chance of differential settling.

Septic tank absorption fields

Suitability: Unknown
Management measures and considerations:
- All areas of this map unit require an onsite investigation if the unit is to be used for septic tank filter fields.

Interpretive Groups

Land capability classification: None assigned

Uc—Urban land-Udorthents complex, clayey substratum, hard bedrock 0-5 feet, 0 to 12 percent slopes

Setting

Location: In and around the city of Bowling Green

Composition

Urban land: 50 percent
Udorthents: 30 percent

Inclusions

- Crider, Vertrees, Caneyville, and Baxter soils

Typical Profile

Urban land

Most of the Urban land consists of areas where 85 to 90 percent of the surface is covered by streets, buildings, parking lots, driveways, railroad yards, or airports. The remainder consists of cut and fill areas of soil material imported onto the site or disturbed in the process of urbanization.

Udorthents

This part of the map unit consists of nearly level and rolling areas of soils and rock material that have been cut, graded, and filled during the process of urbanization. Most of the natural soil has been removed or altered to the extent that it no longer can be classified at the series level. The soil material consists of reworked clay mixed with chert gravel and cobbles. Hard limestone bedrock is at a depth of less than 5 feet.

Soil Properties and Qualities

- See the interpretations tables for map units in urban areas.

Use and Management

Residential and commercial structures

Suitability: Suited (fig. 8)
Management measures and considerations:
- The design of structures and driveways should conform to the natural slope, and shallower excavations should be considered because of the depth to hard bedrock.
- Design modifications that overcome the shrink-swell potential are needed for excavations.

Figure 8.—An area of Urban land-Udorthents complex, clayey substratum, hard bedrock 0-5 feet, 0 to 12 percent slopes. Excavations are limited to dwellings without basements because of the depth to bedrock.

• Stockpiling topsoil, if available, or planning to import topsoil to the site is necessary in order to reclaim areas disturbed during construction.
• Careful use of equipment and good site conservation measures prevent the discharge of sediment onto adjacent property or into streams.
• Soil compaction is a severe problem around construction sites. Sites require aeration or deep tillage and reseeding.
• Yards may be subject to ponding in low areas where the soil is compacted. Shallow diversions may be needed to remove surface runoff from low areas.
• Diverting runoff from gutters and driveways away from structures reduces the chance of differential settling.

Septic tank absorption fields

Suitability: Unsuited

Management measures and considerations:
• All areas of this map unit require central sewerage because of the slow or very slow permeability in the subsoil and the depth to hard bedrock.

Interpretive Groups

Land capability classification: None assigned

Ud—Urban land-Udorthents complex, clayey substratum, hard bedrock >5 feet, 0 to 12 percent slopes

Setting

Location: In and around the city of Bowling Green

Composition

Urban land: 75 percent
Udorthents: 20 percent

Inclusions

- Crider, Vertrees, Caneyville, and Baxter soils

Typical Profile

Urban land

Most of the Urban land consists of areas where 85 to 90 percent of the surface is covered by streets, buildings, parking lots, driveways, railroad yards, or airports. The remainder consists of cut and fill areas of soil material imported onto the site or disturbed in the process of urbanization.

Udorthents

This part of the map unit consists of nearly level and rolling areas of soils and rock material that have been cut, graded, and filled during the process of urbanization. Most of the natural soil has been removed or altered to the extent that it no longer can be classified at the series level. The soil material consists of reworked clay mixed with chert gravel and cobbles. Hard limestone bedrock is at a depth of more than 5 feet.

Soil Properties and Qualities

- See the interpretations tables for map units in urban areas.

Use and Management

Residential and commercial structures

Suitability: Suited
Management measures and considerations:
- Designing structures that conform to the natural slope reduces the amount of cutting or filling needed.
- Design modifications that overcome the shrink-swell potential are needed in areas of deep excavations.
- Stockpiling topsoil, if available, or planning to import topsoil to the site is necessary in order to reclaim areas disturbed during construction.
- Careful use of equipment and good site conservation measures prevent the discharge of sediment onto adjacent property or into streams.
- Soil compaction is a severe problem around construction sites. Sites require aeration or deep tillage and reseeding.
- Yards may be subject to ponding in low areas where the soil is compacted. Shallow diversions may be needed to remove surface runoff from low areas.
- Diverting runoff from gutters and driveways away from structures reduces the chance of differential settling.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
- All areas of this map unit require central sewerage because of the slow or very slow permeability in the subsoil and soil compaction.

Interpretive Groups

Land capability classification: None assigned

Us—Urban land-Udorthents complex, smoothed, 0 to 15 percent slopes

Setting

Location: Primarily on Interstate 65 and major U.S. and State highways bisecting Warren County and around the city of Bowling Green

Composition

Urban land: 60 percent
Udorthents: 40 percent

Typical Profile

Urban land

Urban land mainly consists of areas where the surface is covered by asphalt, such as major highway lanes, parking areas, and access ramps.

Udorthents

This part of the map unit consists of nearly level to moderately steep areas of soil and rock material that have been filled, shaped, and graded for road shoulders and medians between road surfaces.

Soil Properties and Qualities

- See the interpretations tables for map units in urban areas.

Use and Management

Residential and commercial structures

Suitability: Unsuited
Management measures and considerations:
- This map unit consists of soil material used for major highways and is unsuited to use for structures.

Septic tank absorption fields

Suitability: Unsuited
Management measures and considerations:
- All areas in this map unit are in major highways and are not suited to use as septic tank filter fields.

Interpretive Groups

Land capability classification: None assigned

VrC3—Vertrees silty clay loam, 6 to 12 percent slopes, severely eroded

Setting

Landscape position: Side slopes and areas around the rims of depressions
Size of areas: 3 to 25 acres
Slope range: 6 to 12 percent
Parent material: Residuum from limestone

Composition

Vertrees soil and similar inclusions: 85 percent

Contrasting Inclusions

• Crider, Newark, Nolin, Baxter, and Fredonia soils

Typical Profile

Surface layer:
0 to 3 inches—reddish brown silty clay loam

Subsoil:
3 to 20 inches—red clay
20 to 80 inches—dusky red clay

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderately slow or slow
Available water capacity: Moderate
Soil reaction: Strongly acid or moderately acid
High water table: None
Depth to bedrock: More than 60 inches

Use and Management

Cropland

Suitability: Suited
Management measures and considerations:
• Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Suited
Management measures and considerations:
• Areas around sinkholes are unstable and have a considerable risk of collapse if used for dwellings.
• Structures should be designed so that they conform to the natural slope.
• Topsoil should be stockpiled and used to reclaim areas that are disturbed during construction.
• Design modifications that overcome the shrink-swell potential are needed in areas of deep excavations.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
• This soil is limited for septic systems because of the slow permeability, slope, and moderate shrink-swell potential in the lower part of the subsoil.
• An onsite investigation is needed to determine site suitability and design.

Interpretive Groups

Land capability classification: 4e

VtC3—Vertrees-Urban land complex, 6 to 12 percent slopes, severely eroded

Setting

Location: In and around the city of Bowling Green

Composition

Vertrees soil and similar inclusions: 60 percent
Urban land: 25 percent

Contrasting Inclusions

• Udorthents and Baxter, Newark, and Nolin soils

Typical Profile

Vertrees

Surface layer:
0 to 3 inches—reddish brown silty clay loam

Subsoil:
3 to 20 inches—red clay
20 to 80 inches—dusky red clay

Urban land

Most of the Urban land consists of areas where 85 to 90 percent of the surface is covered by streets, buildings, parking lots, driveways, railroad yards, or airports. The remainder consists of cut and fill areas of soil material imported onto the site or disturbed in the process of urbanization.

Soil Properties and Qualities

• See the interpretations tables for map units in urban areas.

Use and Management

Residential and commercial structures

Suitability: Suited
Management measures and considerations:
• Designing structures that conform to the natural slope reduces the amount of cutting or filling needed.
• Topsoil may need to be stockpiled and used to reclaim areas that are disturbed during construction.
• Careful use of equipment and good site conservation measures prevent the discharge of sediment onto adjacent property or into streams.
• Soil compaction is a problem around construction sites. Sites may require aeration or deep tillage and reseeding.
• Yards may be subject to rill and gully erosion if the soil is compacted. Shallow diversions may be needed to remove surface runoff.
• Modifications in the design of footings and basements that overcome the shrink-swell potential are needed in areas of deep excavations.
• Diverting runoff from gutters and driveways away from structures reduces the chance of differential settling or cracking of foundations caused by the shrink-swell potential.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
• This soil is limited for septic systems because of the slow permeability and moderate shrink-swell potential in the lower part of the subsoil.
• Lot design for structures and driveways needs to allow sufficient area for a septic field and conform to the slope.
• An onsite investigation is needed to determine a suitable site.

Interpretive Groups

Land capability classification: None assigned

W—Water

Setting

This map unit consists of small to large constructed or natural bodies of water. It includes small tributaries, creeks, and rivers and water areas at the head of drainageways and in depressions. It occurs throughout the survey area. This unit makes up 3,650 acres in Warren County. Individual areas are irregular in shape and range from 3 to more than 89 acres in size.

Composition

This map unit includes small ponds and moderately sized impoundments, such as Shanty Hollow Lake and Dewey Lake. Several major rivers and large streams flow through the survey area. They include the Green, Barren, and Gasper Rivers and Drake's Creek.

Use and Management

This map unit is used for fishing, canoeing, and other recreational activities, as a source of municipal and irrigation water storage, and for fire protection.

Interpretive Groups

Land capability classification: None assigned

WeB—Wellston silt loam, 2 to 6 percent slopes

Setting

Landscape position: Undulating ridges
Size of areas: 2 to 15 acres
Slope range: 2 to 6 percent
Parent material: Loess and residuum from sandstone

Composition

Wellston soil and similar inclusions: 90 percent

Contrasting Inclusions

• Zanesville, Sadler, Frondorf, and Newark soils

Typical Profile

Surface layer:
0 to 8 inches—brown silt loam

Subsurface layer:
8 to 13 inches—yellowish brown silt loam

Subsoil:
13 to 30 inches—strong brown silty clay loam that has brown and pale brown mottles
30 to 46 inches—strong brown gravelly clay loam
46 inches—hard sandstone bedrock

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Soil reaction: Strongly acid or very strongly acid
High water table: None
Depth to bedrock: 40 to 60 inches

Use and Management

Cropland

Suitability: Well suited
Management measures and considerations:
• Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Well suited
Management measures and considerations:
• Careful use of equipment and good design practices prevent the runoff of off-site sediments.
• Deep excavations are limited by the depth to bedrock.

Septic tank absorption fields

Suitability: Suited
Management measures and considerations:
• The depth to bedrock is a limitation affecting filter field trenches.
• An onsite investigation is needed in eroded areas to determine a suitable site.

Interpretive Groups

Land capability classification: 2e

WeC2—Wellston silt loam, 6 to 12 percent slopes, eroded

Setting

Landscape position: Rolling ridges
Size of areas: 2 to 30 acres
Slope range: 6 to 12 percent
Parent material: Loess and residuum from sandstone

Composition

Wellston soil and similar inclusions: 85 percent

Contrasting Inclusions

• Zanesville, Sadler, Frondorf, and Newark soils

Typical Profile

Surface layer:
0 to 5 inches—brown silt loam

Subsoil:
5 to 30 inches—strong brown silty clay loam
30 to 46 inches—strong brown gravelly clay loam
46 inches—hard sandstone bedrock

Soil Properties and Qualities

Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Soil reaction: Strongly acid or very strongly acid
High water table: None
Depth to bedrock: 40 to 60 inches

Use and Management

Cropland

Suitability: Suited
Management measures and considerations:
• Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Suited
Management measures and considerations:
• Structures should be designed so that they conform to the natural slope.
• Topsoil should be stockpiled and used to reclaim areas that are disturbed during construction.
• Careful use of equipment and good design practices prevent the runoff of off-site sediments.
• Deep excavations are limited by the depth to bedrock.

Septic tank absorption fields

Suitability: Suited
Management measures and considerations:
• Filter lines should be installed on the contour and conform to the slope.
• An onsite investigation is needed in eroded areas to determine a suitable site.
• The depth to bedrock is a limitation affecting filter field trenches.

Interpretive Groups

Land capability classification: 3e

ZaB—Zanesville silt loam, 2 to 6 percent slopes

Setting

Landscape position: Undulating ridges
Size of areas: 2 to 200 acres
Slope range: 2 to 6 percent
Parent material: Loess and residuum of sandstone

Composition

Zanesville soil and similar inclusions: 85 percent

Contrasting Inclusions

• Lawrence, Sadler, Frondorf, Ramsey, and Wellston soils

Typical Profile

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

Subsoil:
8 to 16 inches—strong brown silty clay loam
16 to 23 inches—yellowish brown silty clay loam
23 to 35 inches—yellowish brown silty clay loam fragipan that has gray and brown mottles
35 to 45 inches—yellowish brown silty clay loam fragipan that has gray mottles

Substratum:
45 to 56 inches—yellowish brown clay loam that has gray mottles
56 inches—hard sandstone bedrock

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and slow or very slow in the fragipan
Available water capacity: High
Soil reaction: Strongly acid or very strongly acid
High water table: At a depth of 1.5 to 2.0 feet from December through April
Depth to bedrock: 40 to 60 inches

Use and Management

Cropland

Suitability: Well suited
Management measures and considerations:
• Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
• Planting later in spring, when the water table has receded, helps to prevent crusting and rutting of the soil surface.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
• Selecting forage plants that can tolerate short periods of wetness, such as tall fescue and ladino clover, is recommended.
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.

• Deferring livestock grazing until later in spring or until early summer, when the water table has receded, helps to prevent soil compaction and improve forage growth.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Poorly suited
Management measures and considerations:
• This soil is poorly suited to dwellings because of the seasonal wetness caused by the perched water table and slow permeability in the subsoil.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
• This soil is poorly suited to septic tank filter fields because of the high water table and very slow permeability.

Interpretive Groups

Land capability classification: 2e

ZaC2—Zanesville silt loam, 6 to 12 percent slopes, eroded

Setting

Landscape position: Rolling ridges and side slopes
Size of areas: 5 to 65 acres
Slope range: 6 to 12 percent
Parent material: Loess and residuum of sandstone

Composition

Zanesville soil and similar inclusions: 80 percent

Contrasting Inclusions

• Frondorf, Sadler, Ramsey, and Wellston soils

Typical Profile

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

Subsoil:
5 to 20 inches—yellowish brown silty clay loam
20 to 45 inches—yellowish brown silt loam fragipan that has gray and brown mottles

Substratum:
45 to 56 inches—yellowish brown clay loam that has gray, brown, and black mottles
56 inches—hard sandstone bedrock

Soil Properties and Qualities

Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and slow or very slow in the fragipan
Available water capacity: High
Soil reaction: Strongly acid to slightly acid
High water table: At a depth of 1.5 to 2.0 feet from December through April
Depth to bedrock: 40 to 60 inches

Use and Management

Cropland

Suitability: Suited
Management measures and considerations:
• Practices that include minimum tillage or no-till planting, farming on the contour, grassed waterways, and winter cover crops reduce the risk of soil erosion.
• Planting later in spring, when the water table has receded, helps to prevent crusting and rutting of the soil surface.
• Nutrient management practices, such as soil tests, returning crop residue to the soil, and timing of fertilizer and chemical treatments, help to improve soil health and productivity.

Pasture and hay

Suitability: Well suited
Management measures and considerations:
• Selecting forage plants that can tolerate short periods of wetness, such as tall fescue and ladino clover, is recommended.
• Periodic clipping and mowing helps to maintain uniform growth and discourages weed competition.
• Deferring livestock grazing until later in spring or until early summer, when the water table has receded, helps to prevent soil compaction and improve forage growth.
• Proper stocking rates, lime and fertilizer programs, and pasture rotation increase the quality and quantity of forages.

Woodland

Suitability: Well suited
Management measures and considerations:
• See the tables on forest productivity and forestland management.

Dwellings

Suitability: Poorly suited
Management measures and considerations:
• This soil is poorly suited to dwellings because of the slope, seasonal wetness caused by the perched water table, and slow permeability in the subsoil.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
• This soil is poorly suited to septic tank filter fields because of the slope, high water table, and very slow permeability.

Interpretive Groups

Land capability classification: 3e

ZuB—Zanesville-Urban land complex, 2 to 6 percent slopes

Setting

Location: In and around the city of Richardsville

Composition

Zanesville soil and similar inclusions: 65 percent
Urban land: 25 percent

Contrasting Inclusions

• Wellston, Frondorf, Lawrence, and Sadler soils and Udorthents

Typical Profile

Zanesville

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

Subsoil:
8 to 16 inches—strong brown silty clay loam
16 to 23 inches—yellowish brown silty clay loam
23 to 35 inches—yellowish brown silty clay loam fragipan that has gray and brown mottles
35 to 45 inches—yellowish brown silty clay loam fragipan that has gray mottles

Substratum:
45 to 56 inches—yellowish brown clay loam that has gray mottles
56 inches—hard sandstone bedrock

Urban land

Most of the Urban land consists of areas where 85 to 90 percent of the surface is covered by streets, buildings, parking lots, driveways, railroad yards, or airports. The remainder consists of cut and fill areas of soil material imported onto the site or disturbed in the process of urbanization.

Soil Properties and Qualities

• See the interpretations tables for map units in urban areas.

Use and Management

Residential and commercial structures

Suitability: Suited
Management measures and considerations:
• Designing structures that conform to the natural slope reduces the amount of cutting or filling needed.
• Topsoil may need to be stockpiled and used to reclaim areas that are disturbed during construction.
• Careful use of equipment and good site conservation measures prevent the discharge of sediment onto adjacent property or into streams.
• Soil compaction is a problem around construction sites. Sites may require aeration or deep tillage and reseeding.
• Yards may be subject to periods of ponding if the soil is compacted. Shallow diversions may be needed to remove surface runoff from low areas.
• Modifications in the design of footings and basements that overcome the depth to bedrock limitation are needed in areas of deep excavations.
• Diverting runoff from gutters and driveways away from structures reduces the chance of differential settling or cracking of foundations.

Septic tank absorption fields

Suitability: Poorly suited
Management measures and considerations:
• The Zanesville soil is limited for septic systems because of the slow permeability and wetness caused by the perched water table.
• Lot design for structures and driveways needs to allow sufficient area for a septic field.
• An onsite investigation is needed to determine site suitability.

Interpretive Groups

Land capability classification: None assigned

Use and Management of the Soils

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

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

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

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

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

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

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 well 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 (fig. 9). The estimated yields of the main crops and pasture plants are listed, the system of land capability classification used by the Natural Resources Conservation Service is explained, and prime farmland is described.

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

Figure 9.—Rotating crops with pasture and hay plants is an excellent management practice for cropland. This practice helps to control erosion and improve soil quality.

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 tables 5 and 6. In any given year, yields may be higher or lower than those indicated in the tables because of variations in rainfall and other climatic factors. The land capability classification of map units in the survey area also is shown in the tables.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

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

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 tables 5 and 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the 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 is one of a number of interpretative groupings made primarily for agricultural purposes *(10)*. Crops that require special management are excluded. The soils are grouped according to their limitations for agronomic uses, 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.

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

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for agronomic uses. 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, forest, or wildlife habitat.

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

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to forest 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,* or *s* to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth, cultivation, or both; and *s* shows that the soil is limited mainly because it is shallow, droughty, stony, or has numerous rock outcrops.

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* or *s*, because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, forest, wildlife habitat, or recreation.

The capability classification of map units in this survey area is given in the section “Detailed Soil Map Units” and in tables 5 and 6.

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation’s short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation’s prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pasture, forest, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

A recent trend in land use in large parts of the survey area has been the loss of prime farmland to industrial, residential, and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in table 7. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading “Detailed Soil Map Units.”

Forest Productivity and Management

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

Forest Productivity

In table 8, the *potential productivity* of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forest managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the “National Forestry Manual,” which is available in local offices of the Natural Resources Conservation Service or on the Internet *(7)*.

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.

Forest Management

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

Some rating class terms indicate the degree to which the soils are suited to a specified forest management practice. *Well suited* indicates that the soil has features that are favorable for the specified practice and has no limitations. Good performance can be expected, and little or no maintenance is needed. *Moderately well suited* indicates that the soil has features that are moderately favorable for the specified practice. 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 practice. 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 practice or that extreme measures are needed to overcome the undesirable soil properties.

Numerical ratings in the tables indicate the 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 specified forest management practice (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 for forest management practices. More detailed information about the criteria used in the ratings is available in the “National Forestry Manual,” which is available in local offices of the Natural Resources Conservation Service or on the Internet *(7)*.

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 well 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 well 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 well 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.

Recreation

The soils of the survey area are rated in table 10, parts I and II, and table 11, parts I and II, according to limitations that affect their suitability for recreation. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

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

The ratings in the tables are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The information in tables 10 and 11 can be supplemented by other information in this survey, for example, interpretations for building site development, construction materials, sanitary facilities, and water management.

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 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, 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, 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, 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; 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.

Wildlife Habitat

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 12, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of grain and seed crops are corn, soybeans, grain sorghum, wheat, and oats.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture also are considerations. Examples of grasses and legumes are tall fescue, orchardgrass, annual lespedeza, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of wild herbaceous plants are bluestem, panicum, carpetgrass, switchgrass, greenbrier, and eastern gamagrass.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are shrub lespedeza, autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine and redcedar.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, wildrice, cattail, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds. Examples of shallow water plants are coontail, common duckweed, spatterdock, cattail, lily, arrowhead, and water milfoil.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, meadowlark, field sparrow, cottontail rabbit, and red fox.

Habitat for woodland wildlife consists of areas of deciduous and/or coniferous plants and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, deer, and bear.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, otter, and beaver.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the “Soil Properties” section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil 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, earthfill, and topsoil; plan structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

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 13, parts I and II, and table 14, parts I and II, show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

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

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

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

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

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock, hardness of bedrock, 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, and the available water capacity in the upper 40 inches. 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 15, parts I and II, and table 16 show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 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, and flooding affect absorption of the effluent. Stones, boulders, and bedrock interfere with installation. 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, 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 and bedrock 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 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, depth to a water table, ponding, slope, flooding, texture, stones and boulders, 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 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.

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

The soils are rated *good, fair,* or *poor* as potential sources of topsoil, reclamation material, and roadfill. 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 topsoil, reclamation material, or roadfill. The lower the number, the greater the limitation.

The soils are rated as a *probable* or *improbable* source of sand and gravel. A rating of *probable* means that the source material is likely to be in or below the soil. The numerical ratings in these columns indicate the degree of probability. The number 0.00 indicates that the soil is an improbable source. A number between 0.00 and 1.00 indicates the degree to which the soil is a probable source of sand or gravel.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 17, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the lowest layer of the soil contains sand or gravel, the soil is rated as a probable source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

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, 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 18 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

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

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

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

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, 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. The data and the estimates of soil and water features, listed in the tables, are explained on the following pages.

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

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

Engineering Index Properties

Table 19 gives the engineering classifications and the range of index properties for the layers of several soils 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.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of particle-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is generally omitted in the table.

Physical Properties

Tables 20 and 21 show 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.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In tables 20 and 21, 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 tables, 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 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.

Permeability (K_{sat}) refers to the ability of a soil to transmit water or air. The term “permeability,” as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). The estimates in the tables indicate the rate of water movement, in inches per hour, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each 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 tables 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 tables 20 and 21, 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 tables 20 and 21 as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of several factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict 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 water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Chemical Properties

Table 22 shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of several soils in the survey area. The estimates are based on field observations and on test data for these and similar soils.

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

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Effective cation-exchange capacity refers to the sum of extractable bases plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Water Features

Table 23 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.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. Table 23 indicates, by month, depth to the top (*upper limit*) of the saturated zone in most years. Estimates of the upper 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. Table 23 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 or by runoff from adjacent slopes. 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* (0.1 hour to 4 hours), *very brief* (4 hours to 2 days), *brief* (2 to 7 days), *long* (7 to 30 days), and *very long* (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

Tables 24 and 25 give estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical or chemical properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are hard bedrock, fragipans, and weathered bedrock. The tables indicate the hardness and thickness of the restrictive layer, both of which significantly affect 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 *(8, 9)*. 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 26 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 Alfisol.

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 Udalf (*Ud*, meaning humid, plus *alf*, from Alfisol).

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 Hapludalfs (*Hapl*, meaning minimal horizonation, plus *udalf*, the suborder of the Alfisols 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 Hapludalfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle size, mineral content, soil temperature regime, soil depth, and reaction. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine, mixed, active, mesic Typic Hapludalfs.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the “Soil Survey Manual” *(6)*. Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” *(8)* and in “Keys to Soil Taxonomy” *(9)*. 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.

Baxter Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Physiographic area: Highland Rim/Pennyroyal
Landform: Karst ridges and hillsides
Parent material: Gravelly limestone residuum
Slope: 2 to 30 percent
Taxonomic class: Fine, mixed, semiactive, mesic Typic Paleudalfs

Figure 10.—A profile of Baxter soils. These soils have a subsoil of cherty clay and are very deep over hard limestone bedrock.

Typical Pedon

Baxter gravelly silt loam, 6 to 12 percent slopes; 2.75 miles east of Smiths Grove on Hays-Smith Grove Road, 100 yards north of the intersection of Interstate Highway 65 and Smith Grove Road, in a field; USGS Smith's Grove Quadrangle; lat. 37 degrees 2 minutes 44.2 seconds N. and long. 86 degrees 9 minutes 36.7 seconds W.

Ap—0 to 8 inches; brown (10YR 4/3) gravelly silt loam; weak very fine granular structure; very friable; common fine roots; 25 percent chert gravel; neutral; abrupt smooth boundary.

Bt1—8 to 15 inches; yellowish red (5YR 5/6) gravelly silty clay loam; weak medium subangular blocky structure; friable; common fine roots; few fine continuous pores; common fine distinct reddish brown (5YR 5/4) clay films on faces of peds; 15 percent chert gravel; very strongly acid; clear smooth boundary.

Bt2—15 to 49 inches; red (2.5YR 4/6) gravelly clay; few medium distinct (7.5YR 5/6) strong brown mottles; moderate fine and medium angular blocky structure parting to very fine angular blocky; very firm; few fine roots; few fine continuous pores; many fine prominent reddish brown (2.5YR 4/4) clay films on faces of peds; few fine discontinuous silt coatings between peds; 25 percent chert gravel and few cobbles; very strongly acid; gradual wavy boundary.

Bt3—49 to 61 inches; red (2.5YR 4/6) gravelly clay; common medium distinct strong brown (7.5YR 5/6) and common medium prominent very pale brown (10YR 7/3) mottles; moderate medium angular blocky structure parting to fine and very fine angular blocky; very firm; few fine roots; few fine continuous pores; many fine prominent reddish brown (2.5YR 4/4) clay films on faces of peds; 25 percent chert gravel and few cobbles; very strongly acid; gradual wavy boundary.

Bt4—61 to 81 inches; red (2.5YR 4/6) gravelly clay; common medium distinct (5YR 5/4) reddish brown mottles; moderate medium angular blocky structure parting to fine and very fine angular blocky; very firm; few fine continuous pores; many fine and medium prominent reddish brown (2.5YR 4/4) clay films on faces of peds; 20 percent chert gravel and few cobbles; very strongly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Kind of rock fragments: Subrounded chert (fig. 10)
Reaction: Strongly acid or very strongly acid, except in limed areas

A or Ap horizon:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—2 to 4
Texture of the fine-earth fraction—silt loam or silty clay loam
Content of rock fragments—15 to 35 percent

Bt horizon:
Hue—5YR, 2.5YR, or 10R
Value—4 or 5
Chroma—4 to 6
Texture of the fine-earth fraction—silty clay or clay
Content of rock fragments—5 to 45 percent

Caneyville Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow or very slow
Physiographic area: Highland Rim/Pennyroyal
Landform: Undulating ridges and steep hillsides
Parent material: Residuum of limestone
Slope: 2 to 60 percent
Taxonomic class: Fine, mixed, active, mesic Typic Hapludalfs

Typical Pedon

Caneyville silt loam, 2 to 6 percent slopes; 5.2 miles north of Bowling Green on Kentucky Highway 185, about 1.5 miles east on Kentucky Highway 526, about 0.6 mile south on Bill Ferguson Road, 500 feet north of a farmhouse, in pasture; USGS Bowling Green North Quadrangle; lat. 37 degrees 3 minutes 33.3 seconds N. and long. 86 degrees 25 minutes 2.7 seconds W.

Ap—0 to 6 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine roots; slightly acid; abrupt smooth boundary.
Bt1—6 to 11 inches; reddish brown (5YR 4/4) silty clay; moderate medium angular and subangular blocky structure; firm; slightly sticky; slightly plastic; common fine roots; many prominent reddish brown (5YR 4/3) clay films on faces of peds; moderately acid; clear smooth boundary.
Bt2—11 to 21 inches; yellowish red (5YR 4/6) clay; moderate medium angular blocky structure; very firm; moderately sticky; moderately plastic; common very fine roots; many prominent reddish brown (5YR 4/4) clay films on faces of peds; moderately acid; clear smooth boundary.
Bt3—21 to 27 inches; dark reddish brown (5YR 3/4) clay; moderate medium angular blocky structure; very firm; moderately sticky; moderately plastic; few very fine roots; many prominent reddish brown (5YR 4/4) clay films on faces of peds; few black (5YR 2.5/1) manganese concretions; few limestone gravel; slightly acid; abrupt smooth boundary.
R—27 inches; hard limestone bedrock.

Range in Characteristics

Depth to bedrock: 20 to 40 inches
Kind of rock fragments: Subrounded chert
Reaction: Typically strongly acid or moderately acid; the layer just above bedrock ranges from moderately acid to neutral

A or Ap horizon:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—2 to 4
Texture of the fine-earth fraction—silt loam or silty clay
Content of rock fragments—0 to 10 percent

Bt horizon:
Hue—2.5YR, 5YR, or 7.5YR
Value—4 or 5
Chroma—4 to 6
Texture of the fine-earth fraction—silty clay or clay
Content of rock fragments—0 to 10 percent

Crider Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Physiographic area: Highland Rim/Pennyroyal
Landform: Undulating karst plains
Parent material: Loess and residuum from limestone
Slope: 2 to 12 percent
Taxonomic class: Fine-silty, mixed, active, mesic Typic Paleudalfs

Typical Pedon

Crider silt loam, 2 to 6 percent slopes; 3.2 miles northwest of Woodburn on Kentucky Highway 240, about 1.9 miles northwest of the intersection of U.S. Highway 31W and Kentucky Highway 240, about 1,248 feet northeast of the intersection of Kentucky Highway 240 and Old Downing Hanes Road, in a field; USGS Woodburn Quadrangle; lat. 36 degrees 52 minutes 9 seconds N. and long. 86 degrees 34 minutes 14 seconds W.

Ap—0 to 9 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine roots; few continuous pores; neutral; clear smooth boundary.
Bt1—9 to 17 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; many fine roots; few fine pores; few faint strong brown clay films on faces of peds; neutral; gradual smooth boundary.

Bt2—17 to 28 inches; yellowish red (5YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; few fine pores; common distinct reddish brown (5YR 5/4) clay films on faces of peds; moderately acid; gradual smooth boundary.

2Bt3—28 to 50 inches; red (2.5YR 4/6) silty clay loam; moderate medium subangular blocky structure; friable; few fine pores; common distinct reddish brown (2.5YR 4/4) clay films on faces of peds; few fine black (5YR 2.5/1) manganese concretions; strongly acid; clear smooth boundary.

2Bt4—50 to 80 inches; dark red (10R 3/6) clay; few fine prominent brown (7.5YR 5/4) and yellowish red (5YR 5/8) mottles; strong fine angular blocky structure; firm; moderately sticky; moderately plastic; common prominent dark red (2.5YR 3/6) clay films on faces of peds; common black (5YR 2.5/1) manganese concretions; strongly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Kind of rock fragments: Subrounded chert
Reaction: Neutral to strongly acid in the A and Bt horizons and moderately acid to very strongly acid in the 2Bt horizon

A or Ap horizon:
Hue—10YR or 7.5YR
Value—4
Chroma—2 to 4
Texture of the fine-earth fraction—silt loam
Content of rock fragments—0 to 2 percent

Bt horizon:
Hue—5YR, 7.5YR, or 10YR
Value—4 or 5
Chroma—4 to 8
Texture of the fine-earth fraction—silty clay loam or clay
Content of rock fragments—0 to 10 percent

2Bt horizon:
Hue—5YR, 2.5YR, or 10R
Value—3 to 5
Chroma—4 to 8
Texture of the fine-earth fraction—silty clay loam, silty clay, or clay
Content of rock fragments—0 to 35 percent

Dunning Series

Depth class: Very deep
Drainage class: Poorly drained or very poorly drained
Permeability: Slow or very slow
Physiographic area: Highland Rim/Pennyroyal
Landform: Upland depressions and flood plains
Parent material: Fine textured alluvium
Slope: 0 to 2 percent
Taxonomic class: Fine, mixed, active, mesic Fluvaquentic Endoaquolls

Typical Pedon

Dunning silty clay loam, ponded; 1.2 miles southwest of Rockfield, 0.5 mile northwest of the intersection of Bogle Road and Old Downing Hanes Lane, 400 feet northwest of the bridge on Brush Creek, in a field; USGS Rockfield Quadrangle; lat. 36 degrees 53 minutes 53 seconds N. and long. 86 degrees 34 minutes 54 seconds W.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silty clay loam; moderate medium angular blocky structure; firm; many fine roots; neutral; gradual smooth boundary.

Ag—9 to 16 inches; very dark gray (10YR 3/1) silty clay loam; moderate medium angular blocky structure; firm; common fine roots; few fine prominent dark yellowish brown (10YR 4/6) masses of iron accumulation; slightly alkaline; gradual smooth boundary.

Bg1—16 to 25 inches; dark gray (10YR 4/1) silty clay; moderate medium subangular blocky structure; firm; common fine roots; few fine prominent dark yellowish brown (10YR 4/6) masses of iron accumulation; slightly alkaline; gradual smooth boundary.

Bg2—25 to 43 inches; dark gray (10YR 4/1) clay; moderate medium subangular blocky structure; firm; few fine roots; common fine distinct brown (10YR 4/3) masses of iron accumulation; slightly alkaline; gradual smooth boundary.

Cg—43 to 71 inches; dark gray (5Y 4/1) clay; massive; firm; moderately sticky; moderately plastic; common black (10YR 2/1) and dark brown (10YR 3/3) iron and manganese concretions; common medium prominent light olive brown (2.5Y 5/6) and brown (7.5YR 5/4) masses of iron accumulation; slightly alkaline.

Range in Characteristics

Depth to bedrock: More than 60 inches
Kind of rock fragments: Rounded gravel
Reaction: Moderately acid to slightly alkaline

Ap and Ag horizons:
Hue—10YR to 5Y
Value—2 or 3
Chroma—1 or 2

Texture of the fine-earth fraction—silty clay loam
Content of rock fragments—none

Bg horizon:
Hue—10YR to 5Y
Value—3 to 5
Chroma—0 to 2
Texture of the fine-earth fraction—silty clay or clay
Content of rock fragments—none

Cg horizon:
Hue—2.5Y or 5Y
Value—3 to 5
Chroma—0 to 2
Texture of the fine-earth fraction—clay or silty clay
Content of rock fragments—0 to 30 percent

Elk Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Physiographic area: Highland Rim/Pennyroyal
Landform: Stream terraces
Parent material: Alluvium
Slope: 2 to 6 percent
Taxonomic class: Fine-silty, mixed, active, mesic Ultic Hapludalfs

Typical Pedon

Elk silt loam, 2 to 6 percent slopes, rarely flooded; 3.3 miles southeast of Bowling Green on U.S. Highway 231, about 3.2 miles southeast of the intersection of Interstate 65 and U.S. Highway 231, about 0.6 mile southeast of the intersection of Upton Road and U.S. Highway 231, about 1,655 feet northwest of the Drake’s Creek Bridge, in a field; USGS Bowling Green South Quadrangle; lat. 36 degrees 53 minutes 55 seconds N. and long. 86 degrees 23 minutes 00 seconds W.

Ap—0 to 10 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine roots; moderately acid; gradual smooth boundary.
Bt1—10 to 20 inches; brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure; friable; common fine roots; few faint clay films on faces of peds; moderately acid; gradual smooth boundary.
Bt2—20 to 32 inches; brown (7.5YR 4/4) silty clay loam; moderate medium subangular blocky structure; friable; common fine roots; few faint clay films on faces of peds; 2 percent rounded chert gravel; strongly acid; gradual smooth boundary.
Bt3—32 to 42 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; few distinct brown (7.5YR 4/4) clay films on faces of peds; few black (10YR 2/1) manganese concretions; 2 percent rounded chert gravel; strongly acid; clear smooth boundary.
C—42 to 65 inches; yellowish brown (10YR 5/4) silty clay loam; common medium faint pale brown (10YR 6/3) and light yellowish brown (10YR 6/4) mottles; massive; firm; few black (10YR 2/1) manganese concretions; moderately acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Kind of rock fragments: Rounded chert
Reaction: Strongly acid or moderately acid, except in limed areas

A or Ap horizon:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—3 or 4
Texture of the fine-earth fraction—silt loam
Content of rock fragments—0 to 5 percent

Bt horizon:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—4 or 6
Texture of the fine-earth fraction—silt loam or silty clay loam
Content of rock fragments—0 to 5 percent

C horizon:
Hue—10YR to 5YR
Value—4 or 5
Chroma—4 to 8
Texture of the fine-earth fraction—silt loam or silty clay loam
Content of rock fragments—0 to 35 percent

Epley Series

Depth class: Deep or very deep
Drainage class: Moderately well drained
Permeability: Slow or very slow
Physiographic area: Western Coal Fields
Landform: Upland ridges
Parent material: Silty alluvium and residuum of shale
Slope: 2 to 6 percent
Taxonomic class: Fine-silty, mixed, semiactive, mesic Oxyaquic Hapludalfs

Typical Pedon

Epley silt loam, 2 to 6 percent slopes; about 17 miles northeast of Lewisburg, 0.2 mile north of the intersection of Kentucky Highways 106 and 1153, about 875 feet north of the intersection of Kentucky Highway 1153 and Iron Mountain Road, in pasture; USGS Lewisburg Quadrangle; lat. 36 degrees 59 minutes 54.7 seconds N. and long. 86 degrees 55 minutes 24.9 seconds W.

Ap—0 to 9 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; few fine roots; common black (10YR 2/1) manganese concretions; slightly acid; gradual wavy boundary.

Bt1—9 to 17 inches; yellowish brown (10YR 5/4) silt loam; weak fine subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; few fine strong brown (7.5YR 5/6) iron concentrations; slightly acid; gradual wavy boundary.

Bt2—17 to 24 inches; yellowish brown (10YR 5/4) silt loam; weak medium subangular blocky structure; friable; few fine roots; common distinct brown (10YR 5/3) clay films on faces of peds; few light gray (10YR 7/2) silt coatings on faces of peds at horizon transition; common medium distinct strong brown (7.5YR 5/6) iron concentrations; very strongly acid; abrupt smooth boundary.

2Bt/E—24 to 29 inches; brown (7.5YR 4/4) silty clay; weak medium and coarse prismatic structure parting to moderate medium subangular blocky; firm; moderately sticky; moderately plastic; common prominent brown (7.5YR 4/3) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) silt coatings on prism faces; very strongly acid; abrupt smooth boundary.

2Bt—29 to 41 inches; dark yellowish brown (10YR 4/6) silty clay; weak coarse prismatic structure parting to moderate medium and coarse subangular blocky; very firm; very sticky; very plastic; common prominent dark yellowish brown (10YR 4/4) clay films and pressure faces on prism faces; few fine and medium pale brown (10YR 6/3) silt coatings on prism faces; common black (10YR 2/1) manganese concretions; common medium prominent light brownish gray (10YR 6/2) iron depletions; very strongly acid; gradual wavy boundary.

2C—41 to 65 inches; yellowish brown (10YR 5/4) clay; massive; very firm; very sticky; very plastic; common medium distinct grayish brown (10YR 5/2) silt coatings on faces of peds; few fine faint brown (10YR 5/3) iron depletions; slightly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Kind of rock fragments: Limestone and shale
Reaction: Very strongly acid to moderately acid to a depth of 4 feet and moderately acid to neutral below this depth

A or Ap horizon:
Hue—2.5Y or 10YR
Value—4 or 5
Chroma—2 to 4
Texture of the fine-earth fraction—silt loam
Content of rock fragments—none

Bt horizon:
Hue—2.5Y, 10YR, or 7.5YR
Value—4 to 6
Chroma—3 to 6
Texture of the fine-earth fraction—silt loam or silty clay loam
Content of rock fragments—none

2Bt/E and 2Bt horizons:
Hue—10YR or 7.5YR
Value—4 to 7
Chroma—0 to 8
Texture of the fine-earth fraction—silty clay or clay
Content of rock fragments—none

2C horizon:
Hue—10YR or 7.5YR
Value—4 to 7
Chroma—0 to 8
Texture of the fine-earth fraction—clay
Content of rock fragments—0 to 50 percent

Fredonia Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow or slow
Physiographic area: Highland Rim/Pennyroyal
Landform: Undulating karst plains
Parent material: Residuum from limestone
Slope: 2 to 12 percent
Taxonomic class: Fine, mixed, active, mesic Typic Hapludalfs

Typical Pedon

Fredonia silt loam in an area of Fredonia-Vertrees complex, 6 to 12 percent slopes, very rocky; 0.3 mile north of Petros at the intersection of U.S. Highway 68 and Petros-Browning Road, 0.6 mile southeast of the intersection of Petros-Browning Road and Finney Road, 400 feet east of Petros-Browning Road, in pasture; USGS Rockfield Quadrangle; lat. 36 degrees 54 minutes 6 seconds N. and long. 86 degrees 35 minutes 59 seconds W.

Ap—0 to 5 inches; brown (7.5YR 4/4) silt loam; moderate fine granular structure; friable; many fine roots; moderately acid; abrupt smooth boundary.

Bt1—5 to 22 inches; dark red (2.5YR 3/6) silty clay; moderate fine and medium subangular blocky structure; firm; slightly sticky; slightly plastic; common fine roots; many distinct dark reddish brown (2.5YR 3/4) clay films on faces of peds; few fine black (10YR 2/1) manganese concretions; moderately acid; gradual smooth boundary.

Bt2—22 to 37 inches; dusky red (10R 3/4) clay; moderate medium angular blocky structure; very firm; moderately sticky; moderately plastic; common fine roots; many dark reddish brown (2.5YR 3/4) clay films on faces of peds; few fine black (10YR 2/1) manganese concretions; 2 percent fragments of chert; slightly acid; abrupt wavy boundary.

R—37 inches; hard limestone bedrock.

Range in Characteristics

Depth to bedrock: 20 to 40 inches
Kind of rock fragments: Subrounded chert
Reaction: Strongly acid to slightly acid in the upper layers and moderately acid to neutral in the Bt2 horizon

A or Ap horizon:
Hue—10YR or 7.5YR
Value—3 or 4
Chroma—2 to 4
Texture of the fine-earth fraction—silt loam
Content of rock fragments—0 to 5 percent

Bt horizon:
Hue—2.5YR to 10R
Value—3 to 5
Chroma—4 to 6
Texture of the fine-earth fraction—silty clay or clay
Content of rock fragments—0 to 5 percent

Frondorf Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Physiographic area: Western Coal Fields
Landform: Upland ridges and hillsides
Parent material: Loess and residuum of sandstone and siltstone
Slope: 6 to 20 percent
Taxonomic class: Fine-loamy, mixed, active, mesic Ultic Hapludalfs

Typical Pedon

Frondorf silt loam, 12 to 20 percent slopes; 1.3 miles north of Anna on Kentucky Highway 185, about 0.3 mile north of the intersection of Kentucky Highway 185 and Austin Raymer Road, 100 feet west of Kentucky Highway 185, in pasture; USGS Reedyville Quadrangle; lat. 37 degrees 8 minutes 9.4 seconds N. and long. 86 degrees 25 minutes 26.5 seconds W.

Ap—0 to 5 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine roots; few fine pores; slightly acid; clear smooth boundary.

Bt1—5 to 11 inches; strong brown (7.5YR 5/6) silty clay loam; moderate fine subangular blocky structure; friable; common fine roots; few fine pores; few faint clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt2—11 to 18 inches; yellowish brown (10YR 5/6) silty clay loam; few fine distinct pale brown (10YR 6/3) mottles; moderate medium angular and subangular blocky structure; firm; common fine roots; few fine pores; common distinct yellowish brown (10YR 5/4) clay films on faces of peds; 2 percent channers of sandstone and shale; very strongly acid; clear smooth boundary.

2Bt3—18 to 26 inches; yellowish brown (10YR 5/6) very channery silty clay loam; few fine faint yellowish brown (10YR 5/8) mottles; weak medium angular blocky structure; firm; few fine pores; common distinct yellowish brown (10YR 5/4) clay films on faces of peds; 60 percent channers of sandstone and shale; very strongly acid; abrupt smooth boundary.

R—26 inches; hard sandstone bedrock.

Range in Characteristics

Depth to bedrock: 20 to 40 inches
Kind of rock fragments: Channers of sandstone and shale
Reaction: Strongly acid or very strongly acid, except in limed areas

A or Ap horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 4
Texture of the fine-earth fraction—silt loam
Content of rock fragments—0 to 5 percent

Bt horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—4 to 8

Texture of the fine-earth fraction—silty clay loam or silt loam
Content of rock fragments—0 to 5 percent

2Bt horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—4 to 8
Texture of the fine-earth fraction—silty clay loam, silt loam, loam, or clay loam
Content of rock fragments—15 to 70 percent

Grigsby Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate or moderately rapid
Physiographic area: Western Coal Fields
Landform: Flood plains of the Barren and Green Rivers
Parent material: Alluvium
Slope: 0 to 2 percent
Taxonomic class: Coarse-loamy, mixed, active, mesic Dystric Fluventic Eutrudepts

Typical Pedon

Grigsby sandy loam, frequently flooded; 6.6 miles north-northwest of Richardsville, 1.2 miles north of the intersection of Harry Cherry Road and Richardsville-Threlkel Ferry Road, 939 feet east of Threlkel Ferry Road, in a field adjacent to the Green River; USGS Reedyville Quadrangle; lat. 37 degrees 11 minutes 13.2 seconds N. and long. 86 degrees 29 minutes 41 seconds W.

Ap—0 to 9 inches; dark yellowish brown (10YR 4/4) sandy loam; weak fine granular structure; very friable; many fine roots; neutral; gradual smooth boundary.
Bw1—9 to 21 inches; dark yellowish brown (10YR 4/4) sandy loam; few fine faint brown (10YR 5/3) mottles; weak fine and medium subangular blocky structure; very friable; common fine roots; few fine pores and earthworm channels; neutral; gradual wavy boundary.
Bw2—21 to 26 inches; brown (10YR 5/3) sandy loam; few fine faint brown (10YR 4/3) mottles; weak fine subangular blocky structure; very friable; common fine roots; neutral; gradual wavy boundary.
Bw3—26 to 41 inches; yellowish brown (10YR 5/4) sandy loam; weak fine subangular blocky structure; very friable; common fine roots; neutral; gradual wavy boundary.
Bw4—41 to 80 inches; dark yellowish brown (10YR 4/4) loam; few fine faint yellowish brown (10YR 5/4) mottles; weak fine subangular blocky structure; very friable; few fine roots; neutral.

Range in Characteristics

Depth to bedrock: More than 60 inches
Kind of rock fragments: Rounded chert and sandstone
Reaction: Moderately acid to neutral

A or Ap horizon:
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture of the fine-earth fraction—sandy loam
Content of rock fragments—0 to 10 percent

Bw horizon:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—3 to 6
Texture of the fine-earth fraction—sandy loam or loam
Content of rock fragments—0 to 10 percent

Hammack Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Physiographic area: Highland Rim/Pennyroyal
Landform: Undulating plains
Parent material: Loess and residuum of limestone
Slope: 2 to 6 percent
Taxonomic class: Fine-silty, mixed, semiactive, mesic Glossic Paleudalfs

Typical Pedon

Hammack silt loam, 2 to 6 percent slopes; 0.7 mile northwest of Oakland, 0.5 mile northwest of the intersection of Oakland School Road and Oakland-31W Road, 0.3 mile southeast of the intersection of W.R. Wilson Road and Oakland-31W Road, 75 feet east of Oakland-31W Road, in a field; USGS Bristow Quadrangle; lat. 37 degrees 3 minutes 11.2 seconds N. and long. 86 degrees 15 minutes 39.4 seconds W.

Ap—0 to 9 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; very friable; many fine roots; slightly acid; clear smooth boundary.
Bt1—9 to 17 inches; brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure; friable; common fine roots; few fine black (10YR 2/1) manganese concretions; moderately acid; clear smooth boundary.
Bt2—17 to 30 inches; yellowish red (5YR 4/6) silty

clay loam; moderate medium subangular blocky structure; firm; common fine roots; few distinct reddish brown (5YR 5/4) clay films on faces of peds; common fine black (10YR 2/1) manganese concretions; moderately acid; abrupt wavy boundary.

2B/E—30 to 41 inches; 70 percent yellowish red (5YR 4/6) very gravelly silt loam; moderate medium subangular blocky structure; firm; few very fine roots; few distinct reddish brown (5YR 5/4) clay films on faces of peds; 30 percent light brownish gray (10YR 6/2) and pale brown (10YR 6/3) silt coatings on faces of peds and coating fragments; 60 percent angular fragments of chert; strongly acid; clear smooth boundary.

2Bt1—41 to 54 inches; dark red (2.5YR 3/6) gravelly clay; moderate medium subangular blocky structure; firm; common prominent dark reddish brown (2.5YR 3/4) clay films on faces of peds; common black (10YR 2/1) manganese concretions; 30 percent angular fragments of chert; strongly acid; clear smooth boundary.

2Bt2—54 to 84 inches; dark red (10R 3/6) clay; moderate medium subangular blocky structure; very firm; moderately sticky; moderately plastic; many prominent dark red (2.5YR 3/6) clay films on faces of peds; common black (10YR 2/1) manganese concretions; 10 percent angular fragments of chert; strongly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Kind of rock fragments: Subrounded and angular chert
Reaction: Moderately acid to very strongly acid, except in limed areas

A or Ap horizon:
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture of the fine-earth fraction—silt loam
Content of rock fragments—0 to 5 percent

Bt horizon:
Hue—5YR or 7.5YR
Value—4 or 5
Chroma—3 to 6
Texture of the fine-earth fraction—silty clay loam or silt loam
Content of rock fragments—0 to 5 percent

2B/E horizon:
Hue—5YR, 7.5YR, or 10YR
Value—4 or 5
Chroma—3 to 6
Texture of the fine-earth fraction—silty clay loam or silt loam
Content of rock fragments—15 to 70 percent

2Bt horizon:
Hue—5YR to 10R
Value—3 to 5
Chroma—4 or 6
Texture of the fine-earth fraction—silty clay or clay
Content of rock fragments—10 to 75 percent

Lawrence Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate above the fragipan and slow or very slow in the fragipan
Physiographic area: Highland Rim/Pennyroyal
Landform: Nearly level uplands and stream terraces
Parent material: Loess or alluvium and residuum of limestone
Slope: 0 to 2 percent
Taxonomic class: Fine-silty, mixed, semiactive, mesic Aquic Fragiudalfs

Typical Pedon

Lawrence silt loam, rarely flooded; 0.6 mile northwest of Plano, 2,927 feet southwest of the intersection of Carter Sims Road and Kentucky Highway 622, about 3,069 feet northwest of the intersection of Baldock Road and the Plano-Richpond Road; USGS Bowling Green South Quadrangle; lat. 36 degrees 53 minutes 13 seconds N. and long. 86 degrees 25 minutes 36 seconds W.

Ap—0 to 7 inches; grayish brown (10YR 5/2) silt loam; weak fine granular structure; very friable; common fine roots; few fine black (10YR 2/1) and dark brown (10YR 3/3) iron and manganese concretions; strongly acid; abrupt smooth boundary.

Bt1—7 to 14 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; common fine roots; few faint clay films on faces of peds; common medium distinct light yellowish brown (2.5Y 6/4) iron depletions; very strongly acid; clear smooth boundary.

Bt2—14 to 18 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; few fine white (10YR 8/1) silt coatings on faces of peds; few fine black (10YR 2/1) and dark brown (10YR 3/3) iron and manganese concretions; common medium distinct very pale brown (10YR 7/4) and common medium prominent light brownish gray (10YR 6/2) iron depletions; strongly acid; clear smooth boundary.

Btx1—18 to 40 inches; 50 percent gray (10YR 5/1) and 50 percent yellowish brown (10YR 5/6) silty clay loam; weak very coarse prismatic structure parting to weak medium subangular blocky; very firm; few very fine roots between prisms; common distinct yellowish brown (10YR 5/4) clay films on prism faces; few fine light gray (10YR 7/2) silt coatings on prism faces; brittle in 70 percent of the mass; strongly acid; gradual smooth boundary.

Btx2—40 to 65 inches; 50 percent gray (10YR 5/1) and 50 percent yellowish brown (10YR 5/6) silty clay loam; moderate very coarse prismatic structure parting to moderate medium subangular blocky; very firm; few very fine roots between prisms; few distinct yellowish brown (10YR 5/4) clay films on prism faces; few fine light brownish gray (10YR 6/2) silt coatings on prism faces; brittle in 90 percent of the mass; strongly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Kind of rock fragments: Subrounded chert
Reaction: Very strongly acid or strongly acid, except in limed areas

A or Ap horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4
Texture of the fine-earth fraction—silt loam
Content of rock fragments—none

Bt horizon:
Hue—7.5YR to 2.5Y
Value—5 or 6
Chroma—4 or 6
Texture of the fine-earth fraction—silty clay loam or silt loam
Content of rock fragments—none

Btx horizon:
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—1 to 6
Texture of the fine-earth fraction—silty clay loam or silt loam
Content of rock fragments—0 to 5 percent

Lindside Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate
Physiographic area: Highland Rim/Pennyroyal
Landform: Flood plains
Parent material: Alluvium
Slope: 0 to 2 percent
Taxonomic class: Fine-silty, mixed, active, mesic Fluvaquentic Eutrudepts

Typical Pedon

Lindside silt loam, frequently flooded; 2.4 miles northwest of Riverside, 1.0 mile north of the intersection of James Elkins Road and Joe Willis Road, 738 feet northwest of Joe Willis Road, in a field; USGS Riverside Quadrangle; lat. 37 degrees 10 minutes 30 seconds N. and long. 86 degrees 34 minutes 10 seconds W.

Ap—0 to 10 inches; brown (10YR 4/3) silt loam; moderate fine granular structure; friable; few fine roots; neutral; clear smooth boundary.

BA—10 to 16 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable; few fine roots; neutral; clear smooth boundary.

Bw1—16 to 22 inches; brown (10YR 4/3) silty clay loam; moderate medium subangular blocky structure; friable; few fine pores; few fine distinct light brownish gray (10YR 6/2) iron depletions; moderately acid; gradual wavy boundary.

Bw2—22 to 42 inches; brown (10YR 4/3) silty clay loam; moderate medium subangular blocky structure; friable; common fine pores; common fine prominent yellowish brown (10YR 5/8) masses of iron accumulation; common medium distinct light brownish gray (10YR 6/2) iron depletions; moderately acid; clear smooth boundary.

Cg—42 to 65 inches; 25 percent light brownish gray (10YR 6/2), 25 percent light gray (2.5Y 7/2), 25 percent dark brown (10YR 3/3), and 25 percent light yellowish brown (10YR 6/4) silt loam; massive; firm; few rounded chert gravel; moderately acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Kind of rock fragments: Rounded chert
Reaction: Strongly acid or very strongly acid, except in limed areas

A or Ap horizon:
Hue—10YR
Value—4 or 5
Chroma—2 or 3
Texture of the fine-earth fraction—silt loam
Content of rock fragments—15 to 35 percent

BA and Bw horizons:
Hue—7.5YR to 2.5Y
Value—4 or 5
Chroma—3 to 6
Texture of the fine-earth fraction—silty clay loam or silt loam
Content of rock fragments—0 to 5 percent

Cg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 4
Texture of the fine-earth fraction—silt loam or silty clay loam
Content of rock fragments—0 to 35 percent

Melvin Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderate
Physiographic area: Highland Rim/Pennyroyal
Landform: Flood plains
Parent material: Alluvium
Slope: 0 to 2 percent
Taxonomic class: Fine-silty, mixed, active, nonacid, mesic Fluvaquentic Endoaquepts

Typical Pedon

Melvin silt loam, frequently flooded; 6.0 miles northwest of Benleo on Kentucky Highway 263, about 1.2 miles northwest of the intersection of Amber White Road and Kentucky Highway 263, about 2,342 feet west on a dirt road off Kentucky Highway 263, about 1,006 feet northwest from the end of the road, in a field; USGS Riverside Quadrangle; lat. 37 degrees 9 minutes 30 seconds N. and long. 86 degrees 36 minutes 38 seconds W.

Ap—0 to 9 inches; grayish brown (10YR 5/2) silt loam; weak fine granular structure; friable; common fine roots; few fine prominent yellowish brown (10YR 5/8) masses of iron accumulation; slightly alkaline; abrupt smooth boundary.
Bg—9 to 33 inches; light brownish gray (10YR 6/2) silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; common fine distinct yellowish brown (10YR 5/4) masses of iron accumulation; moderately alkaline; gradual smooth boundary.
Cg—33 to 62 inches; light brownish gray (10YR 6/2) silty clay loam; massive; friable; few fine black (10YR 2/1) manganese concretions; few fine prominent yellowish brown (10YR 5/6) masses of iron accumulation; slightly alkaline.

Range in Characteristics

Depth to bedrock: More than 60 inches
Kind of rock fragments: Rounded chert
Reaction: Moderately acid to moderately alkaline

A or Ap horizon:
Hue—10YR to 5Y
Value—6 or 7
Chroma—1 or 2
Texture of the fine-earth fraction—silt loam
Content of rock fragments—none

Bg horizon:
Hue—10YR to 5Y
Value—5 to 7
Chroma—0 to 2
Texture of the fine-earth fraction—silty clay loam or silt loam
Content of rock fragments—none

Cg horizon:
Hue—10YR to 2.5Y
Value—4 to 6
Chroma—0 to 2
Texture of the fine-earth fraction—silty clay loam or silt loam
Content of rock fragments—none

Newark Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Physiographic area: Highland Rim/Pennyroyal
Landform: Flood plains and depressions
Parent material: Alluvium
Slope: 0 to 2 percent
Taxonomic class: Fine-silty, mixed, active, nonacid, mesic Fluventic Endoaquepts

Typical Pedon

Newark silt loam, frequently flooded; 1.0 mile northeast of Greenwood, 1.6 miles northwest of the intersection of Hunt Road and Middle Bridge Road, 1.5 miles northwest of the intersection of Roy Thomas Road and Middle Bridge Road, 400 feet east of Drake’s Creek; USGS Bowling Green South Quadrangle; lat. 36 degrees 56 minutes 50.8 seconds N. and long. 86 degrees 24 minutes 18.7 seconds W.

Ap—0 to 11 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine roots; few fine pores; moderately alkaline; abrupt smooth boundary.
Bw—11 to 18 inches; yellowish brown (10YR 5/4) silty clay loam; weak fine subangular blocky structure;

very friable; common fine roots; few fine and medium pores; many fine and medium light brownish gray (10YR 6/2) iron depletions; slightly acid; clear smooth boundary.

Bg—18 to 28 inches; light brownish gray (10YR 6/2) silty clay loam; weak fine subangular blocky structure; friable; common fine pores; few fine black (10YR 2/1) manganese concretions; common medium distinct yellowish brown (10YR 5/4) masses of iron accumulation; slightly acid; clear smooth boundary.

Cg—28 to 65 inches; light brownish gray (2.5Y 6/2) silty clay loam; massive; friable; few fine pores; common fine and medium black (10YR 2/1) manganese concretions; few medium distinct light yellowish brown (2.5Y 6/4) masses of iron accumulation; moderately acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Kind of rock fragments: Rounded chert
Reaction: Moderately acid to slightly alkaline

A or Ap horizon:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—2 to 4
Texture of the fine-earth fraction—silt loam
Content of rock fragments—none

Bw horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—3 to 6
Texture of the fine-earth fraction—silty clay loam
Content of rock fragments—none

Bg horizon:
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—0 to 2
Texture of the fine-earth fraction—silty clay loam
Content of rock fragments—none

Cg horizon:
Hue—10YR or 2.5Y
Value—4 to 7
Chroma—0 to 2
Texture of the fine-earth fraction—silty clay loam or silt loam
Content of rock fragments—none

Nicholson Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and slow or very slow in the fragipan
Physiographic area: Highland Rim/Pennyroyal
Landform: Undulating or rolling ridges and side slopes
Parent material: Loess and residuum of limestone
Slope: 0 to 12 percent
Taxonomic class: Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs

Typical Pedon

Nicholson silt loam, 2 to 6 percent slopes; 0.7 mile northwest of Plano, 0.4 mile west of the intersection of Kentucky Highway 622 and Carter Sims Road, 1,122 feet south of Carter Sims Road; USGS Bowling Green South Quadrangle; lat. 36 degrees 53 minutes 18 seconds N. and long. 86 degrees 25 minutes 37 seconds W.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; very friable; common fine roots; slightly acid; clear smooth boundary.

Bt1—6 to 19 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; slightly acid; gradual smooth boundary.

Bt2—19 to 25 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; common distinct brown (10YR 5/3) clay films on faces of peds; few medium faint pale brown (10YR 6/3) iron depletions; few fine prominent red (2.5YR 4/6) iron concentrations; strongly acid; gradual wavy boundary.

Btx—25 to 37 inches; yellowish brown (10YR 5/4) silt loam; strong very coarse prismatic structure parting to moderate medium angular blocky; very firm; few very fine roots between prisms; common distinct brown (10YR 5/3) clay films on prism faces; common black (10YR 2/1) manganese concretions; common medium distinct gray (10YR 6/1) iron depletions; brittle in 80 percent of the mass; strongly acid; gradual smooth boundary.

2Bt—37 to 57 inches; red (2.5YR 4/6) clay; moderate coarse angular blocky structure; firm; moderately sticky; moderately plastic; common prominent reddish brown (2.5YR 4/4) clay films on faces of peds; few black (10YR 2/1) manganese concretions; common medium prominent light brownish gray (10YR 6/2) iron depletions; strongly acid; gradual wavy boundary.

2C—57 to 62 inches; yellowish brown (10YR 5/6) clay; massive; very firm; very sticky; very plastic;

common medium prominent light brownish gray (10YR 6/2) iron depletions; moderately acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Depth to fragipan: 18 to 30 inches
Reaction: Strongly acid to slightly acid, except in limed areas

A or Ap horizon:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—2 to 4
Texture of the fine-earth fraction—silt loam
Content of rock fragments—none

Bt horizon:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—3 to 6
Texture of the fine-earth fraction—silty clay loam or silt loam
Content of rock fragments—none

Btx horizon:
Hue—2.5Y to 7.5YR
Value—3 to 5
Chroma—4 to 8
Texture of the fine-earth fraction—silty clay loam or silt loam
Content of rock fragments—none

2Bt and 2C horizons:
Hue—10YR to 2.5YR
Value—4 or 5
Chroma—4 or 6
Texture of the fine-earth fraction—silty clay or clay
Content of rock fragments—0 to 35 percent

Nolin Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Physiographic area: Highland Rim/Pennyroyal and Western Coal Fields
Landform: Flood plains and depressions
Parent material: Alluvium
Slope: 0 to 2 percent
Taxonomic class: Fine-silty, mixed, active, mesic Dystric Fluventic Eutrudepts

Typical Pedon

Nolin silt loam, frequently flooded; 7.65 miles northwest of Benleo, 1.65 miles northwest of the intersection of Richardsville-Morgantown Road and Old Kentucky Highway 263, about 1,765 feet northeast of the end of Richardsville-Morgantown Road and the Green River, in a field; USGS Riverside Quadrangle; lat. 37 degrees 10 minutes 52 seconds N. and long. 86 degrees 37 minutes 00 seconds W.

Ap—0 to 9 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine roots; moderately acid; gradual smooth boundary.
Bw—9 to 65 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine subangular blocky structure; friable; few fine black (10YR 2/1) manganese concretions; moderately acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Kind of rock fragments: Rounded chert and sandstone
Reaction: Strongly acid to moderately alkaline

A or Ap horizon:
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture of the fine-earth fraction—silt loam
Content of rock fragments—0 to 5 percent

Bw horizon:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—3 to 6
Texture of the fine-earth fraction—silt loam or silty clay loam
Content of rock fragments—0 to 5 percent

Otwood Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and slow or very slow in the fragipan
Physiographic area: Highland Rim/Pennyroyal and Western Coal Fields
Landform: Stream terraces
Parent material: Alluvium
Slope: 0 to 6 percent
Taxonomic class: Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs

Typical Pedon

Otwood silt loam, 0 to 2 percent slopes, rarely flooded; in Bowling Green, 2.2 miles northeast of the intersection of Kentucky Highways 880 and 1435, about 1.4 miles northeast of the intersection of Kentucky Highway 1435 and McFarland Lane, 2,814 feet northwest at the end of McFarland Lane, in a field;

USGS Bowling Green North Quadrangle; lat. 37 degrees 2 minutes 5.8 seconds N. and long. 86 degrees 28 minutes 2.2 seconds W.

Ap—0 to 6 inches; brown (10YR 5/3) silt loam; weak fine granular structure; very friable; many fine and medium roots; few fine black (10YR 2/1) manganese and iron concretions; slightly acid; gradual smooth boundary.

BA—6 to 12 inches; yellowish brown (10YR 5/4) silt loam; weak fine subangular blocky structure; friable; common fine and very fine roots; common fine black (10YR 2/1) manganese concretions; common fine faint pale brown (10YR 6/3) iron depletions; slightly acid; gradual smooth boundary.

Bt1—12 to 20 inches; brown (10YR 5/3) silt loam; weak medium subangular blocky structure; friable; common fine roots; few faint clay films on faces of peds; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation; slightly acid; gradual wavy boundary.

Bt2—20 to 28 inches; pale brown (10YR 6/3) silt loam; weak medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; common fine black (10YR 2/1) and dark brown (10YR 3/3) manganese and iron concretions; common fine faint light brownish gray (10YR 6/2) iron depletions; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation; 2 percent rounded siltstone gravel; moderately acid; abrupt smooth boundary.

Btx—28 to 37 inches; 60 percent light brownish gray (10YR 6/2) and 40 percent pale brown (10YR 6/3) silt loam; moderate to strong very coarse prismatic structure parting to moderate medium subangular blocky; very firm; few very fine roots between prisms; few fine distinct brown (10YR 5/3) clay films on prism faces; few fine pale brown (10YR 6/3) silt coatings on prism faces; few fine black (10YR 2/1) manganese concretions; common medium distinct yellowish brown (10YR 5/6) iron concentrations along faces of peds; brittle in 90 percent of the mass; moderately acid; abrupt wavy boundary.

B´t1—37 to 44 inches; light brownish gray (10YR 6/2) silt loam; weak fine subangular blocky structure; firm; few fine distinct brown (10YR 5/3) clay films on faces of peds; few fine distinct very pale brown (10YR 7/4) silt coatings on faces of peds; few black (10YR 2/1) and dark brown (10YR 3/3) manganese and iron concentrations; strongly acid; clear smooth boundary.

B´t2—44 to 80 inches; brown (7.5YR 4/4) silt loam; weak fine subangular blocky structure; firm; few fine faint clay films on faces of peds; few fine distinct brown (10YR 5/3) silt coatings on faces of peds; common black (10YR 2/1) and dark brown (10YR 3/3) manganese and iron stains on faces of peds; very strongly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Depth to fragipan: 20 to 36 inches
Kind of rock fragments: Rounded chert
Reaction: Slightly acid to very strongly acid

A or Ap horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4
Texture of the fine-earth fraction—silt loam
Content of rock fragments—0 to 5 percent

BA horizon:
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture of the fine-earth fraction—silt loam
Content of rock fragments—0 to 5 percent

Bt horizon:
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—4 to 8
Texture of the fine-earth fraction—silt loam or silty clay loam
Content of rock fragments—0 to 5 percent

Btx horizon:
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—1 to 8
Texture of the fine-earth fraction—silt loam or silty clay loam
Content of rock fragments—0 to 15 percent

B´t horizon:
Hue—7.5YR to 2.5Y
Value—4 to 6
Chroma—1 to 8
Texture of the fine-earth fraction—silt loam or silty clay loam
Content of rock fragments—0 to 15 percent

Pembroke Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate or moderately slow
Physiographic area: Highland Rim/Pennyroyal
Landform: Nearly level karst plains

Parent material: Loess and alluvium or residuum of limestone
Slope: 0 to 2 percent
Taxonomic class: Fine-silty, mixed, active, mesic Mollic Paleudalfs

Typical Pedon

Pembroke silt loam, 0 to 2 percent slopes; 0.8 mile southeast of Memphis Junction, 0.54 mile east of the intersection of U.S. Highway 31 and Bennett Road, 350 feet south of Bennett Road, in pasture; USGS Bowling Green South Quadrangle; lat. 36 degrees 56 minutes 13.1 seconds N. and long. 86 degrees 28 minutes 32.2 seconds W.

Ap—0 to 9 inches; dark brown (7.5YR 3/3) silt loam; weak fine granular structure; friable; common fine roots; neutral; clear wavy boundary.
Bt1—9 to 18 inches; reddish brown (5YR 4/4) silt loam; weak fine subangular blocky structure; friable; common fine and medium roots; common distinct reddish brown (5YR 4/3) clay films on faces of peds; common fine black (10YR 2/1) manganese stains and concretions throughout; neutral; gradual wavy boundary.
Bt2—18 to 28 inches; yellowish red (5YR 4/6) silty clay loam; moderate medium subangular blocky structure; firm; slightly sticky; slightly plastic; common fine roots; common distinct reddish brown (5YR 5/4) clay films on faces of peds; common fine black (10YR 2/1) manganese stains and concretions; moderately acid; gradual wavy boundary.
Bt3—28 to 35 inches; red (2.5YR 4/6) silty clay loam; moderate medium subangular blocky structure; firm; slightly sticky; slightly plastic; common very fine roots; common prominent reddish brown (2.5YR 4/4) clay films on faces of peds; common fine black (10YR 2/1) manganese stains and concretions; moderately acid; gradual wavy boundary.
Bt4—35 to 62 inches; dark red (2.5YR 3/6) silty clay loam; moderate medium subangular blocky structure; firm; slightly sticky; slightly plastic; few very fine roots; common prominent reddish brown (2.5YR 4/4) clay films on faces of peds; few fine distinct yellowish red (5YR 4/6) silt coatings on faces of peds; common fine black (10YR 2/1) manganese concretions; strongly acid; gradual wavy boundary.
Bt5—62 to 80 inches; dark red (2.5YR 3/6) silty clay; moderate medium subangular blocky structure; very firm; moderately sticky; moderately plastic; common prominent reddish brown (2.5YR 4/4) clay films on faces of peds; common fine black (10YR 2/1) manganese concretions; 5 percent chert gravel; strongly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Kind of rock fragments: Subrounded chert
Reaction: Moderately acid to very strongly acid, except in limed areas

A or Ap horizon:
Hue—10YR to 5YR
Value—3
Chroma—2 or 3
Texture of the fine-earth fraction—silt loam
Content of rock fragments—0 to 5 percent

Bt horizon:
Hue—5YR or 2.5YR
Value—4 or 5
Chroma—4 to 8
Texture of the fine-earth fraction—silty clay loam or silty clay
Content of rock fragments—0 to 15 percent

Ramsey Series

Depth class: Shallow
Drainage class: Somewhat excessively drained
Permeability: Rapid
Physiographic area: Western Coal Fields
Landform: Steep hillsides
Parent material: Residuum of sandstone
Slope: 20 to 60 percent
Taxonomic class: Loamy, siliceous, subactive, mesic Lithic Dystrudepts

Typical Pedon

Ramsey loam in an area of Ramsey-Frondorf complex, 20 to 60 percent slopes; 2.81 miles south of Glenmore, 1.76 miles southeast of the intersection of Kentucky Highway 1748 and Lake Road, 1.03 miles east of the intersection of Lake Road and Shanty Hollow Road, 65 feet east of the road in woods; USGS Reedyville Quadrangle; lat. 37 degrees 2 minutes 44.2 seconds N. and long. 86 degrees 9 minutes 36.7 seconds W.

A1—0 to 1 inch; very dark grayish brown (10YR 3/2) loam; weak fine granular structure; very friable; many fine roots; very strongly acid; clear smooth boundary.
A2—1 to 4 inches; brown (10YR 4/3) channery loam; weak medium granular structure; very friable; many fine roots; 15 percent channers of sandstone; strongly acid; clear smooth boundary.

Bw1—4 to 12 inches; yellowish brown (10YR 5/4) channery loam; weak medium subangular blocky structure; very friable; common fine roots; 20 percent channers of sandstone; very strongly acid; abrupt smooth boundary.
Bw2—12 to 19 inches; light yellowish brown (10YR 6/4) channery loam; weak medium subangular blocky structure; very friable; common fine roots; 30 percent channers of sandstone; very strongly acid; very abrupt smooth boundary.
R—19 inches; hard sandstone bedrock.

Range in Characteristics

Depth to bedrock: 7 to 20 inches
Kind of rock fragments: Channers of sandstone
Reaction: Strongly acid or very strongly acid

A horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 4
Texture of the fine-earth fraction—loam or sandy loam
Content of rock fragments—0 to 35 percent

Bw horizon:
Hue—10YR or 7.5YR
Value—4 or 6
Chroma—3 to 8
Texture of the fine-earth fraction—loam or sandy loam
Content of rock fragments—5 to 35 percent

Robertsville Series

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderate above the fragipan and slow or very slow in the fragipan
Physiographic area: Highland Rim/Pennyroyal
Landform: Nearly level stream terraces and upland depressions
Parent material: Mixed alluvium and loess
Slope: 0 to 2 percent
Taxonomic class: Fine-silty, mixed, semiactive, mesic Typic Fragiaqualfs

Typical Pedon

Robertsville silt loam, ponded; 2.26 miles northwest of Plano, 1.3 miles west of the intersection of Kentucky Highway 522 and Collett Lane, 2,088 feet west of Dewey Lake Road and a farm road, in a field; USGS Bowling Green South Quadrangle; lat. 36 degrees 54 minutes 7.2 seconds N. and long. 86 degrees 25 minutes 52.2 seconds W.

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; very friable; common fine roots; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation; slightly acid; abrupt smooth boundary.
Bg—10 to 28 inches; light gray (10YR 7/1) silt loam; moderate medium subangular blocky structure; friable; few fine black (10YR 2/1) manganese concretions; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation; very strongly acid; clear wavy boundary.
Btxg—28 to 40 inches; gray (10YR 6/1) silty clay loam; moderate very coarse prismatic structure parting to weak fine and medium subangular blocky; very firm; few fine faint clay films on faces of prisms; few light brownish gray (10YR 6/2) silt coatings on prism faces; few fine black (10YR 2/1) manganese concretions; many medium prominent yellowish brown (10YR 5/6) masses of iron accumulation; brittle in 90 percent of the mass; very strongly acid; gradual wavy boundary.
Cg—40 to 80 inches; 34 percent gray (10YR 5/1), 33 percent red (2.5YR 4/8), and 33 percent yellowish red (5YR 5/8) silty clay; massive; very firm; few fine black (10YR 2/1) manganese concretions; very strongly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Depth to fragipan: 18 to 30 inches
Kind of rock fragments: Rounded chert
Reaction: Strongly acid to extremely acid, except in limed areas

A or Ap horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 or 2
Texture of the fine-earth fraction—silt loam
Content of rock fragments—0 to 5 percent

Bg horizon:
Hue—10YR to 5Y
Value—6 or 7
Chroma—1 or 2
Texture of the fine-earth fraction—silt loam or silty clay loam
Content of rock fragments—0 to 5 percent

Btxg horizon:
Hue—10YR to 5Y
Value—5 to 7
Chroma—1 or 2

Texture of the fine-earth fraction—silt loam or silty clay loam
Content of rock fragments—0 to 5 percent

Cg horizon:
Hue—10YR to 5Y
Value—5 to 7
Chroma—1 or 2
Texture of the fine-earth fraction—silt loam, silty clay loam, or silty clay
Content of rock fragments—0 to 20 percent

Sadler Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and slow or very slow in the fragipan
Physiographic area: Western Coal Fields
Landform: Nearly level or undulating ridges
Parent material: Loess and residuum of sandstone
Slope: 0 to 6 percent
Taxonomic class: Fine-silty, mixed, semiactive, mesic Oxyaquic Fraglossudalfs

Typical Pedon

Sadler silt loam, 2 to 6 percent slopes; 2.42 miles northwest of Richardsville on Kentucky Highway 263, about 0.74 mile northwest of the intersection of Ed Hudson Road and Kentucky Highway 263, about 844 feet northeast of Kentucky Highway 263, in a field; USGS Reedyville Quadrangle; lat. 37 degrees 7 minutes 48 seconds N. and long. 86 degrees 29 minutes 49 seconds W.

Ap—0 to 9 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine roots; neutral; clear smooth boundary.
Bt—9 to 23 inches; brownish yellow (10YR 6/6) silty clay loam; weak medium angular and subangular blocky structure; friable; many fine roots; common distinct yellowish brown (10YR 5/4) clay films on faces of peds; few fine distinct strong brown (7.6YR 5/6) masses of iron accumulation; moderately acid; abrupt smooth boundary.
E/B—23 to 26 inches; 55 percent brown (10YR 5/3) silt loam (E part) and 45 percent brownish yellow (10YR 6/6) silt loam (B part); weak fine and medium subangular blocky structure in E part; moderate medium subangular blocky structure in B part; very friable in E part and firm in B part; few fine roots in E part; few fine distinct pale brown (10YR 6/3) and light brownish gray (10YR 6/2) silt coatings on faces of peds; few fine and medium black (10YR 2/1) manganese concretions; brittle in less than 40 percent of the mass; very strongly acid; clear irregular boundary.
2Btx—26 to 56 inches; 34 percent brownish yellow (10YR 6/6), 33 percent grayish brown (10YR 5/2), and 33 percent yellowish brown (10YR 5/4) silty clay loam; strong very coarse prismatic structure parting to moderate medium angular blocky; very firm; common light yellowish brown (10YR 6/4) clay films on faces of prisms; few fine black (10YR 2/1) and dark brown (10YR 3/3) manganese and iron concretions; brittle in 90 percent of the mass; very strongly acid; clear wavy boundary.
2B´t—56 to 65 inches; light brownish gray (10YR 6/2) silt loam; moderate medium subangular blocky structure; firm; common gray (10YR 6/1) clay films on faces of peds; few fine black (10YR 2/1) manganese concretions; common medium prominent yellowish brown (10YR 5/8) and strong brown (7.5YR 5/8) masses of iron accumulation; 5 percent channers of sandstone; very strongly acid; clear wavy boundary.
R—65 inches; hard sandstone bedrock.

Range in Characteristics

Depth to bedrock: More than 60 inches
Depth to fragipan: 18 to 32 inches (fig. 11)
Kind of rock fragments: Channers of sandstone
Reaction: Strongly acid or very strongly acid, except in limed areas

A or Ap horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4
Texture of the fine-earth fraction—silt loam
Content of rock fragments—0 to 5 percent

Bt horizon:
Hue—7.5YR to 2.5Y
Value—5 or 6
Chroma—4 or 6
Texture of the fine-earth fraction—silty clay loam or silt loam
Content of rock fragments—0 to 5 percent

E/B horizon:
Hue—10YR to 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture of the fine-earth fraction—silty clay loam or silt loam
Content of rock fragments—0 to 5 percent

2Btx horizon:
Hue—7.5YR to 5Y
Value—3 to 6

Figure 11.—A profile of Sadler soils. A dense fragipan starting at a depth of 24 inches limits rooting depth and available water capacity.

Chroma—1 to 6
Texture of the fine-earth fraction—silty clay loam or silt loam
Content of rock fragments—0 to 15 percent

2B´t horizon:
Hue—7.5YR to 2.5Y
Value—5 or 6
Chroma—4 to 6
Texture of the fine-earth fraction—silty clay loam or silt loam
Content of rock fragments—0 to 60 percent

Vertrees Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow or slow
Physiographic area: Highland Rim/Pennyroyal
Landform: Undulating or rolling ridges and side slopes
Parent material: Residuum from limestone
Slope: 2 to 12 percent
Taxonomic class: Fine, mixed, semiactive, mesic Typic Paleudalfs

Typical Pedon

Vertrees silt loam in an area of Fredonia-Vertrees complex, 2 to 6 percent slopes, rocky; in Bowling Green, 0.4 mile southeast of Memphis Junction, 0.2 mile northeast of the intersection of U.S. Highway 31W and Elrod Road, 767 feet southeast of the intersection of Memphis Junction Road and U.S. Highway 31W; USGS Bowling Green South Quadrangle; lat. 36 degrees 56 minutes 15.4 seconds N. and long. 86 degrees 29 minutes 3.8 seconds W.

Ap—0 to 4 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable; common fine roots; neutral; abrupt smooth boundary.
E—4 to 6 inches; yellowish brown (10YR 5/4) silt loam; weak medium granular structure; common fine roots; neutral; abrupt wavy boundary.
Bt1—6 to 15 inches; red (2.5YR 4/6) silty clay; moderate medium subangular blocky structure; firm; slightly sticky; slightly plastic; common fine roots; common distinct reddish brown (2.5YR 4/4) clay films on faces of peds; common fine black (10YR 2/1) manganese concretions; slightly acid; gradual wavy boundary.
Bt2—15 to 27 inches; red (2.5YR 4/6) clay; moderate medium subangular blocky structure; firm; slightly sticky; slightly plastic; common fine roots; common prominent reddish brown (2.5YR 4/4) clay films on faces of peds; common fine black (10YR 2/1) manganese concretions; few fine chert gravel; moderately acid; gradual wavy boundary.
Bt3—27 to 80 inches; dark red (2.5YR 3/6) clay; few fine prominent dark yellowish brown (10YR 4/6) and strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; moderately sticky; moderately plastic; few very fine and fine roots; common or many prominent red (2.5YR 4/6) clay films on faces of peds; slightly acid.

Range in Characteristics

Depth to bedrock: More than 60 inches
Kind of rock fragments: Subrounded and angular chert
Reaction: Strongly acid or moderately acid, except in limed areas

A or Ap horizon:
Hue—10YR to 5YR

Value—4 or 5
Chroma—2 to 4
Texture of the fine-earth fraction—silt loam or silty clay loam
Content of rock fragments—0 to 10 percent

E horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—3 or 4
Texture of the fine-earth fraction—silt loam
Content of rock fragments—0 to 10 percent

Bt horizon:
Hue—5YR, 2.5YR, or 10R
Value—3 to 5
Chroma—4 to 8
Texture of the fine-earth fraction—silty clay or clay
Content of rock fragments—5 to 35 percent

Wellston Series

Depth class: Deep
Drainage class: Well drained
Permeability: Moderate
Physiographic area: Western Coal Fields
Landform: Undulating or rolling ridges
Parent material: Loess and residuum of sandstone
Slope: 2 to 12 percent
Taxonomic class: Fine-silty, mixed, active, mesic Ultic Hapludalfs

Typical Pedon

Wellston silt loam, 2 to 6 percent slopes; 2.74 miles northeast of Rockfield, 2.92 miles northwest of the intersection of U.S. Highway 68 and Kentucky Highway 1083, about 1.25 miles northeast of the intersection of Fuqua Road and Kentucky Highway 1083, about 2,972 feet east of the intersection of Fuqua Road and a farm path, in pasture; USGS Rockfield Quadrangle; lat. 36 degrees 56 minutes 55 seconds N. and long. 86 degrees 33 minutes 8.1 seconds W.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine roots; strongly acid; abrupt smooth boundary.
Bt1—8 to 13 inches; yellowish brown (10YR 5/6) silt loam; weak fine subangular blocky structure; friable; many fine roots; few faint clay films on faces of peds; few fine black (10YR 2/1) manganese concretions; very strongly acid; clear smooth boundary.
Bt2—13 to 30 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; common fine roots; few distinct brown (7.5YR 5/4) clay films on faces of peds; few fine prominent pale brown (10YR 6/3) silt coatings on faces of peds; few fine black (10YR 2/1) manganese concretions; very strongly acid; abrupt smooth boundary.
2Bt3—30 to 46 inches; strong brown (7.5YR 5/6) gravelly clay loam; moderate medium angular and subangular blocky structure; firm; few fine roots; 20 percent channers of sandstone; very strongly acid; abrupt wavy boundary.
R—46 inches; hard sandstone bedrock.

Range in Characteristics

Depth to bedrock: 40 to 60 inches
Kind of rock fragments: Channers of sandstone
Reaction: Strongly acid or very strongly acid, except in limed areas

A or Ap horizon:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—3 to 8
Texture of the fine-earth fraction—silt loam
Content of rock fragments—0 to 10 percent

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 to 8
Texture of the fine-earth fraction—silt loam or silty clay loam
Content of rock fragments—5 to 15 percent

2Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—3 to 8
Texture of the fine-earth fraction—silt loam, loam, or clay loam
Content of rock fragments—5 to 45 percent

Zanesville Series

Depth class: Deep
Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and slow or very slow in the fragipan
Physiographic area: Western Coal Fields
Landform: Undulating or rolling ridges
Parent material: Loess and residuum of sandstone
Slope: 2 to 12 percent
Taxonomic class: Fine-silty, mixed, active, mesic Typic Fragiudalfs

Typical Pedon

Zanesville silt loam, 2 to 6 percent slopes; 2.27 miles northwest of Richardsville, 1.0 mile northwest of the intersection of Kentucky Highways 2631 and 263, about 0.56 mile northwest of the intersection of Ed Hudson Road and Kentucky Highway 263, about 300 feet northeast of Kentucky Highway 263, in a field; USGS Reedyville Quadrangle; lat. 37 degrees 2 minutes 44.2 seconds N. and long. 86 degrees 9 minutes 36.7 seconds W.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; very friable; many fine roots; moderately alkaline; clear smooth boundary.

Bt1—8 to 16 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; many fine roots; few faint clay films on faces of peds; moderately acid; abrupt smooth boundary.

Bt2—16 to 23 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; strongly acid; clear wavy boundary.

Btx1—23 to 35 inches; yellowish brown (10YR 5/6) silty clay loam; moderate very coarse prismatic structure parting to moderate medium subangular blocky; very firm; common distinct yellowish brown (10YR 5/4) clay films on prism faces; common fine prominent gray (10YR 6/1) silt coatings on prism faces; many medium prominent light brownish gray (10YR 6/2) iron depletions; brittle in 90 percent of the mass; strongly acid; clear wavy boundary.

Btx2—35 to 45 inches; yellowish brown (10YR 5/6) silty clay loam; moderate very coarse prismatic structure parting to moderate medium subangular blocky; very firm; common distinct yellowish brown (10YR 5/4) clay films on prism faces; common fine distinct brown (10YR 5/3) and common fine prominent light brownish gray (10YR 6/2) iron depletions; brittle in 90 percent of the mass; strongly acid; clear smooth boundary.

2C—45 to 56 inches; yellowish brown (10YR 5/6) clay loam; weak medium and coarse platy structure parting to weak medium subangular blocky; firm; common medium prominent gray (10YR 6/1) and light brownish gray (2.5Y 6/2) iron depletions; 10 percent sandstone fragments; very strongly acid; clear smooth boundary.

R—56 inches; hard sandstone bedrock.

Range in Characteristics

Depth to bedrock: 40 to 60 inches
Depth to fragipan: 20 to 32 inches
Kind of rock fragments: Subrounded and angular sandstone
Reaction: Strongly acid or very strongly acid, except in limed areas

A or Ap horizon:
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture of the fine-earth fraction—silt loam
Content of rock fragments—0 to 5 percent

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 to 6
Texture of the fine-earth fraction—silty clay loam or silt loam
Content of rock fragments—0 to 5 percent

Btx horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 to 6
Texture of the fine-earth fraction—silty clay loam or silt loam
Content of rock fragments—0 to 5 percent

2C horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—4 to 6
Texture of the fine-earth fraction—clay loam, silty clay loam, or silt loam
Content of rock fragments—5 to 35 percent

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Glossary

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvial fan. The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Alpha,alpha-dipyridyl. A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction in which a slope faces.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 40-inch profile or to a limiting layer is expressed as:

Very low	0 to 2
Low	2 to 4
Moderate	4 to 6
High	more than 6

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.

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.

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Canopy. The leafy crown of trees or shrubs. (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 but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Channery soil material. Soil material that 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.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that 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. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

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.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the “Soil Survey Manual.”

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

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.

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.

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.

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.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

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.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

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. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Footslope. The position that forms the inner, gently inclined surface at the base of a hillslope. In profile, footslopes are commonly concave. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

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 miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Head slope. 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.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

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.

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 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.

Interfluve. An elevated area between two drainageways that sheds water to those drainageways.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Karst (topography). The relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions or small basins.

Knoll. A small, low, rounded hill rising above adjacent landforms.

K_{sat}. Saturated hydraulic conductivity. (See Permeability.)

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

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. Fine-grained material, dominantly of silt-sized particles, deposited by wind.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Low strength. The soil is not strong enough to support loads.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mudstone. Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

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. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

Nose slope. A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as “saturated hydraulic conductivity,” which is defined in the “Soil Survey Manual.” In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as “permeability.” Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

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.

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 in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments ranging from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Saprolite. Unconsolidated residual material underlying the soil and grading to hard bedrock below.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Second bottom. The first terrace above the normal flood plain (or first bottom) of a river.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shoulder. The position that forms the uppermost inclined surface near the top of a hillslope. It is a transition from backslope to summit. The surface is dominantly convex in profile and erosional in origin.

Side slope. A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole. A depression in the landscape where limestone has been dissolved.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

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:

Level	0 to 1 percent
Nearly level	0 to 3 percent
Gently sloping	2 to 6 percent
Strongly sloping	6 to 12 percent
Moderately steep	12 to 20 percent
Steep	20 to 60 percent
Very steep	45 percent and higher

Classes for complex slopes are as follows:

Level	0 to 1 percent
Nearly level	0 to 3 percent
Undulating	2 to 6 percent
Rolling	6 to 12 percent
Hilly	12 to 20 percent
Steep	20 to 60 percent
Very steep	45 percent and higher

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

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.

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. Fragments of rock and other soil material accumulated by gravity at the foot of cliffs or steep slopes.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The position that forms 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.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Valley fill. In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.

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 and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse-grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.—Temperature and Precipitation

(Recorded in the period 1961-90 at Bowling Green, Kentucky)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snow-fall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January--	42.1	23.6	32.9	69	-8	62	3.83	1.85	5.54	6	5.2
February-	47.1	27.1	37.1	74	0	92	4.13	2.20	5.84	6	3.9
March----	58.2	36.6	47.4	82	15	274	5.10	2.93	7.04	8	1.3
April----	68.6	45.4	57.0	88	26	512	4.32	2.44	5.99	7	0.1
May------	77.3	54.3	65.8	92	35	800	4.94	2.84	6.81	8	0.0
June-----	85.5	62.8	74.1	97	47	1,024	4.17	2.16	5.92	6	0.0
July-----	88.6	67.1	77.9	101	52	1,174	4.74	2.69	6.57	6	0.0
August---	87.2	65.4	76.3	99	51	1,125	3.52	1.87	4.96	5	0.0
September	81.0	58.4	69.7	96	39	890	3.72	1.68	5.47	5	0.0
October--	70.2	45.4	57.8	87	27	552	3.02	1.30	4.49	5	0.0
November-	57.6	37.3	47.5	80	17	260	4.43	2.58	6.08	7	0.4
December-	47.0	28.4	37.7	71	1	104	5.03	2.62	7.13	7	1.8
Yearly:											
Average-	67.5	46.0	56.8	---	---	---	---	---	---	---	---
Extreme-	107	-21	---	101	-10	---	---	---	---	---	---
Total---	---	---	---	---	---	6,868	50.95	43.81	57.84	76	12.8

* 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 1961-90 at Bowling Green, Kentucky)

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. 6	Apr. 11	Apr. 25
2 years in 10 later than--	Mar. 30	Apr. 7	Apr. 20
5 years in 10 later than--	Mar. 17	Mar. 29	Apr. 10
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 30	Oct. 21	Oct. 7
2 years in 10 earlier than--	Nov. 4	Oct. 26	Oct. 12
5 years in 10 earlier than--	Nov. 16	Nov. 5	Oct. 22

Table 3.—Growing Season

(Recorded in the period 1961-90 at Bowling Green, Kentucky)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	218	201	177
8 years in 10	227	208	183
5 years in 10	243	220	194
2 years in 10	259	232	206
1 year in 10	267	238	211

Table 4.—Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
BaB	Baxter gravelly silt loam, 2 to 6 percent slopes	2,525	0.7
BaC	Baxter gravelly silt loam, 6 to 12 percent slopes	39,522	11.3
BaD	Baxter gravelly silt loam, 12 to 20 percent slopes	34,401	9.8
BaE	Baxter gravelly silt loam, 20 to 30 percent slopes	4,269	1.2
BbC3	Baxter gravelly silty clay loam, 6 to 12 percent slopes, severely eroded	2,122	0.6
BbD3	Baxter gravelly silty clay loam, 12 to 20 percent slopes, severely eroded	725	0.2
BrB	Baxter-Urban land complex, 2 to 6 percent slopes	291	*
BrC	Baxter-Urban land complex, 6 to 12 percent slopes	762	0.2
BrD	Baxter-Urban land complex, 12 to 20 percent slopes	372	0.1
CaB	Caneyville silt loam, 2 to 6 percent slopes	280	*
CaC	Caneyville silt loam, 6 to 12 percent slopes	1,177	0.3
CaC3	Caneyville silty clay, 6 to 12 percent slopes, severely eroded	396	0.1
CnD	Caneyville-Rock outcrop complex, 6 to 20 percent slopes	10,605	3.0
CnF	Caneyville-Rock outcrop complex, 20 to 60 percent slopes	19,601	5.6
CoD	Caneyville-Urban land-Rock outcrop complex, 6 to 20 percent slopes	219	*
CoE	Caneyville-Urban land-Rock outcrop complex, 20 to 30 percent slopes	118	*
CrB	Crider silt loam, 2 to 6 percent slopes	50,827	14.5
CrC	Crider silt loam, 6 to 12 percent slopes	8,476	2.4
CuB	Crider-Urban land complex, 2 to 6 percent slopes	9,053	2.6
CuC	Crider-Urban land complex, 6 to 12 percent slopes	1,055	0.3
DAM	Dam, large	70	*
Du	Dunning silty clay loam, ponded	657	0.2
EkB	Elk silt loam, 2 to 6 percent slopes, rarely flooded	1,063	0.3
EpB	Epley silt loam, 2 to 6 percent slopes	335	*
FeB	Fredonia-Vertrees complex, 2 to 6 percent slopes, rocky	286	*
FeC	Fredonia-Vertrees complex, 6 to 12 percent slopes, very rocky	25,248	7.2
FnB	Fredonia-Vertrees-Urban land complex, 2 to 6 percent slopes, rocky	2,712	0.8
FnC	Fredonia-Vertrees-Urban land complex, 6 to 12 percent slopes, very rocky	607	0.2
FnC2	Fredonia-Vertrees-Urban land complex, 6 to 12 percent slopes, eroded, rocky	2,140	0.6
FrC	Frondorf silt loam, 6 to 12 percent slopes	7,148	2.0
FrD	Frondorf silt loam, 12 to 20 percent slopes	8,666	2.5
Gr	Grigsby sandy loam, frequently flooded	609	0.2
HaB	Hammack silt loam, 2 to 6 percent slopes	4,616	1.3
La	Lawrence silt loam, rarely flooded	4,873	1.4
Ld	Lindside silt loam, frequently flooded	1,008	0.3
Me	Melvin silt loam, frequently flooded	1,143	0.3
Ne	Newark silt loam, frequently flooded	3,904	1.1
Nf	Newark silt loam, ponded	332	*
NhA	Nicholson silt loam, 0 to 2 percent slopes	649	0.2
NhB	Nicholson silt loam, 2 to 6 percent slopes	8,254	2.4
NhC	Nicholson silt loam, 6 to 12 percent slopes	172	*
No	Nolin silt loam, frequently flooded	13,685	3.9
Np	Nolin silt loam, ponded	1,675	0.5
OtA	Otwood silt loam, 0 to 2 percent slopes, rarely flooded	48	*
OtB	Otwood silt loam, 2 to 6 percent slopes, rarely flooded	256	*
PbA	Pembroke silt loam, 0 to 2 percent slopes	4,696	1.3
PeA	Pembroke-Urban land complex, 0 to 2 percent slopes	107	*
Pm	Pits, loamy, frequently flooded	22	*
Pq	Pits, quarry	361	0.1
RaF	Ramsey-Frondorf complex, 20 to 60 percent slopes	21,786	6.2
Ro	Robertsville silt loam, ponded	1,246	0.4
RxF	Rock outcrop-Caneyville complex, 20 to 60 percent slopes	6,382	1.8
SaA	Sadler silt loam, 0 to 2 percent slopes	475	0.1
SaB	Sadler silt loam, 2 to 6 percent slopes	2,611	0.7
UaC	Udorthents, 0 to 20 percent slopes	165	*
UaD	Udorthents, refuse substratum, 0 to 25 percent slopes	132	*
Ub	Urban land-Udorthents complex, 0 to 12 percent slopes	1,991	0.6
Uc	Urban land-Udorthents complex, clayey substratum, hard bedrock 0-5 feet, 0 to 12 percent slopes	785	0.2

See footnote at end of table.

Table 4.—Acreage and Proportionate Extent of the Soils—Continued

Map symbol	Soil name	Acres	Percent
Ud	Urban land-Udorthents complex, clayey substratum, hard bedrock >5 feet, 0 to 12 percent slopes	2,017	0.6
Us	Urban land-Udorthents complex, smoothed, 0 to 15 percent slopes	2,412	0.7
VrC3	Vertrees silty clay loam, 6 to 12 percent slopes, severely eroded	1,893	0.5
VtC3	Vertrees-Urban land complex, 6 to 12 percent slopes, severely eroded	193	*
W	Water	3,650	1.0
WeB	Wellston silt loam, 2 to 6 percent slopes	624	0.2
WeC2	Wellston silt loam, 6 to 12 percent slopes, eroded	1,915	0.5
ZaB	Zanesville silt loam, 2 to 6 percent slopes	14,380	4.1
ZaC2	Zanesville silt loam, 6 to 12 percent slopes, eroded	5,579	1.6
ZuB	Zanesville-Urban land complex, 2 to 6 percent slopes	122	*
	Total	350,496	100.0

* Less than 0.1 percent.

Table 5.—Land Capability and Yields per Acre of Crops

(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 units that have Urban land as a major component were not rated and are not included in this table)

Map symbol and soil name	Land capability	Corn	Soybeans	Tobacco	Wheat
		Bu	Bu	Lbs	Bu
BaB: Baxter	2e	100.00	35.00	3,000.00	45.00
BaC: Baxter	3e	90.00	33.00	2,600.00	40.00
BaD: Baxter	4e	75.00	25.00	1,600.00	30.00
BaE: Baxter	6e	---	---	---	---
BbC3: Baxter	4e	75.00	23.00	1,500.00	28.00
BbD3: Baxter	6e	---	---	---	---
CaB: Caneyville	3e	85.00	30.00	2,500.00	---
CaC: Caneyville	4e	70.00	25.00	2,200.00	---
CaC3: Caneyville	6e	---	---	---	---
CnD: Caneyville-Rock outcrop	6s	---	---	---	---
CnF: Caneyville-Rock outcrop	7s	---	---	---	---
CrB: Crider	2e	125.00	50.00	3,400.00	50.00
CrC: Crider	3e	110.00	40.00	2,900.00	45.00
DAM. Dam, large					
Du: Dunning	4w	---	---	---	---
EkB: Elk	2e	125.00	50.00	3,200.00	45.00
EpB: Epley	2e	95.00	35.00	---	---

Table 5.—Land Capability and Yields per Acre of Crops—Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Tobacco	Wheat
		Bu	Bu	Lbs	Bu
FeB: Fredonia-Vertrees	3e	---	28.00	1500.00	---
FeC: Fredonia-Vertrees	4e	---	---	---	---
FrC: Frondorf	3e	85.00	30.00	---	35.00
FrD: Frondorf	4e	80.00	25.00	---	30.00
Gr: Grigsby	2w	---	35.00	2,900.00	---
HaB: Hammack	2e	120.00	40.00	3,100.00	50.00
La: Lawrence	3w	85.00	40.00	1,700.00	---
Ld: Lindside	3w	---	45.00	2,800.00	---
Me: Melvin	4w	---	---	---	---
Ne: Newark	3w	---	35.00	---	---
Nf: Newark	4w	---	30.00	---	---
NhA: Nicholson	2w	125.00	45.00	2,500.00	40.00
NhB: Nicholson	2e	120.00	45.00	3,000.00	40.00
NhC: Nicholson	3e	110.00	30.00	2,200.00	35.00
No: Nolin	2w	---	45.00	3,300.00	---
Np: Nolin	3w	---	35.00	---	---
OtA: Otwood	2w	110.00	40.00	2,600.00	45.00
OtB: Otwood	2e	105.00	40.00	2,550.00	40.00
PbA: Pembroke	1	130.00	50.00	3,400.00	50.00

Table 5.—Land Capability and Yields per Acre of Crops—Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Tobacco	Wheat
		Bu	Bu	Lbs	Bu
Pm. Pits, loamy, frequently flooded					
Pq. Pits, quarry					
RaF. Ramsey-Frondorf	7s	---	---	---	---
Ro. Robertsville	4w	---	---	---	---
RxF. Rock outcrop-Caneyville	7s	---	---	---	---
SaA. Sadler	2w	110.00	45.00	2,600.00	40.00
SaB. Sadler	2e	105.00	40.00	2,550.00	40.00
VrC3. Vertrees	4e	75.00	25.00	1,700.00	30.00
W. Water					
WeB. Wellston	2e	125.00	45.00	3,000.00	45.00
WeC2. Wellston	3e	115.00	40.00	2,800.00	40.00
ZaB. Zanesville	2e	110.00	40.00	2,800.00	40.00
ZaC2. Zanesville	3e	100.00	35.00	2,550.00	35.00

Table 6.—Land Capability and Yields per Acre of Pasture and Hay

(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 pasture or hay crops or those crops generally are not grown on the soil. Map units that have Urban land as a major component were not rated and are not included in this table)

Map symbol and soil name	Land capability	Alfalfa hay	Corn silage	Grass-legume hay	Tall fescue-ladino
		Tons	Tons	Tons	AUM*
BaB---------------------- Baxter	2e	3.50	18.00	4.50	9.00
BaC---------------------- Baxter	3e	3.00	17.00	4.50	9.00
BaD---------------------- Baxter	4e	2.50	15.00	3.50	7.00
BaE---------------------- Baxter	6e	---	---	---	4.00
BbC3--------------------- Baxter	4e	2.50	15.00	3.50	7.00
BbD3--------------------- Baxter	6e	---	---	3.00	6.00
CaB---------------------- Caneyville	3e	---	16.00	4.00	8.00
CaC---------------------- Caneyville	4e	---	15.00	3.50	7.00
CaC3--------------------- Caneyville	6e	---	---	---	5.50
CnD---------------------- Caneyville-Rock outcrop	6s	---	---	---	---
CnF---------------------- Caneyville-Rock outcrop	7s	---	---	---	---
CrB---------------------- Crider	2e	5.00	23.00	5.00	10.00
CrC---------------------- Crider	3e	4.50	18.00	4.50	9.00
DAM. Dam, large					
Du----------------------- Dunning	4w	---	---	4.00	6.00
EkB---------------------- Elk	2e	5.00	23.00	4.50	9.00
EpB---------------------- Epley	2e	---	16.00	4.00	7.00

See footnote at end of table.

Table 6.—Land Capability and Yields per Acre of Pasture and Hay—Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn silage	Grass-legume hay	Tall fescue-ladino
		Tons	Tons	Tons	AUM*
FeB: Fredonia-Vertrees	3e	---	---	3.80	7.50
FeC: Fredonia-Vertrees	4e	---	---	3.50	7.00
FrC: Frondorf	3e	---	16.00	3.00	6.00
FrD: Frondorf	4e	---	15.00	2.50	5.00
Gr: Grigsby	2w	---	17.00	3.00	6.00
HaB: Hammack	2e	3.00	23.00	5.00	10.00
La: Lawrence	3w	---	16.00	3.00	5.50
Ld: Lindside	3w	---	23.00	3.50	7.00
Me: Melvin	4w	---	---	3.50	5.50
Ne: Newark	3w	---	---	4.50	8.50
Nf: Newark	4w	---	---	3.50	7.50
NhA: Nicholson	2w	---	23.00	3.50	7.00
NhB: Nicholson	2e	---	24.00	3.50	6.50
NhC: Nicholson	3e	---	20.00	3.00	6.00
No: Nolin	2w	---	24.00	4.50	9.00
Np: Nolin	3w	---	---	4.00	8.00
OtA: Otwood	2w	---	18.00	3.80	7.50
OtB: Otwood	2e	---	19.00	3.50	7.00
PbA: Pembroke	1	5.00	24.00	5.00	10.00

See footnote at end of table.

Table 6.—Land Capability and Yields per Acre of Pasture and Hay—Continued

Map symbol and soil name	Land capability	Alfalfa hay	Corn silage	Grass-legume hay	Tall fescue-ladino
		Tons	Tons	Tons	AUM*
Pm. Pits, loamy, frequently flooded					
Pq. Pits, quarry					
RaF---------------------- Ramsey-Frondorf	7s	---	---	---	---
Ro----------------------- Robertsville	4w	---	---	3.00	5.50
RxF---------------------- Rock outcrop-Caneyville	7s	---	---	---	---
SaA---------------------- Sadler	2w	---	18.00	3.80	7.50
SaB---------------------- Sadler	2e	---	19.00	3.50	7.00
VrC3--------------------- Vertrees	4e	2.50	---	3.00	6.00
W. Water					
WeB---------------------- Wellston	2e	4.00	23.00	4.00	7.50
WeC2--------------------- Wellston	3e	3.50	22.00	4.00	7.00
ZaB---------------------- Zanesville	2e	---	20.00	4.00	7.50
ZaC2--------------------- Zanesville	3e	---	18.00	3.50	7.00

* Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one sheep, or five goats) for 30 days.

Table 7.—Prime Farmland

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
BaB	Baxter gravelly silt loam, 2 to 6 percent slopes
CaB	Caneyville silt loam, 2 to 6 percent slopes
CrB	Crider silt loam, 2 to 6 percent slopes
EkB	Elk silt loam, 2 to 6 percent slopes, rarely flooded
EpB	Epley silt loam, 2 to 6 percent slopes
Gr	Grigsby sandy loam, frequently flooded (if protected from flooding or not frequently flooded during the growing season)
HaB	Hammack silt loam, 2 to 6 percent slopes
La	Lawrence silt loam, rarely flooded (if drained)
Ld	Lindside silt loam, frequently flooded (if protected from flooding or not frequently flooded during the growing season)
Ne	Newark silt loam, frequently flooded (if drained and either protected from flooding or not frequently flooded during the growing season)
NhA	Nicholson silt loam, 0 to 2 percent slopes
NhB	Nicholson silt loam, 2 to 6 percent slopes
No	Nolin silt loam, frequently flooded (if protected from flooding or not frequently flooded during the growing season)
OtA	Otwood silt loam, 0 to 2 percent slopes, rarely flooded
OtB	Otwood silt loam, 2 to 6 percent slopes, rarely flooded
PbA	Pembroke silt loam, 0 to 2 percent slopes
SaA	Sadler silt loam, 0 to 2 percent slopes
SaB	Sadler silt loam, 2 to 6 percent slopes
WeB	Wellston silt loam, 2 to 6 percent slopes
ZaB	Zanesville silt loam, 2 to 6 percent slopes

Table 8.—Forest Productivity

(Map units that have Urban land as a major component were not rated and are not included in this table)

Map symbol and soil name	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber	Trees to manage
			cu ft/ac	
BaB, BaC, BaD, BaE, BbC3, BbD3:				
Baxter	black oak	80	57	black oak, northern red oak, white oak, yellow-poplar
	northern red oak	85	62	
	white oak	75	57	
	yellow-poplar	92	90	
CaB, CaC, CaC3:				
Caneyville	black oak	75	62	black oak, eastern redcedar, northern red oak, scarlet oak, white oak
	eastern redcedar	45	43	
	northern red oak	70	52	
	scarlet oak	70	52	
	white oak	70	52	
CnD, CnF:				
Caneyville	black oak	75	62	black oak, eastern redcedar, northern red oak, scarlet oak, white oak
	eastern redcedar	45	43	
	northern red oak	70	52	
	scarlet oak	70	52	
	white oak	70	52	
Rock outcrop.				
CrB, CrC:				
Crider	black oak	85	62	black oak, black walnut, northern red oak, white ash, white oak, yellow-poplar
	black walnut	85	62	
	northern red oak	85	62	
	white ash	85	62	
	white oak	75	57	
	yellow-poplar	95	98	
DAM:				
Dam, large				
Du:				
Dunning	American sycamore	85	62	American sycamore, green ash, pin oak, sweetgum, willow oak
	green ash	60	52	
	pin oak	75	57	
	sweetgum	85	70	
	willow oak	75	52	
EkB:				
Elk	black walnut	85	62	black walnut, cherrybark oak, white ash, white oak, yellow-poplar
	cherrybark oak	85	62	
	white ash	80	62	
	white oak	85	62	
	yellow-poplar	100	107	
EpB:				
Epley	black oak	70	57	black oak, cherrybark oak, green ash, sweetgum, white oak
	cherrybark oak	70	57	
	green ash	75	52	
	sweetgum	80	86	
	white oak	70	57	

Table 8.—Forest Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
FeB, FeC:				
Fredonia	eastern redcedar	45	40	black oak, eastern redcedar, northern red oak, scarlet oak
	black oak	80	57	
	northern red oak	70	52	
	scarlet oak	70	52	
Vertrees	eastern redcedar	45	40	black oak, eastern redcedar, northern red oak, scarlet oak
	black oak	80	57	
	northern red oak	70	52	
	scarlet oak	70	52	
FrC, FrD:				
Frondorf	chestnut oak	65	57	chestnut oak, northern red oak, Virginia pine
	northern red oak	55	57	
	Virginia pine	60	90	
Gr:				
Grigsby	American sycamore	80	62	American sycamore, black walnut, cherrybark oak, sweetgum, white oak, yellow-poplar
	black walnut	85	62	
	cherrybark oak	90	72	
	sweetgum	100	107	
	white oak	90	72	
	yellow-poplar	110	129	
HaB:				
Hammack	northern red oak	85	62	northern red oak, white oak, yellow-poplar
	white oak	80	62	
	yellow-poplar	90	86	
La:				
Lawrence	green ash	75	57	green ash, pin oak, sweetgum, white oak, willow oak, yellow-poplar
	pin oak	95	72	
	sweetgum	90	85	
	white oak	85	57	
	willow oak	90	72	
	yellow-poplar	90	95	
Ld:				
Lindside	cherrybark oak	86	72	cherrybark oak, white ash, white oak, willow oak, yellow-poplar
	pin oak	90	72	
	sweetgum	95	95	
	white ash	85	72	
	yellow-poplar	98	100	
Me:				
Melvin	American sycamore	85	62	American sycamore, green ash, pin oak, sweetgum, willow oak
	green ash	85	57	
	pin oak	95	90	
	sweetgum	90	85	
	willow oak	85	62	
Ne:				
Newark	American sycamore	85	62	American sycamore, green ash, pin oak, sweetgum, willow oak
	green ash	85	62	
	pin oak	98	95	
	sweetgum	95	90	
	willow oak	90	62	

Table 8.—Forest Productivity—Continued

Map symbol and soil name	Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
Nf:				
Newark	American sycamore	85	62	American sycamore, green ash, pin oak, sweetgum, willow oak
	green ash	85	62	
	pin oak	95	90	
	sweetgum	95	90	
	willow oak	85	62	
NhA, NhB, NhC:				
Nicholson	black oak	82	57	black oak, cherrybark oak, northern red oak, white oak, yellow-poplar
	cherrybark oak	85	62	
	northern red oak	85	57	
	white oak	75	52	
	yellow-poplar	95	98	
No:				
Nolin	American sycamore	80	62	American sycamore, cherrybark oak, sweetgum, white oak, yellow-poplar
	cherrybark oak	90	72	
	sweetgum	92	98	
	white oak	75	62	
	yellow-poplar	98	107	
Np:				
Nolin	American sycamore	80	57	American sycamore, cherrybark oak, sweetgum, white oak, yellow-poplar
	cherrybark oak	90	57	
	sweetgum	85	90	
	white oak	75	52	
	yellow-poplar	90	92	
OtA, OtB:				
Otwood	cherrybark oak	85	62	cherrybark oak, pin oak, sweetgum, white oak, yellow-poplar
	pin oak	95	98	
	sweetgum	90	92	
	white oak	85	62	
	yellow-poplar	95	98	
PbA:				
Pembroke	black oak	85	72	black oak, black walnut, northern red oak, white ash, yellow-poplar
	black walnut	80	62	
	northern red oak	85	72	
	white ash	85	62	
	yellow-poplar	95	98	
Pm. Pits, loamy, frequently flooded				
Pq. Pits, quarry				
RaF:				
Ramsey	chestnut oak	75	57	chestnut oak, eastern redcedar, Virginia pine, white oak
	eastern redcedar	45	45	
	Virginia pine	60	53	
	white oak	70	52	
Frondorf	chestnut oak	75	57	chestnut oak, eastern redcedar, Virginia pine, white oak
	eastern redcedar	45	45	
	Virginia pine	60	53	
	white oak	70	52	

Table 8.—Forest Productivity—Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
Ro:				
Robertsville	American sycamore	85	62	American sycamore, green ash, pin oak, sweetgum, willow oak
	green ash	60	52	
	pin oak	75	57	
	sweetgum	85	70	
	willow oak	75	52	
RxF:				
Rock outcrop.				
Caneyville	black oak	75	62	black oak, eastern redcedar, northern red oak, scarlet oak, white oak
	eastern redcedar	45	43	
	northern red oak	70	52	
	scarlet oak	70	52	
	white oak	70	52	
SaA, SaB:				
Sadler	cherrybark oak	75	57	cherrybark oak, northern red oak, white oak, yellow-poplar
	northern red oak	75	57	
	white oak	70	57	
	yellow-poplar	90	90	
VrC3:				
Vertrees	black oak	80	57	black oak, northern red oak, scarlet oak, white oak
	northern red oak	85	62	
	scarlet oak	80	57	
	white oak	80	57	
	yellow-poplar	90	90	
W.				
Water				
WeB, WeC2:				
Wellston	yellow-poplar	93	100	chestnut oak, northern red oak, white ash, white oak, yellow-poplar
	northern red oak	82	57	
	chestnut oak	78	57	
	white ash	75	57	
	white oak	74	57	
ZaB, ZaC2:				
Zanesville	black oak	77	57	black oak, chestnut oak, northern red oak, white oak, yellow-poplar
	chestnut oak	76	57	
	northern red oak	85	62	
	white oak	70	57	
	yellow-poplar	88	90	

Table 9.—Forestland Management, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table. Map units that have Urban land as a major component were not rated and are not included in this table)

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for log landings: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
BaB:							
Baxter	90	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
BaC:							
Baxter	85	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
BaD:							
Baxter	85	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
BaE:							
Baxter	80	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
BbC3:							
Baxter	85	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
BbD3:							
Baxter	85	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
CaB:							
Caneyville	85	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
		Restrictive layer	0.50				
CaC:							
Caneyville	85	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
		Restrictive layer	0.50	Strength	0.50		
CaC3:							
Caneyville	85	Moderate		Moderately suited		Severe	
		Stickiness/slope	0.50	Slope	0.50	Strength	1.00
		Strength	0.50	Strength	0.50		
		Restrictive layer	0.50	Stickiness	0.50		
CnD:							
Caneyville	65	Moderate		Poorly suited		Severe	
		Restrictive layer	0.50	Slope	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
Rock outcrop	25	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: 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
CnF:							
Caneyville----------	65	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Strength	1.00
		Stoniness	1.00	Rock fragments	1.00		
		Strength	0.50	Strength	0.50		
Rock outcrop--------	25	Not rated		Not rated		Not rated	
CrB:							
Crider--------------	90	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
CrC:							
Crider--------------	85	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
DAM:							
Dam, large----------	100	Not rated		Not rated		Not rated	
Du:							
Dunning-------------	85	Moderate		Poorly suited		Severe	
		Strength	0.50	Ponding	1.00	Strength	1.00
				Wetness	1.00		
				Strength	0.50		
EkB:							
Elk-----------------	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
EpB:							
Epley---------------	85	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Wetness	0.50		
FeB:							
Fredonia------------	50	Moderate		Moderately suited		Severe	
		Strength	0.50	Rock fragments	0.50	Strength	1.00
		Stickiness/slope	0.50	Strength	0.50		
		Restrictive layer	0.50				
Vertrees------------	35	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
		Stickiness/slope	0.50				
FeC:							
Fredonia------------	50	Moderate		Poorly suited		Severe	
		Strength	0.50	Rock fragments	1.00	Strength	1.00
		Stoniness	0.50	Slope	0.50		
		Stickiness/slope	0.50	Strength	0.50		
		Restrictive layer	0.50				
Vertrees------------	30	Moderate		Poorly suited		Severe	
		Strength	0.50	Rock fragments	1.00	Strength	1.00
		Stoniness	0.50	Slope	0.50		
		Stickiness/slope	0.50	Strength	0.50		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: 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
FrC:							
Frondorf	85	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
FrD:							
Frondorf	85	Severe		Poorly suited		Severe	
		Landslides	1.00	Landslides	1.00	Strength	1.00
		Slope	0.50	Slope	1.00		
		Strength	0.50	Strength	0.50		
Gr:							
Grigsby	90	Severe		Poorly suited		Moderate	
		Flooding	1.00	Flooding	1.00	Strength	0.50
HaB:							
Hammack	85	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
La:							
Lawrence	90	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Wetness	0.50		
Ld:							
Lindside	90	Severe		Poorly suited		Severe	
		Flooding	1.00	Flooding	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
				Wetness	0.50		
Me:							
Melvin	80	Severe		Poorly suited		Severe	
		Flooding	1.00	Flooding	1.00	Strength	1.00
		Strength	0.50	Wetness	1.00		
				Strength	0.50		
Ne:							
Newark	90	Severe		Poorly suited		Severe	
		Flooding	1.00	Flooding	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
				Wetness	0.50		
Nf:							
Newark	90	Moderate		Poorly suited		Severe	
		Strength	0.50	Ponding	1.00	Strength	1.00
				Strength	0.50		
				Wetness	0.50		
NhA, NhB:							
Nicholson	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Wetness	0.50		
NhC:							
Nicholson	85	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
				Wetness	0.50		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings: 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
No:							
Nolin	90	Severe		Poorly suited		Severe	
		Flooding	1.00	Flooding	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
Np:							
Nolin	90	Moderate		Poorly suited		Severe	
		Strength	0.50	Ponding	1.00	Strength	1.00
				Strength	0.50		
OtA, OtB:							
Otwood	90	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Wetness	0.50		
PbA:							
Pembroke	90	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
Pm:							
Pits, loamy, frequently flooded	95	Not rated		Not rated		Not rated	
Pq:							
Pits, quarry	90	Not rated		Not rated		Not rated	
RaF:							
Ramsey	75	Severe		Poorly suited		Severe	
		Landslides	1.00	Slope	1.00	Strength	1.00
		Slope	1.00	Landslides	1.00		
				Strength	0.50		
Frondorf	20	Severe		Poorly suited		Severe	
		Landslides	1.00	Slope	1.00	Strength	1.00
		Slope	1.00	Landslides	1.00		
		Strength	0.50	Strength	0.50		
Ro:							
Robertsville	90	Moderate		Poorly suited		Severe	
		Flooding	0.50	Ponding	1.00	Strength	1.00
		Strength	0.50	Wetness	1.00		
				Flooding	0.50		
				Strength	0.50		
RxF:							
Rock outcrop	55	Not rated		Not rated		Not rated	
Caneyville	33	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Strength	1.00
		Strength	0.50	Strength	0.50		
SaA, SaB:							
Sadler	85	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Wetness	0.50		
VrC3:							
Vertrees	85	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
		Stickiness/slope	0.50	Strength	0.50		

Table 9.—Forestland Management, Part I—Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
W:							
Water	100	Not rated		Not rated		Not rated	
WeB:							
Wellston	90	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
WeC2:							
Wellston	85	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
ZaB:							
Zanesville	85	Moderate		Moderately suited		Severe	
		Strength	0.50	Strength	0.50	Strength	1.00
				Wetness	0.50		
ZaC2:							
Zanesville	80	Moderate		Moderately suited		Severe	
		Strength	0.50	Slope	0.50	Strength	1.00
				Strength	0.50		
				Wetness	0.50		

Table 9.—Forestland Management, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table. Map units that have Urban land as a major component were not rated and are not included in this table)

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BaB:							
Baxter	90	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
BaC:							
Baxter	85	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
BaD:							
Baxter	85	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
BaE:							
Baxter	80	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
BbC3:							
Baxter	85	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
BbD3:							
Baxter	85	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
CaB:							
Caneyville	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
CaC:							
Caneyville	85	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
CaC3:							
Caneyville	85	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
						Stickiness	0.50
CnD:							
Caneyville	65	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
Rock outcrop	25	Not rated		Not rated		Not rated	

Table 9.—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
CnF:							
Caneyville----------	65	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	1.00
						Strength	0.50
Rock outcrop--------	25	Not rated		Not rated		Not rated	
CrB:							
Crider--------------	90	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
CrC:							
Crider--------------	85	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
DAM:							
Dam, large----------	100	Not rated		Not rated		Not rated	
Du:							
Dunning-------------	85	Slight		Slight		Poorly suited	
						Ponding	1.00
						Wetness	1.00
						Strength	0.50
EkB:							
Elk-----------------	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
EpB:							
Epley---------------	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Wetness	0.50
FeB:							
Fredonia------------	50	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Rock fragments	0.50
						Strength	0.50
Vertrees------------	35	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
FeC:							
Fredonia------------	50	Slight		Severe		Poorly suited	
				Slope/erodibility	0.95	Rock fragments	1.00
						Slope	0.50
						Strength	0.50
Vertrees------------	30	Slight		Severe		Poorly suited	
				Slope/erodibility	0.95	Rock fragments	1.00
						Slope	0.50
						Strength	0.50
FrC:							
Frondorf------------	85	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: 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
FrD:							
Frondorf-----------	85	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Landslides	1.00
						Slope	1.00
						Strength	0.50
Gr:							
Grigsby------------	90	Slight		Slight		Poorly suited	
						Flooding	1.00
HaB:							
Hammack------------	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
La:							
Lawrence-----------	90	Slight		Slight		Moderately suited	
						Strength	0.50
						Wetness	0.50
Ld:							
Lindside-----------	90	Slight		Slight		Poorly suited	
						Flooding	1.00
						Strength	0.50
						Wetness	0.50
Me:							
Melvin-------------	80	Slight		Slight		Poorly suited	
						Flooding	1.00
						Wetness	1.00
						Strength	0.50
Ne:							
Newark-------------	90	Slight		Slight		Poorly suited	
						Flooding	1.00
						Strength	0.50
						Wetness	0.50
Nf:							
Newark-------------	90	Slight		Slight		Poorly suited	
						Ponding	1.00
						Strength	0.50
						Wetness	0.50
NhA:							
Nicholson----------	80	Slight		Slight		Moderately suited	
						Strength	0.50
						Wetness	0.50
NhB:							
Nicholson----------	80	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Wetness	0.50
NhC:							
Nicholson----------	85	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
						Wetness	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: 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
No:							
Nolin	90	Slight		Slight		Poorly suited	
						Flooding	1.00
						Strength	0.50
Np:							
Nolin	90	Slight		Slight		Poorly suited	
						Ponding	1.00
						Strength	0.50
OtA:							
Otwood	90	Slight		Slight		Moderately suited	
						Strength	0.50
						Wetness	0.50
OtB:							
Otwood	90	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Wetness	0.50
PbA:							
Pembroke	90	Slight		Slight		Moderately suited	
						Strength	0.50
Pm:							
Pits, loamy, frequently flooded	95	Not rated		Not rated		Not rated	
Pq:							
Pits, quarry	90	Not rated		Not rated		Not rated	
RaF:							
Ramsey	75	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
						Strength	0.50
Frondorf	20	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Landslides	1.00
						Strength	0.50
Ro:							
Robertsville	90	Slight		Slight		Poorly suited	
						Ponding	1.00
						Wetness	1.00
						Flooding	0.50
						Strength	0.50
RxF:							
Rock outcrop	55	Not rated		Not rated		Not rated	
Caneyville	33	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Strength	0.50
SaA:							
Sadler	85	Slight		Slight		Moderately suited	
						Strength	0.50
						Wetness	0.50

Table 9.—Forestland Management, Part II—Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion: 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
SaB:							
Sadler	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Wetness	0.50
VrC3:							
Vertrees	85	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
W:							
Water	100	Not rated		Not rated		Not rated	
WeB:							
Wellston	90	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
WeC2:							
Wellston	85	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
ZaB:							
Zanesville	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Strength	0.50
						Wetness	0.50
ZaC2:							
Zanesville	80	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Strength	0.50
						Wetness	0.50

Table 9.—Forestland Management, Part III

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table. Map units that have Urban land as a major component were not rated and are not included 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
BaB:							
Baxter	90	Well suited		Well suited		Moderately suited	
						Strength	0.50
BaC:							
Baxter	85	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
BaD:							
Baxter	85	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
BaE:							
Baxter	80	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50
						Slope	0.50
BbC3:							
Baxter	85	Moderately suited		Moderately suited		Moderately suited	
		Stickiness	0.50	Stickiness	0.50	Strength	0.50
				Slope	0.50		
				Rock fragments	0.50		
BbD3:							
Baxter	85	Moderately suited		Poorly suited		Moderately suited	
		Stickiness	0.50	Slope	0.75	Strength	0.50
				Stickiness	0.50		
				Rock fragments	0.50		
CaB:							
Caneyville	85	Poorly suited		Poorly suited		Moderately suited	
		Stickiness	0.75	Stickiness	0.75	Strength	0.50
CaC:							
Caneyville	85	Poorly suited		Poorly suited		Moderately suited	
		Stickiness	0.75	Stickiness	0.75	Strength	0.50
				Slope	0.50		
CaC3:							
Caneyville	85	Poorly suited		Poorly suited		Moderately suited	
		Stickiness	0.75	Stickiness	0.75	Strength	0.50
				Slope	0.50	Stickiness	0.50
CnD:							
Caneyville	65	Poorly suited		Poorly suited		Moderately suited	
		Stickiness	0.75	Stickiness	0.75	Strength	0.50
				Slope	0.50		
Rock outcrop	25	Not rated		Not rated		Not rated	

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
CnF:							
Caneyville	65	Poorly suited		Unsuited		Poorly suited	
		Stickiness	0.75	Slope	1.00	Rock fragments	1.00
		Rock fragments	0.75	Rock fragments	1.00	Slope	1.00
		Slope	0.50	Stickiness	0.75	Strength	0.50
Rock outcrop	25	Not rated		Not rated		Not rated	
CrB:							
Crider	90	Well suited		Well suited		Moderately suited	
						Strength	0.50
CrC:							
Crider	85	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
DAM:							
Dam, large	100	Not rated		Not rated		Not rated	
Du:							
Dunning	85	Moderately suited		Moderately suited		Moderately suited	
		Stickiness	0.50	Stickiness	0.50	Strength	0.50
EkB:							
Elk	80	Well suited		Well suited		Moderately suited	
						Strength	0.50
EpB:							
Epley	85	Well suited		Well suited		Moderately suited	
						Strength	0.50
FeB:							
Fredonia	50	Poorly suited		Poorly suited		Moderately suited	
		Stickiness	0.75	Stickiness	0.75	Rock fragments	0.50
				Rock fragments	0.50	Strength	0.50
Vertrees	35	Poorly suited		Poorly suited		Moderately suited	
		Stickiness	0.75	Stickiness	0.75	Strength	0.50
FeC:							
Fredonia	50	Poorly suited		Poorly suited		Poorly suited	
		Stickiness	0.75	Stickiness	0.75	Rock fragments	1.00
		Rock fragments	0.50	Rock fragments	0.75	Strength	0.50
				Slope	0.50		
Vertrees	30	Poorly suited		Poorly suited		Poorly suited	
		Stickiness	0.75	Stickiness	0.75	Rock fragments	1.00
		Rock fragments	0.50	Rock fragments	0.75	Strength	0.50
				Slope	0.50		
FrC:							
Frondorf	85	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
FrD:							
Frondorf	85	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Strength	0.50

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
Gr:							
Grigsby	90	Well suited		Well suited		Well suited	
HaB:							
Hammack	85	Well suited		Well suited		Moderately suited	
						Strength	0.50
La:							
Lawrence	90	Well suited		Well suited		Moderately suited	
						Strength	0.50
Ld:							
Lindside	90	Well suited		Well suited		Moderately suited	
						Strength	0.50
Me:							
Melvin	80	Well suited		Well suited		Moderately suited	
						Strength	0.50
Ne, Nf:							
Newark	90	Well suited		Well suited		Moderately suited	
						Strength	0.50
NhA, NhB:							
Nicholson	80	Well suited		Well suited		Moderately suited	
						Strength	0.50
NhC:							
Nicholson	85	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
No, Np:							
Nolin	90	Well suited		Well suited		Moderately suited	
						Strength	0.50
OtA, OtB:							
Otwood	90	Well suited		Well suited		Moderately suited	
						Strength	0.50
PbA:							
Pembroke	90	Well suited		Well suited		Moderately suited	
						Strength	0.50
Pm:							
Pits, loamy, frequently flooded	95	Not rated		Not rated		Not rated	
Pq:							
Pits, quarry	90	Not rated		Not rated		Not rated	
RaF:							
Ramsey	75	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
						Strength	0.50
Frondorf	20	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
						Strength	0.50

Table 9.—Forestland Management, Part III—Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting: Rating class and limiting features	Value	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for use of harvesting equipment: Rating class and limiting features	Value
Ro:							
Robertsville	90	Well suited		Well suited		Moderately suited	
						Strength	0.50
RxF:							
Rock outcrop	55	Not rated		Not rated		Not rated	
Caneyville	33	Poorly suited		Unsuited		Poorly suited	
		Stickiness	0.75	Slope	1.00	Slope	1.00
		Slope	0.50	Stickiness	0.75	Strength	0.50
SaA, SaB:							
Sadler	85	Well suited		Well suited		Moderately suited	
						Strength	0.50
VrC3:							
Vertrees	85	Poorly suited		Poorly suited		Moderately suited	
		Stickiness	0.75	Stickiness	0.75	Strength	0.50
				Slope	0.50		
W:							
Water	100	Not rated		Not rated		Not rated	
WeB:							
Wellston	90	Well suited		Well suited		Moderately suited	
						Strength	0.50
WeC2:							
Wellston	85	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50
ZaB:							
Zanesville	85	Well suited		Well suited		Moderately suited	
						Strength	0.50
ZaC2:							
Zanesville	80	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Strength	0.50

Table 9.—Forestland Management, Part IV

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table. Map units that have Urban land as a major component were not rated and are not included in this table)

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
BaB:					
Baxter	90	Well suited		Well suited	
BaC:					
Baxter	85	Well suited		Well suited	
BaD:					
Baxter	85	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
BaE:					
Baxter	80	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
BbC3:					
Baxter	85	Well suited		Well suited	
BbD3:					
Baxter	85	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
CaB, CaC, CaC3:					
Caneyville	85	Poorly suited		Poorly suited	
		Stickiness	0.50	Restrictive layer	0.50
CnD:					
Caneyville	65	Poorly suited		Poorly suited	
		Stickiness	0.50	Restrictive layer	0.50
Rock outcrop	25	Not rated		Not rated	
CnF:					
Caneyville	65	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Rock fragments	1.00	Rock fragments	1.00
		Stickiness	0.50	Restrictive layer	0.50
Rock outcrop	25	Not rated		Not rated	
CrB:					
Crider	90	Well suited		Well suited	
CrC:					
Crider	85	Well suited		Well suited	
DAM:					
Dam, large	100	Not rated		Not rated	
Du:					
Dunning	85	Poorly suited		Well suited	
		Stickiness	0.50		

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
EkB:					
Elk	80	Well suited		Well suited	
EpB:					
Epley	85	Well suited		Well suited	
FeB:					
Fredonia	50	Poorly suited		Well suited	
		Rock fragments	0.50		
		Stickiness	0.50		
Vertrees	35	Poorly suited		Well suited	
		Stickiness	0.50		
FeC:					
Fredonia	50	Unsuited		Poorly suited	
		Rock fragments	1.00	Rock fragments	0.50
		Stickiness	0.50		
Vertrees	30	Unsuited		Poorly suited	
		Rock fragments	1.00	Rock fragments	0.50
		Stickiness	0.50		
FrC:					
Frondorf	85	Well suited		Unsuited	
				Restrictive layer	1.00
FrD:					
Frondorf	85	Poorly suited		Unsuited	
		Slope	0.50	Restrictive layer	1.00
				Slope	0.50
Gr:					
Grigsby	90	Well suited		Well suited	
HaB:					
Hammack	85	Well suited		Well suited	
La:					
Lawrence	90	Well suited		Well suited	
Ld:					
Lindside	90	Well suited		Well suited	
Me:					
Melvin	80	Well suited		Well suited	
Ne, Nf:					
Newark	90	Well suited		Well suited	
NhA, NhB:					
Nicholson	80	Well suited		Well suited	
NhC:					
Nicholson	85	Well suited		Well suited	
No, Np:					
Nolin	90	Well suited		Well suited	

Table 9.—Forestland Management, Part IV—Continued

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface): Rating class and limiting features	Value	Suitability for mechanical site preparation (deep): Rating class and limiting features	Value
OtA, OtB:					
Otwood	90	Well suited		Well suited	
PbA:					
Pembroke	90	Well suited		Well suited	
Pm:					
Pits, loamy, frequently flooded	95	Not rated		Not rated	
Pq:					
Pits, quarry	90	Not rated		Not rated	
RaF:					
Ramsey	75	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
				Restrictive layer	1.00
Frondorf	20	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
				Restrictive layer	0.50
Ro:					
Robertsville	90	Well suited		Well suited	
RxF:					
Rock outcrop	55	Not rated		Not rated	
Caneyville	33	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
		Stickiness	0.50	Restrictive layer	0.50
SaA, SaB:					
Sadler	85	Well suited		Well suited	
VrC3:					
Vertrees	85	Poorly suited		Well suited	
		Stickiness	0.50		
W:					
Water	100	Not rated		Not rated	
WeB:					
Wellston	90	Well suited		Well suited	
WeC2:					
Wellston	85	Well suited		Well suited	
ZaB:					
Zanesville	85	Well suited		Well suited	
ZaC2:					
Zanesville	80	Well suited		Well suited	

Table 9.—Forestland Management, Part V

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table. Map units that have Urban land as a major component were not rated and are not included in this table)

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
BaB:					
Baxter	90	Low		Low	
		Texture/coarse fragments	0.10		
BaC, BaD:					
Baxter	85	Low		Low	
		Texture/coarse fragments	0.10		
BaE:					
Baxter	80	Low		Low	
		Texture/coarse fragments	0.10		
BbC3, BbD3:					
Baxter	85	Low		Low	
CaB, CaC:					
Caneyville	85	Low		Moderate	
		Texture/coarse fragments	0.10	Droughty	0.5
CaC3:					
Caneyville	85	High		Moderate	
		Texture/surface depth/coarse fragments	1.00	Droughty	0.75
CnD:					
Caneyville	65	Low		Moderate	
		Texture/coarse fragments	0.10	Droughty	0.75
Rock outcrop	25	Not rated		Not rated	
CnF:					
Caneyville	65	Low		High	
				Droughty	1.00
Rock outcrop	25	Not rated		Not rated	
CrB:					
Crider	90	Low		Low	
		Texture/coarse fragments	0.10		
CrC:					
Crider	85	Low		Low	
		Texture/coarse fragments	0.10		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
DAM:					
Dam, large	100	Not rated		Not rated	
Du:					
Dunning	85	Low		High	
				Wetness	1.00
EkB:					
Elk	80	Moderate		Low	
		Texture/coarse fragments	0.50		
EpB:					
Epley	85	Low		Low	
		Texture/coarse fragments	0.10		
FeB:					
Fredonia	50	Low		Low	
		Texture/coarse fragments	0.10		
Vertrees	35	Low		Low	
		Texture/coarse fragments	0.10		
FeC:					
Fredonia	50	Low		Moderate	
		Texture/coarse fragments	0.10	Droughty	0.5
Vertrees	30	Low		Moderate	
		Texture/coarse fragments	0.10	Droughty	0.5
FrC, FrD:					
Frondorf	85	Low		Low	
		Texture/coarse fragments	0.10		
Gr:					
Grigsby	90	Low		Low	
		Texture/coarse fragments	0.10		
HaB:					
Hammack	85	Low		Low	
		Texture/coarse fragments	0.10		
La:					
Lawrence	90	Low		Moderate	
		Texture/coarse fragments	0.10	Wetness	0.5
Ld:					
Lindside	90	Low		Low	
		Texture/coarse fragments	0.10		

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
Me:					
Melvin	80	Moderate		High	
		Texture/coarse fragments	0.50	Wetness	1.00
Ne:					
Newark	90	Low		Moderate	
		Texture/coarse fragments	0.10	Wetness	0.5
Nf:					
Newark	90	Low		High	
		Texture/coarse fragments	0.10	Wetness	1.00
NhA, NhB:					
Nicholson	80	Low		Low	
		Texture/coarse fragments	0.10		
NhC:					
Nicholson	85	Low		Low	
		Texture/coarse fragments	0.10		
No:					
Nolin	90	Low		Low	
		Texture/coarse fragments	0.10		
Np:					
Nolin	90	Low		Moderate	
		Texture/coarse fragments	0.10	Wetness	0.25
OtA, OtB:					
Otwood	90	Moderate		Low	
		Texture/coarse fragments	0.50		
PbA:					
Pembroke	90	Low		Low	
		Texture/coarse fragments	0.10		
Pm:					
Pits, loamy, frequently flooded	95	Not rated		Not rated	
Pq:					
Pits, quarry	90	Not rated		Not rated	
RaF:					
Ramsey	75	Moderate		High	
		Texture/slope/ surface depth/ coarse fragments	0.50	Droughty	1.00

Table 9.—Forestland Management, Part V—Continued

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire: Rating class and limiting features	Value	Potential for seedling mortality: Rating class and limiting features	Value
RaF:					
Frondorf------------	20	Low		High	
		Texture/coarse fragments	0.10	Droughty	1.00
Ro:					
Robertsville--------	90	Low		High	
		Texture/coarse fragments	0.10	Wetness	1.00
RxF:					
Rock outcrop--------	55	Not rated		Not rated	
Caneyville----------	33	Low		High	
		Texture/coarse fragments	0.1	Droughty	1.00
SaA, SaB:					
Sadler--------------	85	Moderate		Low	
		Texture/coarse fragments	0.50		
VrC3:					
Vertrees------------	85	Low		Low	
W:					
Water---------------	100	Not rated		Not rated	
WeB:					
Wellston------------	90	Low		Low	
		Texture/coarse fragments	0.10		
WeC2:					
Wellston------------	85	Low		Low	
		Texture/coarse fragments	0.10		
ZaB:					
Zanesville----------	85	Moderate		Low	
		Texture/coarse fragments	0.50		
ZaC2:					
Zanesville----------	80	Moderate		Low	
		Texture/coarse fragments	0.50		

Table 10.—Recreation, 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. See table 11, part I, for ratings for map units that have Urban land as a major component)

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
BaB:							
Baxter	90	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.26	Restricted permeability	0.26	Gravel content	1.00
		Gravel content	0.11	Gravel content	0.11	Slope	0.50
						Restricted permeability	0.26
						Content of large stones	0.01
BaC:							
Baxter	85	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.26	Restricted permeability	0.26	Slope	1.00
		Gravel content	0.11	Gravel content	0.11	Gravel content	1.00
		Slope	0.04	Slope	0.04	Restricted permeability	0.26
						Content of large stones	0.01
BaD:							
Baxter	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.26	Restricted permeability	0.26	Gravel content	1.00
		Gravel content	0.11	Gravel content	0.11	Restricted permeability	0.26
						Content of large stones	0.01
BaE:							
Baxter	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.26	Restricted permeability	0.26	Gravel content	1.00
		Gravel content	0.11	Gravel content	0.11	Restricted permeability	0.26
						Content of large stones	0.01
BbC3:							
Baxter	85	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.26	Restricted permeability	0.26	Slope	1.00
		Gravel content	0.22	Gravel content	0.22	Gravel content	1.00
		Slope	0.04	Slope	0.04	Restricted permeability	0.26
						Content of large stones	0.01
BbD3:							
Baxter	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.26	Restricted permeability	0.26	Gravel content	1.00
		Gravel content	0.22	Gravel content	0.22	Restricted permeability	0.26
						Content of large stones	0.01

Table 10.—Recreation, 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
CaB:							
Caneyville----------	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Restricted permeability	0.99
						Depth to bedrock	0.71
						Slope	0.50
CaC:							
Caneyville----------	85	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
		Slope	0.04	Slope	0.04	Restricted permeability	0.99
						Depth to bedrock	0.71
CaC3:							
Caneyville----------	85	Very limited		Very limited		Very limited	
		Too clayey	1.00	Too clayey	1.00	Slope	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Too clayey	1.00
		Slope	0.04	Slope	0.04	Restricted permeability	0.99
						Depth to bedrock	0.71
CnD:							
Caneyville----------	65	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
		Slope	0.84	Slope	0.84	Restricted permeability	0.99
						Depth to bedrock	0.71
Rock outcrop--------	25	Not rated		Not rated		Not rated	
CnF:							
Caneyville----------	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too stony	1.00	Too stony	1.00	Too stony	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Restricted permeability	0.99
						Depth to bedrock	0.71
Rock outcrop--------	25	Not rated		Not rated		Not rated	
CrB:							
Crider--------------	90	Not limited		Not limited		Somewhat limited	
						Slope	0.50
CrC:							
Crider--------------	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Slope	0.04	Slope	1.00
DAM:							
Dam, large----------	100	Not rated		Not rated		Not rated	
Du:							
Dunning-------------	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96

Table 10.—Recreation, 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
EkB:							
Elk	80	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Slope	0.50
EpB:							
Epley	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Restricted permeability	0.99
		Depth to saturated zone	0.88	Depth to saturated zone	0.56	Depth to saturated zone	0.88
						Slope	0.50
FeB:							
Fredonia	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
		Too stony	0.19	Too stony	0.19	Slope	0.50
						Too stony	0.19
						Depth to bedrock	0.03
Vertrees	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
						Slope	0.50
FeC:							
Fredonia	50	Very limited		Very limited		Very limited	
		Too stony	1.00	Too stony	1.00	Slope	1.00
		Restricted permeability	0.96	Restricted permeability	0.96	Too stony	1.00
		Slope	0.04	Slope	0.04	Restricted permeability	0.96
						Depth to bedrock	0.03
Vertrees	30	Very limited		Very limited		Very limited	
		Too stony	1.00	Too stony	1.00	Slope	1.00
		Restricted permeability	0.96	Restricted permeability	0.96	Too stony	1.00
		Slope	0.04	Slope	0.04	Restricted permeability	0.96
FrC:							
Frondorf	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Slope	0.04	Slope	1.00
						Depth to bedrock	0.80
FrD:							
Frondorf	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.80
Gr:							
Grigsby	90	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.40	Flooding	1.00
HaB:							
Hammack	85	Not limited		Not limited		Somewhat limited	
						Slope	0.50

Table 10.—Recreation, 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
La:							
Lawrence	90	Very limited		Somewhat limited		Very limited	
		Depth to saturated zone	1.00	Restricted permeability	0.99	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	0.94	Restricted permeability	0.99
		Restricted permeability	0.99				
Ld:							
Lindside	90	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Depth to saturated zone	0.56	Flooding	1.00
		Depth to saturated zone	0.88	Flooding	0.40	Depth to saturated zone	0.88
Me:							
Melvin	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Flooding	0.40	Flooding	1.00
Ne:							
Newark	90	Very limited		Somewhat limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
		Flooding	1.00	Flooding	0.40	Flooding	1.00
Nf:							
Newark	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	0.94	Ponding	1.00
NhA:							
Nicholson	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Restricted permeability	0.99
		Depth to saturated zone	0.88	Depth to saturated zone	0.56	Depth to saturated zone	0.88
NhB:							
Nicholson	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Restricted permeability	0.99
		Depth to saturated zone	0.88	Depth to saturated zone	0.56	Depth to saturated zone	0.88
						Slope	0.50
NhC:							
Nicholson	85	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
		Depth to saturated zone	0.88	Depth to saturated zone	0.56	Restricted permeability	0.99
		Slope	0.04	Slope	0.04	Depth to saturated zone	0.88
No:							
Nolin	90	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.40	Flooding	1.00

Table 10.—Recreation, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Np:							
Nolin	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
OtA:							
Otwood	90	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Restricted permeability	0.99	Restricted permeability	0.99
		Restricted permeability	0.99	Depth to saturated zone	0.43	Depth to saturated zone	0.77
		Depth to saturated zone	0.77				
OtB:							
Otwood	90	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Restricted permeability	0.99	Restricted permeability	0.99
		Restricted permeability	0.99	Depth to saturated zone	0.43	Depth to saturated zone	0.77
		Depth to saturated zone	0.77			Slope	0.50
PbA:							
Pembroke	90	Not limited		Not limited		Not limited	
Pm:							
Pits, loamy, frequently flooded	95	Not rated		Not rated		Not rated	
Pq:							
Pits, quarry	90	Not rated		Not rated		Not rated	
RaF:							
Ramsey	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Gravel content	0.16
						Content of large stones	0.01
Frondorf	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.80
Ro:							
Robertsville	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Restricted permeability	0.99	Restricted permeability	0.99
		Restricted permeability	0.99			Flooding	0.60
RxF:							
Rock outcrop	55	Not rated		Not rated		Not rated	
Caneyville	33	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Restricted permeability	0.99
						Depth to bedrock	0.71

Table 10.—Recreation, 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
SaA:							
Sadler	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Restricted permeability	0.99
		Depth to saturated zone	0.77	Depth to saturated zone	0.43	Depth to saturated zone	0.77
SaB:							
Sadler	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Restricted permeability	0.99
		Depth to saturated zone	0.77	Depth to saturated zone	0.43	Depth to saturated zone	0.77
						Slope	0.50
VrC3:							
Vertrees	85	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.96	Restricted permeability	0.96	Slope	1.00
		Slope	0.04	Slope	0.04	Restricted permeability	0.96
W:							
Water	100	Not rated		Not rated		Not rated	
WeB:							
Wellston	90	Not limited		Not limited		Somewhat limited	
						Slope	0.50
WeC2:							
Wellston	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Slope	0.04	Slope	1.00
ZaB:							
Zanesville	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Restricted permeability	0.99
		Depth to saturated zone	0.77	Depth to saturated zone	0.43	Depth to saturated zone	0.77
						Slope	0.50
ZaC2:							
Zanesville	80	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
		Depth to saturated zone	0.77	Depth to saturated zone	0.43	Restricted permeability	0.99
		Slope	0.04	Slope	0.04	Depth to saturated zone	0.77

Table 10.—Recreation, 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. See table 11, part II, for ratings for map units that have Urban land as a major component)

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
BaB:							
Baxter	90	Not limited		Not limited		Somewhat limited	
						Gravel content	0.11
						Content of large stones	0.01
BaC:							
Baxter	85	Not limited		Not limited		Somewhat limited	
						Gravel content	0.11
						Slope	0.04
						Content of large stones	0.01
BaD:							
Baxter	85	Somewhat limited		Not limited		Very limited	
		Slope	0.02			Slope	1.00
						Gravel content	0.11
						Content of large stones	0.01
BaE:							
Baxter	80	Very limited		Not limited		Very limited	
		Slope	1.00			Slope	1.00
						Gravel content	0.11
						Content of large stones	0.01
BbC3:							
Baxter	85	Not limited		Not limited		Somewhat limited	
						Gravel content	0.22
						Slope	0.04
						Content of large stones	0.01
BbD3:							
Baxter	85	Somewhat limited		Not limited		Very limited	
		Slope	0.02			Slope	1.00
						Gravel content	0.22
						Content of large stones	0.01
CaB:							
Caneyville	85	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.71
						Droughty	0.14
CaC:							
Caneyville	85	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Depth to bedrock	0.71
						Droughty	0.14
						Slope	0.04

Table 10.—Recreation, 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
CaC3:							
Caneyville	85	Very limited		Very limited		Very limited	
		Too clayey	1.00	Too clayey	1.00	Too clayey	1.00
						Depth to bedrock	0.71
						Droughty	0.23
						Slope	0.04
CnD:							
Caneyville	65	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Slope	0.84
						Depth to bedrock	0.71
						Droughty	0.14
Rock outcrop	25	Not rated		Not rated		Not rated	
CnF:							
Caneyville	65	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Too stony	1.00	Too stony	1.00	Depth to bedrock	0.71
		Slope	1.00	Slope	1.00	Droughty	0.14
Rock outcrop	25	Not rated		Not rated		Not rated	
CrB:							
Crider	90	Not limited		Not limited		Not limited	
CrC:							
Crider	85	Not limited		Not limited		Somewhat limited	
						Slope	0.04
DAM:							
Dam, large	100	Not rated		Not rated		Not rated	
Du:							
Dunning	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
EkB:							
Elk	80	Not limited		Not limited		Not limited	
EpB:							
Epley	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.18	Depth to saturated zone	0.18	Depth to saturated zone	0.56
FeB:							
Fredonia	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Too stony	0.19	Too stony	0.19	Depth to bedrock	0.03
Vertrees	35	Not limited		Not limited		Not limited	
FeC:							
Fredonia	50	Very limited		Very limited		Somewhat limited	
		Too stony	1.00	Too stony	1.00	Slope	0.04
		Water erosion	1.00	Water erosion	1.00	Depth to bedrock	0.03

Table 10.—Recreation, 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
FeC:							
Vertrees	30	Very limited		Very limited		Somewhat limited	
		Too stony	1.00	Too stony	1.00	Slope	0.04
		Water erosion	1.00	Water erosion	1.00		
FrC:							
Frondorf	85	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Droughty	0.10
						Slope	0.04
FrD:							
Frondorf	85	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	0.02			Depth to bedrock	0.80
						Droughty	0.10
Gr:							
Grigsby	90	Somewhat limited		Somewhat limited		Very limited	
		Flooding	0.40	Flooding	0.40	Flooding	1.00
HaB:							
Hammack	85	Not limited		Not limited		Not limited	
La:							
Lawrence	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
Ld:							
Lindside	90	Somewhat limited		Somewhat limited		Very limited	
		Flooding	0.40	Flooding	0.40	Flooding	1.00
		Depth to saturated zone	0.18	Depth to saturated zone	0.18	Depth to saturated zone	0.56
Me:							
Melvin	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Flooding	0.40	Flooding	0.40	Depth to saturated zone	1.00
Ne:							
Newark	90	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.86	Depth to saturated zone	0.86	Flooding	1.00
		Flooding	0.40	Flooding	0.40	Depth to saturated zone	0.94
Nf:							
Newark	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
NhA, NhB:							
Nicholson	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.18	Depth to saturated zone	0.18	Depth to saturated zone	0.56

Table 10.—Recreation, 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
NhC:							
Nicholson-----------	85	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	0.56
		Depth to saturated zone	0.18	Depth to saturated zone	0.18	Slope	0.04
No:							
Nolin---------------	90	Somewhat limited		Somewhat limited		Very limited	
		Flooding	0.40	Flooding	0.40	Flooding	1.00
Np:							
Nolin---------------	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
OtA, OtB:							
Otwood--------------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.08	Depth to saturated zone	0.08	Depth to saturated zone	0.43
PbA:							
Pembroke------------	90	Not limited		Not limited		Not limited	
Pm:							
Pits, loamy, frequently flooded-	95	Not rated		Not rated		Not rated	
Pq:							
Pits, quarry--------	90	Not rated		Not rated		Not rated	
RaF:							
Ramsey--------------	75	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
						Slope	1.00
						Droughty	0.99
						Content of large stones	0.01
Frondorf------------	20	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Depth to bedrock	0.80
Ro:							
Robertsville--------	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
						Flooding	0.60
RxF:							
Rock outcrop--------	55	Not rated		Not rated		Not rated	
Caneyville----------	33	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Depth to bedrock	0.71
						Droughty	0.14
SaA, SaB:							
Sadler--------------	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.08	Depth to saturated zone	0.08	Depth to saturated zone	0.43

Table 10.—Recreation, 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
VrC3:							
Vertrees------------	85	Not limited		Not limited		Somewhat limited	
						Slope	0.04
W:							
Water---------------	100	Not rated		Not rated		Not rated	
WeB:							
Wellston------------	90	Not limited		Not limited		Not limited	
WeC2:							
Wellston------------	85	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Slope	0.04
ZaB:							
Zanesville----------	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.08	Depth to saturated zone	0.08	Depth to saturated zone	0.43
ZaC2:							
Zanesville----------	80	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	0.43
		Depth to saturated zone	0.08	Depth to saturated zone	0.08	Slope	0.04

Table 11.—Recreation Interpretations for Urban Areas, 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
BrB:							
Baxter	60	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.26	Restricted permeability	0.26	Gravel content	1.00
		Gravel content	0.11	Gravel content	0.11	Slope	0.50
						Restricted permeability	0.26
						Content of large stones	0.01
Urban land	30	Not rated		Not rated		Not rated	
BrC:							
Baxter	55	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.26	Restricted permeability	0.26	Slope	1.00
		Gravel content	0.11	Gravel content	0.11	Gravel content	1.00
		Slope	0.04	Slope	0.04	Restricted permeability	0.26
						Content of large stones	0.01
Urban land	30	Not rated		Not rated		Not rated	
BrD:							
Baxter	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.26	Restricted permeability	0.26	Gravel content	1.00
		Gravel content	0.11	Gravel content	0.11	Restricted permeability	0.26
						Content of large stones	0.01
Urban land	25	Not rated		Not rated		Not rated	
CoD:							
Caneyville	40	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Slope	1.00
		Slope	0.84	Slope	0.84	Restricted permeability	0.99
						Depth to bedrock	0.71
Urban land	25	Not rated		Not rated		Not rated	
Rock outcrop	20	Not rated		Not rated		Not rated	
CoE:							
Caneyville	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.99	Restricted permeability	0.99	Restricted permeability	0.99
						Depth to bedrock	0.71
Urban land	25	Not rated		Not rated		Not rated	
Rock outcrop	20	Not rated		Not rated		Not rated	

Table 11.—Recreation Interpretations for Urban Areas, 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
CuB:							
Crider	55	Not limited		Not limited		Somewhat limited	
						Slope	0.50
Urban land	35	Not rated		Not rated		Not rated	
CuC:							
Crider	55	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Slope	0.04	Slope	1.00
Urban land	35	Not rated		Not rated		Not rated	
FnB:							
Fredonia	37	Very limited		Very limited		Very limited	
		Too stony	1.00	Too stony	1.00	Slope	1.00
		Restricted permeability	0.96	Restricted permeability	0.96	Too stony	1.00
						Restricted permeability	0.96
						Depth to bedrock	0.03
Vertrees	30	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
						Slope	0.50
Urban land	25	Not rated		Not rated		Not rated	
FnC:							
Fredonia	37	Very limited		Very limited		Very limited	
		Too stony	1.00	Too stony	1.00	Slope	1.00
		Restricted permeability	0.96	Restricted permeability	0.96	Too stony	1.00
		Slope	0.04	Slope	0.04	Restricted permeability	0.96
						Depth to bedrock	0.03
Vertrees	27	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.96	Restricted permeability	0.96	Slope	1.00
		Slope	0.04	Slope	0.04	Restricted permeability	0.96
Urban land	25	Not rated		Not rated		Not rated	
FnC2:							
Fredonia	37	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.96	Restricted permeability	0.96	Slope	1.00
		Too stony	0.76	Too stony	0.76	Restricted permeability	0.96
		Slope	0.04	Slope	0.04	Too stony	0.76
						Depth to bedrock	0.03
Vertrees	30	Somewhat limited		Somewhat limited		Very limited	
		Restricted permeability	0.96	Restricted permeability	0.96	Slope	1.00
		Slope	0.04	Slope	0.04	Restricted permeability	0.96
Urban land	25	Not rated		Not rated		Not rated	
PeA:							
Pembroke	65	Not limited		Not limited		Not limited	
Urban land	25	Not rated		Not rated		Not rated	

Table 11.—Recreation Interpretations for Urban Areas, 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
UaC:							
Udorthents	95	Not rated Onsite investigation needed		Not rated Onsite investigation needed		Not rated Onsite investigation needed	
UaD:							
Udorthents, refuse substratum	95	Not rated Onsite investigation needed		Not rated Onsite investigation needed		Not rated Onsite investigation needed	
Ub:							
Urban land	75	Not rated		Not rated		Not rated	
Udorthents	22	Not rated Onsite investigation needed		Not rated Onsite investigation needed		Not rated Onsite investigation needed	
Uc:							
Urban land	50	Not rated		Not rated		Not rated	
Udorthents, clayey substratum, hard bedrock 0-5 feet	30	Very limited Too clayey Restricted permeability	 1.00 0.99	Very limited Too clayey Restricted permeability	 1.00 0.99	Very limited Slope Too clayey Restricted permeability	 1.00 1.00 0.99
Ud:							
Urban land	75	Not rated		Not rated		Not rated	
Udorthents, clayey substratum, hard bedrock >5 feet	20	Very limited Too clayey Restricted permeability	 1.00 0.99	Very limited Too clayey Restricted permeability	 1.00 0.99	Very limited Slope Too clayey Restricted permeability	 1.00 1.00 0.99
Us:							
Urban land	60	Not rated		Not rated		Not rated	
Udorthents, smoothed	40	Impractical		Impractical		Impractical	
VtC3:							
Vertrees	60	Somewhat limited Restricted permeability Slope	 0.96 0.04	Somewhat limited Restricted permeability Slope	 0.96 0.04	Very limited Slope Restricted permeability	 1.00 0.96
Urban land	25	Not rated		Not rated		Not rated	

Table 11.—Recreation Interpretations for Urban Areas, Part I—Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ZuB:							
Zanesville----------	65	Somewhat limited		Somewhat limited		Somewhat limited	
		Restricted permeability	0.99	Restricted permeability	0.99	Restricted permeability	0.99
		Depth to saturated zone	0.77	Depth to saturated zone	0.43	Depth to saturated zone	0.77
						Slope	0.50
Urban land----------	25	Not rated		Not rated		Not rated	

Table 11.—Recreation Interpretations for Urban Areas, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
BrB:							
Baxter	60	Not limited		Not limited		Somewhat limited	
						Gravel content	0.11
						Content of large stones	0.01
Urban land	30	Not rated		Not rated		Not rated	
BrC:							
Baxter	55	Not limited		Not limited		Somewhat limited	
						Gravel content	0.11
						Slope	0.04
						Content of large stones	0.01
Urban land	30	Not rated		Not rated		Not rated	
BrD:							
Baxter	60	Somewhat limited		Not limited		Very limited	
		Slope	0.02			Slope	1.00
						Gravel content	0.11
						Content of large stones	0.01
Urban land	25	Not rated		Not rated		Not rated	
CoD:							
Caneyville	40	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Slope	0.84
						Depth to bedrock	0.71
						Droughty	0.14
Urban land	25	Not rated		Not rated		Not rated	
Rock outcrop	20	Not rated		Not rated		Not rated	
CoE:							
Caneyville	40	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	1.00			Depth to bedrock	0.71
						Droughty	0.14
Urban land	25	Not rated		Not rated		Not rated	
Rock outcrop	20	Not rated		Not rated		Not rated	
CuB:							
Crider	55	Not limited		Not limited		Not limited	
Urban land	35	Not rated		Not rated		Not rated	

Table 11.—Recreation Interpretations for Urban Areas, Part II—Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CuC:							
Crider	55	Not limited		Not limited		Somewhat limited	
						Slope	0.04
Urban land	35	Not rated		Not rated		Not rated	
FnB:							
Fredonia	37	Very limited		Very limited		Somewhat limited	
		Too stony	1.00	Too stony	1.00	Slope	0.04
		Water erosion	1.00	Water erosion	1.00	Depth to bedrock	0.03
Vertrees	30	Not limited		Not limited		Not limited	
Urban land	25	Not rated		Not rated		Not rated	
FnC:							
Fredonia	37	Very limited		Very limited		Somewhat limited	
		Too stony	1.00	Too stony	1.00	Slope	0.04
		Water erosion	1.00	Water erosion	1.00	Depth to bedrock	0.03
Vertrees	27	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Slope	0.04
Urban land	25	Not rated		Not rated		Not rated	
FnC2:							
Fredonia	37	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Slope	0.04
		Too stony	0.76	Too stony	0.76	Depth to bedrock	0.03
Vertrees	30	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Slope	0.04
Urban land	25	Not rated		Not rated		Not rated	
PeA:							
Pembroke	65	Not limited		Not limited		Not limited	
Urban land	25	Not rated		Not rated		Not rated	
UaC:							
Udorthents	95	Not rated		Not rated		Not rated	
UaD:							
Udorthents, refuse substratum	95	Not rated		Not rated		Not rated	
Ub:							
Urban land	75	Not rated		Not rated		Not rated	
Udorthents	22	Not rated		Not rated		Not rated	
Uc:							
Urban land	50	Not rated		Not rated		Not rated	
Udorthents, clayey substratum, hard bedrock 0-5 feet	30	Not rated		Not rated		Not rated	

Table 11.—Recreation Interpretations for Urban Areas, 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
Ud:							
Urban land	75	Not rated		Not rated		Not rated	
Udorthents, clayey substratum, hard bedrock >5 feet	20	Not rated		Not rated		Not rated	
Us:							
Urban land	60	Not rated		Not rated		Not rated	
Udorthents, smoothed	40	Not rated		Not rated		Not rated	
VtC3:							
Vertrees	60	Not limited		Not limited		Somewhat limited	
						Slope	0.04
Urban land	25	Not rated		Not rated		Not rated	
ZuB:							
Zanesville	65	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.08	Depth to saturated zone	0.08	Depth to saturated zone	0.43
Urban land	25	Not rated		Not rated		Not rated	

Table 12.—Wildlife Habitat

(See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable. Map units that have Urban land as a major component were not rated and are not included in this table)

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
BaB:										
Baxter	Good	Good	Good	Good	Fair	Poor	Very poor	Good	Good	Very poor
BaC:										
Baxter	Fair	Good	Good	Good	Fair	Very poor	Very poor	Good	Good	Very poor
BaD:										
Baxter	Poor	Fair	Good	Good	Fair	Very poor	Very poor	Fair	Good	Very poor
BaE:										
Baxter	Very poor	Fair	Good	Good	Fair	Very poor	Very poor	Fair	Good	Very poor
BbC3:										
Baxter	Fair	Good	Good	Good	Fair	Very poor	Very poor	Good	Good	Very poor
BbD3:										
Baxter	Poor	Fair	Good	Good	Fair	Very poor	Very poor	Fair	Good	Very poor
CaB:										
Caneyville	Fair	Good	Good	Good	Fair	Poor	Very poor	Good	Good	Very poor
CaC:										
Caneyville	Fair	Good	Good	Good	Fair	Very poor	Very poor	Good	Good	Very poor
CaC3:										
Caneyville	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Good	Very poor
CnD:										
Caneyville	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Good	Very poor
Rock outcrop.										
CnF:										
Caneyville	Very poor	Fair	Good	Fair	Fair	Very poor	Very poor	Fair	Good	Very poor
Rock outcrop.										
CrB:										
Crider	Good	Good	Good	Good	Fair	Poor	Very poor	Good	Good	Very poor
CrC:										
Crider	Fair	Good	Good	Good	Fair	Very poor	Very poor	Good	Good	Very poor

Table 12.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
DAM. Dam, large										
Du: Dunning	Very poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
EkB: Elk	Good	Good	Good	Good	Fair	Poor	Very poor	Good	Good	Very poor
EpB: Epley	Good	Good	Good	Good	Fair	Poor	Poor	Good	Good	Poor
FeB, FeC: Fredonia	Fair	Good	Good	Good	Fair	Poor	Very poor	Good	Good	Very poor
Vertrees	Good	Good	Good	Good	Fair	Poor	Very poor	Good	Good	Very poor
FrC, FrD: Frondorf	Fair	Good	Good	Good	Fair	Very poor	Very poor	Good	Good	Very poor
Gr: Grigsby	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
HaB: Hammack	Good	Good	Good	Good	Fair	Poor	Very poor	Good	Good	Very poor
La: Lawrence	Fair	Good	Good	Good	Poor	Fair	Fair	Good	Good	Fair
Ld: Lindside	Good	Good	Good	Good	Fair	Poor	Poor	Good	Good	Poor
Me: Melvin	Poor	Fair	Fair	Fair	Very poor	Good	Good	Poor	Poor	Good
Ne: Newark	Poor	Fair	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Fair
Nf: Newark	Poor	Fair	Fair	Fair	Poor	Good	Fair	Fair	Fair	Good
NhA: Nicholson	Good	Good	Good	Good	Poor	Poor	Poor	Good	Good	Poor
NhB: Nicholson	Good	Good	Good	Good	Poor	Poor	Very poor	Good	Good	Very poor
NhC: Nicholson	Fair	Good	Good	Good	Poor	Very poor	Very poor	Good	Good	Very poor

Table 12.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
No:										
Nolin	Good	Good	Good	Good	Fair	Poor	Very poor	Good	Good	Very poor
Np:										
Nolin	Good	Good	Good	Fair	Poor	Poor	Very poor	Good	Good	Very poor
OtA:										
Otwood	Poor	Fair	Fair	Fair	Poor	Poor	Very poor	Fair	Good	Very poor
OtB:										
Otwood	Fair	Fair	Fair	Fair	Poor	Fair	Poor	Fair	Good	Poor
PbA:										
Pembroke	Good	Good	Good	Good	Fair	Poor	Very poor	Good	Good	Very poor
Pm.										
Pits, loamy, frequently flooded										
Pq.										
Pits, quarry										
RaF:										
Ramsey	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Very poor	Poor	Very poor
Frondorf	Very poor	Fair	Good	Fair	Fair	Very poor	Very poor	Poor	Good	Very poor
Ro:										
Robertsville	Poor	Poor	Fair	Fair	Fair	Good	Good	Poor	Fair	Good
RxF:										
Rock outcrop.										
Caneyville	Very poor	Fair	Good	Fair	Fair	Very poor	Very poor	Fair	Good	Very poor
SaA:										
Sadler	Good	Good	Good	Good	Poor	Poor	Poor	Good	Good	Poor
SaB:										
Sadler	Good	Good	Good	Good	Poor	Poor	Very poor	Good	Good	Very poor
VrC3:										
Vertrees	Fair	Good	Good	Good	Fair	Very poor	Very poor	Good	Good	Very poor
W.										
Water										
WeB:										
Wellston	Good	Good	Good	Good	Fair	Poor	Very poor	Good	Good	Very poor

Table 12.—Wildlife Habitat—Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
WeC2:										
Wellston-----------	Fair	Good	Good	Good	Fair	Very poor	Very poor	Good	Good	Very poor
ZaB:										
Zanesville---------	Good	Good	Good	Good	Poor	Poor	Very poor	Good	Good	Very poor
ZaC2:										
Zanesville---------	Fair	Good	Good	Good	Poor	Very poor	Very poor	Good	Good	Very poor

Table 13.—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. See table 14, part I, for ratings for map units that have Urban land as a major component)

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
BaB:							
Baxter	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
BaC:							
Baxter	85	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.04	Slope	0.04	Shrink-swell	0.50
BaD:							
Baxter	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
BaE:							
Baxter	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
BbC3:							
Baxter	85	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.04	Slope	0.04	Shrink-swell	0.50
BbD3:							
Baxter	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
CaB:							
Caneyville	85	Somewhat limited		Very limited		Very limited	
		Shrink-swell	1.00	Depth to hard bedrock	1.00	Shrink-swell	1.00
		Depth to hard bedrock	0.71	Shrink-swell	1.00	Depth to hard bedrock	0.71
CaC, CaC3:							
Caneyville	85	Somewhat limited		Very limited		Very limited	
		Shrink-swell	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.71	Shrink-swell	1.00	Shrink-swell	1.00
		Slope	0.04	Slope	0.04	Depth to hard bedrock	0.71
CnD:							
Caneyville	65	Somewhat limited		Very limited		Very limited	
		Shrink-swell	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.84	Shrink-swell	1.00	Shrink-swell	1.00
		Depth to hard bedrock	0.71	Slope	0.84	Depth to hard bedrock	0.71
Rock outcrop	25	Not rated		Not rated		Not rated	

Table 13.—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
CnF:							
Caneyville	65	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Depth to hard bedrock	1.00	Shrink-swell	1.00
		Depth to hard bedrock	0.71	Shrink-swell	1.00	Depth to hard bedrock	0.71
Rock outcrop	25	Not rated		Not rated		Not rated	
CrB:							
Crider	90	Not limited		Somewhat limited		Not limited	
				Shrink-swell	0.50		
CrC:							
Crider	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Shrink-swell	0.50	Slope	1.00
				Slope	0.04		
DAM:							
Dam, large	100	Not rated		Not rated		Not rated	
Du:							
Dunning	85	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
EkB:							
Elk	80	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
EpB:							
Epley	85	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.88	Depth to saturated zone	1.00	Depth to saturated zone	0.88
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
FeB:							
Fredonia	50	Somewhat limited		Very limited		Somewhat limited	
		Shrink-swell	0.50	Depth to hard bedrock	1.00	Shrink-swell	0.50
		Depth to hard bedrock	0.03	Shrink-swell	0.50	Depth to hard bedrock	0.03
Vertrees	35	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
FeC:							
Fredonia	50	Somewhat limited		Very limited		Very limited	
		Shrink-swell	0.50	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.04	Shrink-swell	0.50	Shrink-swell	0.50
		Depth to hard bedrock	0.03	Slope	0.04	Depth to hard bedrock	0.03
Vertrees	30	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.04	Slope	0.04	Shrink-swell	0.50

Table 13.—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
FrC:							
Frondorf	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Depth to soft bedrock	0.79	Slope	1.00
				Slope	0.04		
FrD:							
Frondorf	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.79		
Gr:							
Grigsby	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Depth to saturated zone	0.15		
HaB:							
Hammack	85	Not limited		Somewhat limited		Not limited	
				Shrink-swell	0.50		
La:							
Lawrence	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Ld:							
Lindside	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	0.88	Depth to saturated zone	1.00	Depth to saturated zone	0.88
Me:							
Melvin	80	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Ne:							
Newark	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Nf:							
Newark	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
NhA, NhB:							
Nicholson	80	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.88	Depth to saturated zone	1.00	Depth to saturated zone	0.88
				Shrink-swell	0.50		

Table 13.—Building Site Development, Part I—Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
NhC:							
Nicholson-----------	85	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.88	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.04	Shrink-swell	0.50	Depth to saturated zone	0.88
				Slope	0.04		
No:							
Nolin---------------	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
Np:							
Nolin---------------	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
OtA, OtB:							
Otwood--------------	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Depth to saturated zone	0.77
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
PbA:							
Pembroke------------	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Pm:							
Pits, loamy, frequently flooded-	95	Not rated		Not rated		Not rated	
Pq:							
Pits, quarry--------	90	Not rated		Not rated		Not rated	
RaF:							
Ramsey--------------	75	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
Frondorf------------	20	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.79		
Ro:							
Robertsville--------	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
RxF:							
Rock outcrop--------	55	Not rated		Not rated		Not rated	
Caneyville----------	33	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	0.71	Depth to hard bedrock	1.00	Depth to hard bedrock	0.71
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50

Table 13.—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
SaA, SaB:							
Sadler	85	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Depth to saturated zone	0.77
VrC3:							
Vertrees	85	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.04	Slope	0.04	Shrink-swell	0.50
W:							
Water	100	Not rated		Not rated		Not rated	
WeB:							
Wellston	90	Not limited		Somewhat limited		Not limited	
				Depth to hard bedrock	0.77		
WeC2:							
Wellston	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Depth to hard bedrock	0.77	Slope	1.00
				Slope	0.04		
ZaB:							
Zanesville	85	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Depth to saturated zone	0.77
				Depth to hard bedrock	0.05		
ZaC2:							
Zanesville	80	Somewhat limited		Very limited		Very limited	
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Slope	1.00
		Slope	0.04	Depth to hard bedrock	0.05	Depth to saturated zone	0.77
				Slope	0.04		

Table 13.—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. See table 14, part II, for ratings for map units that have Urban land as a major component)

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
BaB:							
Baxter	90	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Cutbanks cave	1.00	Gravel content	0.11
		Shrink-swell	0.50	Too clayey	0.50	Content of large stones	0.01
BaC:							
Baxter	85	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Cutbanks cave	1.00	Gravel content	0.11
		Shrink-swell	0.50	Too clayey	0.50	Slope	0.04
		Slope	0.04	Slope	0.04	Content of large stones	0.01
BaD:							
Baxter	85	Very limited		Very limited		Very limited	
		Slope	1.00	Cutbanks cave	1.00	Slope	1.00
		Low strength	1.00	Slope	1.00	Gravel content	0.11
		Shrink-swell	0.50	Too clayey	0.50	Content of large stones	0.01
BaE:							
Baxter	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Cutbanks cave	1.00	Gravel content	0.11
		Shrink-swell	0.50	Too clayey	0.50	Content of large stones	0.01
BbC3:							
Baxter	85	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Cutbanks cave	1.00	Gravel content	0.22
		Shrink-swell	0.50	Too clayey	0.50	Slope	0.04
		Slope	0.04	Slope	0.04	Content of large stones	0.01
BbD3:							
Baxter	85	Very limited		Very limited		Very limited	
		Slope	1.00	Cutbanks cave	1.00	Slope	1.00
		Low strength	1.00	Slope	1.00	Gravel content	0.22
		Shrink-swell	0.50	Too clayey	0.50	Content of large stones	0.01
CaB:							
Caneyville	85	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Depth to bedrock	0.71
		Shrink-swell	1.00			Droughty	0.14
		Depth to hard bedrock	0.71	Too clayey	0.50		
				Cutbanks cave	0.10		

Table 13.—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
CaC:							
Caneyville----------	85	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Depth to bedrock	0.71
		Shrink-swell	1.00	Too clayey	0.50	Droughty	0.14
		Depth to hard bedrock	0.71	Cutbanks cave	0.10	Slope	0.04
		Slope	0.04	Slope	0.04		
CaC3:							
Caneyville----------	85	Very limited		Very limited		Very limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Too clayey	1.00
		Shrink-swell	1.00	Too clayey	0.50	Depth to bedrock	0.71
		Depth to hard bedrock	0.71	Cutbanks cave	0.10	Droughty	0.23
		Slope	0.04	Slope	0.04	Slope	0.04
CnD:							
Caneyville----------	65	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Slope	0.84
		Shrink-swell	1.00	Slope	0.84	Depth to bedrock	0.71
		Slope	0.84	Too clayey	0.50	Droughty	0.14
		Depth to hard bedrock	0.71	Cutbanks cave	0.10		
Rock outcrop--------	25	Not rated		Not rated		Not rated	
CnF:							
Caneyville----------	65	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Low strength	1.00	Slope	1.00	Depth to bedrock	0.71
		Shrink-swell	1.00	Too clayey	0.50	Droughty	0.14
		Depth to hard bedrock	0.71	Cutbanks cave	0.10		
Rock outcrop--------	25	Not rated		Not rated		Not rated	
CrB:							
Crider--------------	90	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.12		
				Cutbanks cave	0.10		
CrC:							
Crider--------------	85	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.12	Slope	0.04
		Slope	0.04	Cutbanks cave	0.10		
				Slope	0.04		
DAM:							
Dam, large----------	100	Not rated		Not rated		Not rated	
Du:							
Dunning-------------	85	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Low strength	1.00	Too clayey	0.50		
		Shrink-swell	0.50	Cutbanks cave	0.10		

Table 13.—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
EkB:							
Elk	80	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Flooding	0.40				
EpB:							
Epley	85	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.56
		Depth to saturated zone	0.56	Too clayey	0.98		
		Shrink-swell	0.50	Cutbanks cave	0.10		
FeB:							
Fredonia	50	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Depth to bedrock	0.03
		Shrink-swell	0.50	Too clayey	0.50		
		Depth to hard bedrock	0.03	Cutbanks cave	0.10		
Vertrees	35	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.98		
		Shrink-swell	0.50	Cutbanks cave	0.10		
FeC:							
Fredonia	50	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Slope	0.04
		Shrink-swell	0.50	Too clayey	0.50	Depth to bedrock	0.03
		Slope	0.04	Cutbanks cave	0.10		
		Depth to hard bedrock	0.03	Slope	0.04		
Vertrees	30	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.98	Slope	0.04
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Slope	0.04	Slope	0.04		
FrC:							
Frondorf	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.04	Depth to soft bedrock	0.79	Depth to bedrock	0.80
				Cutbanks cave	0.10	Droughty	0.10
				Slope	0.04	Slope	0.04
FrD:							
Frondorf	85	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.79	Depth to bedrock	0.80
				Cutbanks cave	0.10	Droughty	0.10
Gr:							
Grigsby	90	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.80	Flooding	1.00
				Depth to saturated zone	0.15		
				Cutbanks cave	0.10		

Table 13.—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
HaB:							
Hammack	85	Very limited		Very limited		Not limited	
		Low strength	1.00	Cutbanks cave	1.00		
				Too clayey	0.50		
La:							
Lawrence	90	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.94
		Depth to saturated zone	0.94	Cutbanks cave	0.10		
		Flooding	0.40				
Ld:							
Lindside	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Low strength	1.00	Flooding	0.80	Depth to saturated zone	0.56
		Depth to saturated zone	0.56	Cutbanks cave	0.10		
Me:							
Melvin	80	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Flooding	1.00	Flooding	0.80	Depth to saturated zone	1.00
		Low strength	1.00	Cutbanks cave	0.10		
Ne:							
Newark	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Low strength	1.00	Flooding	0.80	Depth to saturated zone	0.94
		Depth to saturated zone	0.94	Cutbanks cave	0.10		
Nf:							
Newark	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.94
		Depth to saturated zone	0.94	Cutbanks cave	0.10		
NhA, NhB:							
Nicholson	80	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.56
		Depth to saturated zone	0.56	Too clayey	0.28		
				Cutbanks cave	0.10		
NhC:							
Nicholson	85	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.56
		Depth to saturated zone	0.56	Too clayey	0.28	Slope	0.04
		Slope	0.04	Cutbanks cave	0.10		
				Slope	0.04		
No:							
Nolin	90	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.80	Flooding	1.00
		Low strength	1.00	Cutbanks cave	0.10		

Table 13.—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
Np:							
Nolin	90	Very limited Ponding Low strength	 1.00 1.00	Very limited Ponding Cutbanks cave	 1.00 0.10	Very limited Ponding	 1.00
OtA, OtB:							
Otwood	90	Very limited Low strength Shrink-swell Depth to saturated zone Flooding	 1.00 0.50 0.43 0.40	Very limited Depth to saturated zone Cutbanks cave	 1.00 0.10	Somewhat limited Depth to saturated zone	 0.43
PbA:							
Pembroke	90	Very limited Low strength Shrink-swell	 1.00 0.50	Somewhat limited Too clayey Cutbanks cave	 0.50 0.10	Not limited	
Pm:							
Pits, loamy, frequently flooded	95	Not rated		Not rated		Not rated	
Pq:							
Pits, quarry	90	Not rated		Not rated		Not rated	
RaF:							
Ramsey	75	Very limited Depth to hard bedrock Slope	 1.00 1.00	Very limited Depth to hard bedrock Slope Cutbanks cave	 1.00 1.00 0.10	Very limited Depth to bedrock Slope Droughty Content of large stones	 1.00 1.00 0.99 0.01
Frondorf	20	Very limited Slope Low strength	 1.00 0.22	Very limited Slope Depth to soft bedrock Cutbanks cave	 1.00 0.79 0.10	Very limited Slope Depth to bedrock	 1.00 0.80
Ro:							
Robertsville	90	Very limited Ponding Depth to saturated zone Flooding Low strength	 1.00 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Flooding Cutbanks cave Too clayey	 1.00 1.00 0.60 0.10 0.01	Very limited Ponding Depth to saturated zone Flooding	 1.00 1.00 0.60
RxF:							
Rock outcrop	55	Not rated		Not rated		Not rated	
Caneyville	33	Very limited Slope Low strength Depth to hard bedrock Shrink-swell	 1.00 1.00 0.71 0.50	Very limited Depth to hard bedrock Slope Too clayey Cutbanks cave	 1.00 1.00 0.50 0.10	Very limited Slope Depth to bedrock Droughty	 1.00 0.71 0.14

Table 13.—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
SaA, SaB:							
Sadler--------------	85	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Cutbanks cave	0.10		
VrC3:							
Vertrees------------	85	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.50	Slope	0.04
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Slope	0.04	Slope	0.04		
W:							
Water---------------	100	Not rated		Not rated		Not rated	
WeB:							
Wellston------------	90	Somewhat limited		Very limited		Not limited	
		Low strength	0.22	Cutbanks cave	1.00		
				Depth to hard bedrock	0.77		
WeC2:							
Wellston------------	85	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Cutbanks cave	1.00	Slope	0.04
		Slope	0.04	Depth to hard bedrock	0.77		
				Slope	0.04		
ZaB:							
Zanesville----------	85	Somewhat limited		Very limited		Somewhat limited	
		Low strength	0.78	Depth to saturated zone	1.00	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Cutbanks cave	0.10		
				Depth to hard bedrock	0.05		
ZaC2:							
Zanesville----------	80	Somewhat limited		Very limited		Somewhat limited	
		Low strength	0.78	Depth to saturated zone	1.00	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Cutbanks cave	0.10	Slope	0.04
		Slope	0.04	Depth to hard bedrock	0.05		
				Slope	0.04		

Table 14.—Building Site Interpretations for Urban Areas, 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: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
BrB:							
Baxter	60	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Urban land	30	Not rated		Not rated		Not rated	
BrC:							
Baxter	55	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.04	Slope	0.04	Shrink-swell	0.50
Urban land	30	Not rated		Not rated		Not rated	
BrD:							
Baxter	60	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Urban land	25	Not rated		Not rated		Not rated	
CoD:							
Caneyville	40	Somewhat limited		Very limited		Very limited	
		Shrink-swell	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.84	Shrink-swell	1.00	Shrink-swell	1.00
		Depth to hard bedrock	0.71	Slope	0.84	Depth to hard bedrock	0.71
Urban land	25	Not rated		Not rated		Not rated	
Rock outcrop	20	Not rated		Not rated		Not rated	
CoE:							
Caneyville	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Depth to hard bedrock	1.00	Shrink-swell	1.00
		Depth to hard bedrock	0.71	Shrink-swell	1.00	Depth to hard bedrock	0.71
Urban land	25	Not rated		Not rated		Not rated	
Rock outcrop	20	Not rated		Not rated		Not rated	
CuB:							
Crider	55	Not limited		Somewhat limited		Not limited	
				Shrink-swell	0.50		
Urban land	35	Not rated		Not rated		Not rated	
CuC:							
Crider	55	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Shrink-swell	0.50	Slope	1.00
				Slope	0.04		
Urban land	35	Not rated		Not rated		Not rated	

Table 14.—Building Site Interpretations for Urban Areas, 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
FnB:							
Fredonia	37	Somewhat limited		Very limited		Very limited	
		Shrink-swell	0.50	Depth to hard bedrock	1.00	Shrink-swell	0.50
		Depth to hard bedrock	0.03	Shrink-swell	0.50	Depth to hard bedrock	0.03
Vertrees	30	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Urban land	25	Not rated		Not rated		Not rated	
FnC:							
Fredonia	37	Somewhat limited		Very limited		Very limited	
		Shrink-swell	0.50	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.04	Shrink-swell	0.50	Shrink-swell	0.50
		Depth to hard bedrock	0.03	Slope	0.04	Depth to hard bedrock	0.03
Vertrees	27	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.04	Slope	0.04	Shrink-swell	0.50
Urban land	25	Not rated		Not rated		Not rated	
FnC2:							
Fredonia	37	Somewhat limited		Very limited		Very limited	
		Shrink-swell	0.50	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.04	Shrink-swell	0.50	Shrink-swell	0.50
		Depth to hard bedrock	0.03	Slope	0.04	Depth to hard bedrock	0.03
Vertrees	30	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.04	Slope	0.04	Shrink-swell	0.50
Urban land	25	Not rated		Not rated		Not rated	
PeA:							
Pembroke	65	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Urban land	25	Not rated		Not rated		Not rated	
UaC:							
Udorthents	95	Onsite investigation needed		Onsite investigation needed		Onsite investigation needed	
UaD:							
Udorthents, refuse substratum	95	Onsite investigation needed		Onsite investigation needed		Onsite investigation needed	
Ub:							
Urban land	75	Not rated		Not rated		Not rated	
Udorthents	22	Onsite investigation needed		Onsite investigation needed		Onsite investigation needed	

Table 14.—Building Site Interpretations for Urban Areas, 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
Uc:							
Urban land	50	Not rated		Not rated		Not rated	
Udorthents, clayey substratum, hard bedrock 0-5 feet	30	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.90	Depth to hard bedrock	1.00	Depth to hard bedrock	0.90
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	0.50
						Shrink-swell	0.50
Ud:							
Urban land	75	Not rated		Not rated		Not rated	
Udorthents, clayey substratum, hard bedrock >5 feet	20	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	0.50
						Shrink-swell	0.50
Us:							
Urban land	60	Not rated		Not rated		Not rated	
Udorthents, smoothed	40	Impractical		Impractical		Impractical	
VtC3:							
Vertrees	60	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.04	Slope	0.04	Shrink-swell	0.50
Urban land	25	Not rated		Not rated		Not rated	
ZuB:							
Zanesville	65	Somewhat limited		Very limited		Somewhat limited	
		Depth to saturated zone	0.77	Depth to saturated zone	1.00	Depth to saturated zone	0.77
				Depth to hard bedrock	0.05		
Urban land	25	Not rated		Not rated		Not rated	

Table 14.—Building Site Interpretations for Urban Areas, 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
BrB:							
Baxter	60	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Cutbanks cave	1.00	Gravel content	0.11
		Shrink-swell	0.50	Too clayey	0.50	Content of large stones	0.01
Urban land	30	Not rated		Not rated		Not rated	
BrC:							
Baxter	55	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Cutbanks cave	1.00	Gravel content	0.11
		Shrink-swell	0.50	Too clayey	0.50	Slope	0.04
		Slope	0.04	Slope	0.04	Content of large stones	0.01
Urban land	30	Not rated		Not rated		Not rated	
BrD:							
Baxter	60	Very limited		Very limited		Very limited	
		Slope	1.00	Cutbanks cave	1.00	Slope	1.00
		Low strength	1.00	Slope	1.00	Gravel content	0.11
		Shrink-swell	0.50	Too clayey	0.50	Content of large stones	0.01
Urban land	25	Not rated		Not rated		Not rated	
CoD:							
Caneyville	40	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Slope	0.84
		Shrink-swell	1.00			Depth to bedrock	0.71
		Slope	0.84	Slope	0.84	Droughty	0.14
		Depth to hard bedrock	0.71	Too clayey	0.50		
				Cutbanks cave	0.10		
Urban land	25	Not rated		Not rated		Not rated	
Rock outcrop	20	Not rated		Not rated		Not rated	
CoE:							
Caneyville	40	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Low strength	1.00			Depth to bedrock	0.71
		Shrink-swell	1.00	Slope	1.00	Droughty	0.14
		Depth to hard bedrock	0.71	Too clayey	0.50		
				Cutbanks cave	0.10		
Urban land	25	Not rated		Not rated		Not rated	
Rock outcrop	20	Not rated		Not rated		Not rated	

Table 14.—Building Site Interpretations for Urban Areas, 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
CuB:							
Crider	55	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.12		
				Cutbanks cave	0.10		
Urban land	35	Not rated		Not rated		Not rated	
CuC:							
Crider	55	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.12	Slope	0.04
		Slope	0.04	Cutbanks cave	0.10		
				Slope	0.04		
Urban land	35	Not rated		Not rated		Not rated	
FnB:							
Fredonia	37	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Depth to bedrock	0.03
		Shrink-swell	0.50	Too clayey	0.50		
		Depth to hard bedrock	0.03	Cutbanks cave	0.10		
Vertrees	30	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.98		
		Shrink-swell	0.50	Cutbanks cave	0.10		
Urban land	25	Not rated		Not rated		Not rated	
FnC:							
Fredonia	37	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Slope	0.04
		Shrink-swell	0.50			Depth to bedrock	0.03
		Slope	0.04	Too clayey	0.50		
		Depth to hard bedrock	0.03	Cutbanks cave	0.10		
				Slope	0.04		
Vertrees	27	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.98	Slope	0.04
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Slope	0.04	Slope	0.04		
Urban land	25	Not rated		Not rated		Not rated	
FnC2:							
Fredonia	37	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Slope	0.04
		Shrink-swell	0.50			Depth to bedrock	0.03
		Slope	0.04	Too clayey	0.50		
		Depth to hard bedrock	0.03	Cutbanks cave	0.10		
				Slope	0.04		
Vertrees	30	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.50	Slope	0.04
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Slope	0.04	Slope	0.04		
Urban land	25	Not rated		Not rated		Not rated	

Table 14.—Building Site Interpretations for Urban Areas, 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
UaC:							
Udorthents	95	Onsite investigation needed		Onsite investigation needed		Soil test needed	
UaD:							
Udorthents, refuse substratum	95	Onsite investigation needed		Onsite investigation needed		Soil test needed	
Ub:							
Urban land	75	Not rated		Not rated		Not rated	
Udorthents	22	Not rated		Not rated		Not rated	
Uc:							
Urban land	50	Not rated		Not rated		Not rated	
Udorthents, clayey substratum, hard bedrock 0-5 feet	30	Onsite investigation needed		Onsite investigation needed		Soil test needed	
Ud:							
Urban land	75	Not rated		Not rated		Not rated	
Udorthents, clayey substratum, hard bedrock >5 feet	30	Onsite investigation needed		Onsite investigation needed		Soil test needed	
Us:							
Urban land	60	Not rated		Not rated		Not rated	
Udorthents, smoothed	40	Onsite investigation needed		Onsite investigation needed		Soil test needed	
VtC3:							
Vertrees	60	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.50	Slope	0.04
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Slope	0.04	Slope	0.04		
Urban land	25	Not rated		Not rated		Not rated	
ZuB:							
Zanesville	65	Somewhat limited		Very limited		Somewhat limited	
		Low strength	0.78	Depth to saturated zone	1.00	Depth to saturated zone	0.43
		Depth to saturated zone	0.43	Cutbanks cave	0.10		
				Depth to hard bedrock	0.05		
Urban land	25	Not rated		Not rated		Not rated	

Table 15.—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. See table 16 for ratings for map units that have Urban land as a major component)

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
BaB:					
Baxter	90	Very limited		Somewhat limited	
		Restricted permeability	1.00	Seepage	0.53
				Slope	0.32
BaC:					
Baxter	85	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
				Seepage	0.53
		Slope	0.04		
BaD:					
Baxter	85	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
				Seepage	0.53
		Slope	1.00		
BaE:					
Baxter	80	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Restricted permeability	1.00	Seepage	0.53
BbC3:					
Baxter	85	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Slope	0.04		
BbD3:					
Baxter	85	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Slope	1.00		
CaB:					
Caneyville	85	Very limited		Very limited	
		Restricted permeability	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	0.32
CaC, CaC3:					
Caneyville	85	Very limited		Very limited	
		Restricted permeability	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	0.04		

Table 15.—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
CnD:					
Caneyville----------	65	Very limited		Very limited	
		Restricted permeability	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	0.84		
Rock outcrop--------	25	Not rated		Not rated	
CnF:					
Caneyville----------	65	Very limited		Very limited	
		Restricted permeability	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	1.00		
Rock outcrop--------	25	Not rated		Not rated	
CrB:					
Crider--------------	90	Very limited		Somewhat limited	
		Restricted permeability	1.00	Seepage	0.53
				Slope	0.32
CrC:					
Crider--------------	85	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
				Seepage	0.53
		Slope	0.04		
DAM:					
Dam, large----------	100	Not rated		Not rated	
Du:					
Dunning-------------	85	Very limited		Very limited	
		Restricted permeability	1.00	Ponding	1.00
				Depth to saturated zone	1.00
		Ponding	1.00		
		Depth to saturated zone	1.00		
EkB:					
Elk-----------------	80	Somewhat limited		Somewhat limited	
		Restricted permeability	0.46	Seepage	0.53
				Flooding	0.40
		Flooding	0.40	Slope	0.32
EpB:					
Epley---------------	85	Very limited		Somewhat limited	
		Restricted permeability	1.00	Depth to saturated zone	0.96
		Depth to saturated zone	1.00	Seepage	0.53
				Slope	0.32
		Depth to bedrock	0.09		
FeB:					
Fredonia------------	50	Very limited		Very limited	
		Restricted permeability	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	0.32

Table 15.—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
FeB:					
Vertrees------------	35	Very limited		Somewhat limited	
		Restricted permeability	1.00	Slope	0.32
FeC:					
Fredonia------------	50	Very limited		Very limited	
		Restricted permeability	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	0.04		
Vertrees------------	30	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Slope	0.04		
FrC:					
Frondorf------------	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Restricted permeability	0.46	Slope	1.00
		Slope	0.04	Seepage	0.53
				Content of large stones	0.02
FrD:					
Frondorf------------	85	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
		Restricted permeability	0.46	Seepage	0.53
				Content of large stones	0.02
Gr:					
Grigsby-------------	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	0.40	Seepage	1.00
HaB:					
Hammack-------------	85	Very limited		Somewhat limited	
		Restricted permeability	1.00	Seepage	0.53
				Slope	0.32
La:					
Lawrence------------	90	Very limited		Very limited	
		Restricted permeability	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Seepage	0.53
		Flooding	0.40	Flooding	0.40
Ld:					
Lindside------------	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.46	Seepage	0.53

Table 15.—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
Me:					
Melvin	80	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.46	Seepage	0.53
Ne:					
Newark	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.46	Seepage	0.53
Nf:					
Newark	90	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Restricted permeability	0.46	Seepage	0.53
NhA:					
Nicholson	80	Very limited		Somewhat limited	
		Restricted permeability	1.00	Depth to saturated zone	0.96
		Depth to saturated zone	1.00	Seepage	0.53
NhB:					
Nicholson	80	Very limited		Somewhat limited	
		Restricted permeability	1.00	Depth to saturated zone	0.96
		Depth to saturated zone	1.00	Seepage	0.53
				Slope	0.32
NhC:					
Nicholson	85	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.96
		Slope	0.04	Seepage	0.53
No:					
Nolin	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	0.46	Seepage	0.53
Np:					
Nolin	90	Very limited		Very limited	
		Ponding	1.00	Ponding	1.00
		Restricted permeability	0.46	Seepage	0.53

Table 15.—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
OtA:					
Otwood	90	Very limited		Somewhat limited	
		Restricted permeability	1.00	Depth to saturated zone	0.92
		Depth to saturated zone	1.00	Seepage	0.53
		Flooding	0.40	Flooding	0.40
OtB:					
Otwood	90	Very limited		Somewhat limited	
		Restricted permeability	1.00	Depth to saturated zone	0.92
		Depth to saturated zone	1.00	Seepage	0.53
		Flooding	0.40	Flooding	0.40
				Slope	0.32
PbA:					
Pembroke	90	Very limited		Somewhat limited	
		Restricted permeability	1.00	Seepage	0.53
Pm:					
Pits, loamy, frequently flooded	95	Not rated		Not rated	
Pq:					
Pits, quarry	90	Not rated		Not rated	
RaF:					
Ramsey	75	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
				Seepage	1.00
Frondorf	20	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
		Restricted permeability	0.46	Seepage	0.53
Ro:					
Robertsville	90	Very limited		Very limited	
		Flooding	1.00	Ponding	1.00
		Restricted permeability	1.00	Flooding	1.00
		Ponding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Seepage	0.53
RxF:					
Rock outcrop	55	Not rated		Not rated	
Caneyville	33	Very limited		Very limited	
		Restricted permeability	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	1.00		

Table 15.—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
SaA:					
Sadler	85	Very limited		Somewhat limited	
		Restricted permeability	1.00	Depth to saturated zone	0.92
		Depth to saturated zone	1.00	Seepage	0.53
		Depth to bedrock	0.09		
SaB:					
Sadler	85	Very limited		Somewhat limited	
		Restricted permeability	1.00	Depth to saturated zone	0.92
		Depth to saturated zone	1.00	Seepage	0.53
				Slope	0.32
		Depth to bedrock	0.09		
VrC3:					
Vertrees	85	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Slope	0.04		
W:					
Water	100	Not rated		Not rated	
WeB:					
Wellston	90	Somewhat limited		Somewhat limited	
		Depth to bedrock	0.91	Depth to hard bedrock	0.77
		Restricted permeability	0.46	Seepage	0.53
				Slope	0.32
WeC2:					
Wellston	85	Somewhat limited		Very limited	
		Depth to bedrock	0.91	Slope	1.00
		Restricted permeability	0.46	Depth to hard bedrock	0.77
		Slope	0.04	Seepage	0.53
ZaB:					
Zanesville	85	Very limited		Somewhat limited	
		Restricted permeability	1.00	Depth to saturated zone	0.92
		Depth to saturated zone	1.00	Seepage	0.53
				Slope	0.32
		Depth to bedrock	0.47	Depth to hard bedrock	0.05
ZaC2:					
Zanesville	80	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
				Depth to saturated zone	0.92
		Depth to saturated zone	1.00	Seepage	0.53
		Depth to bedrock	0.47	Depth to hard bedrock	0.05
		Slope	0.04		

Table 15.—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 units that have Urban land as a major component were not rated and are not included 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
BaB:							
Baxter	90	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
						Gravel content	0.19
BaC:							
Baxter	85	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Slope	0.04	Too clayey	1.00
		Slope	0.04			Hard to compact	1.00
						Gravel content	0.19
						Slope	0.04
BaD:							
Baxter	85	Very limited		Very limited		Very limited	
		Too clayey	1.00	Slope	1.00	Too clayey	1.00
		Slope	1.00			Hard to compact	1.00
						Slope	1.00
						Gravel content	0.19
BaE:							
Baxter	80	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
						Gravel content	0.19
BbC3:							
Baxter	85	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Slope	0.04	Too clayey	1.00
		Slope	0.04			Hard to compact	1.00
						Gravel content	0.22
						Slope	0.04
BbD3:							
Baxter	85	Very limited		Very limited		Very limited	
		Too clayey	1.00	Slope	1.00	Too clayey	1.00
		Slope	1.00			Hard to compact	1.00
						Slope	1.00
						Gravel content	0.22
CaB:							
Caneyville	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
CaC, CaC3:							
Caneyville	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00	Slope	0.04	Too clayey	1.00
		Slope	0.04			Hard to compact	1.00
						Slope	0.04

Table 15.—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
CnD:							
Caneyville	65	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00	Slope	0.84	Too clayey	1.00
		Slope	0.84			Hard to compact	1.00
						Slope	0.84
Rock outcrop	25	Not rated		Not rated		Not rated	
CnF:							
Caneyville	65	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
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
Rock outcrop	25	Not rated		Not rated		Not rated	
CrB:							
Crider	90	Somewhat limited		Not limited		Somewhat limited	
		Too clayey	0.50			Too clayey	0.50
CrC:							
Crider	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Slope	0.04	Too clayey	0.50
		Slope	0.04			Slope	0.04
DAM:							
Dam, large	100	Not rated		Not rated		Not rated	
Du:							
Dunning	85	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
EkB:							
Elk	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Flooding	0.40	Too clayey	0.50
		Flooding	0.40				
EpB:							
Epley	85	Very limited		Somewhat limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.96	Too clayey	1.00
		Depth to bedrock	1.00			Hard to compact	1.00
		Too clayey	1.00			Depth to saturated zone	0.98
FeB:							
Fredonia	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
Vertrees	35	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00

Table 15.—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
FeC:							
Fredonia------------	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	1.00	Slope	0.04	Too clayey	1.00
		Slope	0.04			Hard to compact	1.00
						Slope	0.04
Vertrees------------	30	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Slope	0.04	Too clayey	1.00
		Slope	0.04			Hard to compact	1.00
						Slope	0.04
FrC:							
Frondorf------------	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	0.50	Slope	0.04	Too clayey	0.50
		Slope	0.04			Slope	0.04
FrD:							
Frondorf------------	85	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Too clayey	0.50			Too clayey	0.50
Gr:							
Grigsby-------------	90	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Seepage	0.52
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		
		Seepage	1.00	Seepage	1.00		
HaB:							
Hammack-------------	85	Very limited		Not limited		Not limited	
		Too clayey	1.00				
La:							
Lawrence------------	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Too clayey	0.50	Flooding	0.40	Too clayey	0.50
		Flooding	0.40				
Ld:							
Lindside------------	90	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.98
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
		Too clayey	0.50				
Me:							
Melvin--------------	80	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
		Too clayey	0.50				

Table 15.—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
Ne:							
Newark	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		
Nf:							
Newark	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
NhA, NhB:							
Nicholson	80	Very limited		Somewhat limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.96	Too clayey	1.00
		Too clayey	1.00			Hard to compact	1.00
						Depth to saturated zone	0.98
NhC:							
Nicholson	85	Very limited		Somewhat limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.96	Too clayey	1.00
		Too clayey	1.00	Slope	0.04	Hard to compact	1.00
		Slope	0.04			Depth to saturated zone	0.98
						Slope	0.04
No:							
Nolin	90	Very limited		Very limited		Not limited	
		Flooding	1.00	Flooding	1.00		
Np:							
Nolin	90	Very limited		Very limited		Very limited	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
OtA, OtB:							
Otwood	90	Very limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.92	Depth to saturated zone	0.95
		Flooding	0.40	Flooding	0.40		
PbA:							
Pembroke	90	Somewhat limited		Not limited		Very limited	
		Too clayey	0.50			Hard to compact	1.00
						Too clayey	0.50
Pm:							
Pits, loamy, frequently flooded	95	Not rated		Not rated		Not rated	
Pq:							
Pits, quarry	90	Not rated		Not rated		Not rated	
RaF:							
Ramsey	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	1.00			Seepage	1.00

Table 15.—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
RaF:							
Frondorf	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
Ro:							
Robertsville	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Too clayey	1.00
		Too clayey	1.00				
RxF:							
Rock outcrop	55	Not rated		Not rated		Not rated	
Caneyville	33	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
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
SaA, SaB:							
Sadler	85	Very limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.92	Depth to saturated zone	0.95
		Depth to bedrock	1.00			Too clayey	0.50
		Too clayey	0.50				
VrC3:							
Vertrees	85	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Slope	0.04	Too clayey	1.00
		Slope	0.04			Hard to compact	1.00
						Slope	0.04
W:							
Water	100	Not rated		Not rated		Not rated	
WeB:							
Wellston	90	Very limited		Somewhat limited		Somewhat limited	
		Depth to bedrock	1.00	Depth to bedrock	0.77	Depth to bedrock	0.77
		Too clayey	0.50			Too clayey	0.50
WeC2:							
Wellston	85	Very limited		Somewhat limited		Somewhat limited	
		Depth to bedrock	1.00	Depth to bedrock	0.77	Depth to bedrock	0.77
		Slope	0.04	Slope	0.04	Slope	0.04
ZaB:							
Zanesville	85	Very limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.92	Depth to saturated zone	0.95
		Depth to bedrock	1.00	Depth to bedrock	0.05	Too clayey	0.50
		Too clayey	0.50			Depth to bedrock	0.05

Table 15.—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
ZaC2:							
Zanesville----------	80	Very limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	1.00	Depth to saturated zone	0.92	Depth to saturated zone	0.95
		Depth to bedrock	1.00	Depth to bedrock	0.05	Too clayey	0.50
		Too clayey	0.50	Slope	0.04	Depth to bedrock	0.05
		Slope	0.04			Slope	0.04

Table 16.—Sanitary Interpretations for Urban Areas

(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		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
BrB:					
Baxter	60	Very limited		Somewhat limited	
		Restricted permeability	1.00	Seepage	0.53
				Slope	0.32
Urban land	30	Not rated		Not rated	
BrC:					
Baxter	55	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
				Seepage	0.53
		Slope	0.04		
Urban land	30	Not rated		Not rated	
BrD:					
Baxter	60	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
				Seepage	0.53
		Slope	1.00		
Urban land	25	Not rated		Not rated	
CoD:					
Caneyville	40	Very limited		Very limited	
		Restricted permeability	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	0.84		
Urban land	25	Not rated		Not rated	
Rock outcrop	20	Not rated		Not rated	
CoE:					
Caneyville	40	Very limited		Very limited	
		Restricted permeability	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	1.00		
Urban land	25	Not rated		Not rated	
Rock outcrop	20	Not rated		Not rated	
CuB:					
Crider	55	Very limited		Somewhat limited	
		Restricted permeability	1.00	Seepage	0.53
				Slope	0.32
Urban land	35	Not rated		Not rated	

Table 16.—Sanitary Interpretations for Urban Areas—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
CuC:					
Crider	55	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Slope	0.04	Seepage	0.53
Urban land	35	Not rated		Not rated	
FnB:					
Fredonia	37	Very limited		Very limited	
		Restricted permeability	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	0.32
Vertrees	30	Very limited		Somewhat limited	
		Restricted permeability	1.00	Slope	0.32
Urban land	25	Not rated		Not rated	
FnC:					
Fredonia	37	Very limited		Very limited	
		Restricted permeability	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	0.04		
Vertrees	27	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Slope	0.04		
Urban land	25	Not rated		Not rated	
FnC2:					
Fredonia	37	Very limited		Very limited	
		Restricted permeability	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	0.04		
Vertrees	30	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Slope	0.04		
Urban land	25	Not rated		Not rated	
PeA:					
Pembroke	65	Very limited		Somewhat limited	
		Restricted permeability	1.00	Seepage	0.53
Urban land	25	Not rated		Not rated	
UaC:					
Udorthents	95	Not rated		Not rated	

Table 16.—Sanitary Interpretations for Urban Areas—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
UaD:					
Udorthents, refuse substratum	95	Not rated		Not rated	
Ub:					
Urban land	75	Not rated		Not rated	
Udorthents	22	Onsite investigation needed		Onsite investigation needed	
Uc:					
Urban land	50	Not rated		Not rated	
Udorthents, clayey substratum, hard bedrock 0-5 feet	30	Not rated		Not rated	
Ud:					
Urban land	75	Not rated		Not rated	
Udorthents, clayey substratum, hard bedrock >5 feet	20	Not rated		Not rated	
Us:					
Urban land	60	Not rated		Not rated	
Udorthents, smoothed	40	Not rated		Impractical	
VtC3:					
Vertrees	60	Very limited		Very limited	
		Restricted permeability	1.00	Slope	1.00
		Slope	0.04		
Urban land	25	Not rated		Not rated	
ZuB:					
Zanesville	65	Very limited		Somewhat limited	
		Restricted permeability	1.00	Depth to saturated zone	0.92
		Depth to saturated zone	1.00	Seepage	0.53
		Depth to bedrock	0.47	Slope	0.32
				Depth to hard bedrock	0.05
Urban land	25	Not rated		Not rated	

Table 17.—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 units that have Urban land as a major component were not rated and are not included in this table)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
BaB:					
Baxter	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
BaC, BaD:					
Baxter	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
BaE:					
Baxter	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
BbC3, BbD3:					
Baxter	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
CaB, CaC, CaC3:					
Caneyville	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
CnD, CnF:					
Caneyville	65	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop	25	Not rated		Not rated	
CrB:					
Crider	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
CrC:					
Crider	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
DAM:					
Dam, large	100	Not rated		Not rated	
Du:					
Dunning	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 17.—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
EkB:					
Elk	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
EpB:					
Epley	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
FeB:					
Fredonia	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Vertrees	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
FeC:					
Fredonia	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Vertrees	30	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
FrC, FrD:					
Frondorf	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Gr:					
Grigsby	90	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.03
HaB:					
Hammack	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
La:					
Lawrence	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Ld:					
Lindside	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Me:					
Melvin	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 17.—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
Ne, Nf:					
Newark	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
NhA, NhB:					
Nicholson	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
NhC:					
Nicholson	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
No, Np:					
Nolin	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
OtA, OtB:					
Otwood	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
PbA:					
Pembroke	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Pm:					
Pits, loamy, frequently flooded	95	Not rated		Not rated	
Pq:					
Pits, quarry	90	Not rated		Not rated	
RaF:					
Ramsey	75	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Frondorf	20	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Ro:					
Robertsville	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
RxF:					
Rock outcrop	55	Not rated		Not rated	
Caneyville	33	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 17.—Construction Materials, Part I—Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Potential source of gravel: Value	Potential source of sand: Rating class	Potential source of sand: Value
SaA, SaB:					
Sadler	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
VrC3:					
Vertrees	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
W:					
Water	100	Not rated		Not rated	
WeB:					
Wellston	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
WeC2:					
Wellston	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
ZaB:					
Zanesville	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
ZaC2:					
Zanesville	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Table 17.—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 units that have Urban land as a major component were not rated and are not included in this table)

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
BaB:							
Baxter	90	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Too acid	0.32	Shrink-swell	0.87	Rock fragments	0.00
		Low content of organic matter	0.50			Hard to reclaim	0.68
						Too acid	0.88
BaC:							
Baxter	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Too acid	0.32	Shrink-swell	0.87	Rock fragments	0.00
		Low content of organic matter	0.50			Hard to reclaim	0.68
						Too acid	0.88
						Slope	0.96
BaD:							
Baxter	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Too acid	0.32	Shrink-swell	0.87	Slope	0.00
		Low content of organic matter	0.50	Slope	0.98	Rock fragments	0.00
						Hard to reclaim	0.68
						Too acid	0.88
BaE:							
Baxter	80	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Slope	0.00
		Too acid	0.32	Slope	0.00	Too clayey	0.00
		Low content of organic matter	0.50	Shrink-swell	0.87	Rock fragments	0.00
						Hard to reclaim	0.68
						Too acid	0.88
BbC3:							
Baxter	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Low content of organic matter	0.12	Shrink-swell	0.87	Rock fragments	0.00
						Hard to reclaim	0.68
		Too acid	0.32			Too acid	0.88
						Slope	0.96
BbD3:							
Baxter	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Low content of organic matter	0.12	Shrink-swell	0.87	Slope	0.00
				Slope	0.98	Rock fragments	0.00
		Too acid	0.32			Hard to reclaim	0.68
						Too acid	0.88

Table 17.—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
CaB:							
Caneyville----------	85	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.05	Low strength	0.00	Depth to bedrock	0.29
		Depth to bedrock	0.29	Shrink-swell	0.56		
		Low content of organic matter	0.50				
		Too acid	0.74				
		Water erosion	0.90				
CaC:							
Caneyville----------	85	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.05	Low strength	0.00	Depth to bedrock	0.29
		Depth to bedrock	0.29	Shrink-swell	0.56	Slope	0.96
		Low content of organic matter	0.50				
		Too acid	0.74				
		Water erosion	0.90				
CaC3:							
Caneyville----------	85	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.03	Low strength	0.00	Depth to bedrock	0.29
		Low content of organic matter	0.12	Shrink-swell	0.53	Slope	0.96
		Depth to bedrock	0.29				
		Too acid	0.74				
CnD:							
Caneyville----------	65	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.05	Low strength	0.00	Slope	0.16
		Depth to bedrock	0.29	Shrink-swell	0.56	Depth to bedrock	0.29
		Low content of organic matter	0.50				
		Too acid	0.74				
		Water erosion	0.90				
Rock outcrop--------	25	Not rated		Not rated		Not rated	
CnF:							
Caneyville----------	65	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Slope	0.00
		Droughty	0.05	Low strength	0.00	Too clayey	0.00
		Depth to bedrock	0.29	Slope	0.00	Depth to bedrock	0.29
		Low content of organic matter	0.50	Shrink-swell	0.56		
		Too acid	0.74				
		Water erosion	0.90				
Rock outcrop--------	25	Not rated		Not rated		Not rated	
CrB:							
Crider--------------	90	Fair		Poor		Good	
		Low content of organic matter	0.50	Low strength	0.00		
		Too acid	0.54	Shrink-swell	0.99		

Table 17.—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
CrC:							
Crider	85	Fair		Poor		Fair	
		Low content of organic matter	0.50	Low strength	0.00	Slope	0.96
				Shrink-swell	0.99		
		Too acid	0.54				
DAM:							
Dam, large	100	Not rated		Not rated		Not rated	
Du:							
Dunning	85	Poor		Poor		Poor	
		Too clayey	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
		Low content of organic matter	0.12				
				Low strength	0.00	Too clayey	0.00
				Shrink-swell	0.87		
EkB:							
Elk	80	Fair		Poor		Good	
		Low content of organic matter	0.50	Low strength	0.00		
		Too acid	0.68				
		Water erosion	0.99				
EpB:							
Epley	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Low content of organic matter	0.12	Depth to saturated zone	0.24	Depth to saturated zone	0.24
		Too acid	0.54	Shrink-swell	0.98	Hard to reclaim	0.88
		Water erosion	0.90			Too acid	0.98
FeB:							
Fredonia	50	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Low content of organic matter	0.50	Low strength	0.00	Depth to bedrock	0.97
				Shrink-swell	0.87		
		Too acid	0.84				
		Depth to bedrock	0.97				
		Water erosion	0.99				
Vertrees	35	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Low content of organic matter	0.12	Shrink-swell	0.87	Rock fragments	0.97
		Too acid	0.54				
		Water erosion	0.99				
FeC:							
Fredonia	50	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Low content of organic matter	0.50	Low strength	0.00	Slope	0.96
				Shrink-swell	0.87	Depth to bedrock	0.97
		Too acid	0.74				
		Depth to bedrock	0.97				
		Water erosion	0.99				

Table 17.—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
FeC:							
Vertrees------------	30	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Low content of organic matter	0.12	Shrink-swell	0.87	Slope	0.96
		Too acid	0.54			Rock fragments	0.97
		Water erosion	0.99				
FrC:							
Frondorf------------	85	Fair		Poor		Poor	
		Droughty	0.08	Depth to bedrock	0.00	Rock fragments	0.00
		Depth to bedrock	0.21	Low strength	0.00	Depth to bedrock	0.21
		Too acid	0.50	Cobble content	0.96	Too acid	0.88
		Low content of organic matter	0.50			Slope	0.96
		Water erosion	0.99				
FrD:							
Frondorf------------	85	Fair		Poor		Poor	
		Droughty	0.08	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.21	Low strength	0.00	Rock fragments	0.00
		Too acid	0.50	Cobble content	0.96	Depth to bedrock	0.21
		Low content of organic matter	0.50	Slope	0.98	Too acid	0.88
		Water erosion	0.99				
Gr:							
Grigsby-------------	90	Fair		Poor		Good	
		Low content of organic matter	0.12	Low strength	0.00		
HaB:							
Hammack-------------	85	Fair		Poor		Poor	
		Low content of organic matter	0.12	Low strength	0.00	Hard to reclaim	0.00
		Too acid	0.54				
		Water erosion	0.99				
La:							
Lawrence------------	90	Fair		Poor		Fair	
		Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.04
		Too acid	0.50	Depth to saturated zone	0.04	Too acid	0.88
		Water erosion	0.90				
Ld:							
Lindside------------	90	Fair		Poor		Fair	
		Low content of organic matter	0.50	Low strength	0.00	Depth to saturated zone	0.24
		Water erosion	0.99	Depth to saturated zone	0.24		
Me:							
Melvin--------------	80	Fair		Poor		Poor	
		Low content of organic matter	0.50	Depth to saturated zone	0.00	Depth to saturated zone	0.00
		Water erosion	0.90	Low strength	0.00		

Table 17.—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
Ne, Nf:							
Newark	90	Fair		Poor		Fair	
		Low content of organic matter	0.50	Low strength	0.00	Depth to saturated zone	0.04
		Water erosion	0.90	Depth to saturated zone	0.04		
NhA, NhB:							
Nicholson	80	Fair		Poor		Fair	
		Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.24
		Too acid	0.68	Depth to saturated zone	0.24		
		Water erosion	0.90				
NhC:							
Nicholson	85	Fair		Poor		Fair	
		Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.24
		Too acid	0.68	Depth to saturated zone	0.24	Slope	0.96
		Water erosion	0.90				
No, Np:							
Nolin	90	Fair		Poor		Good	
		Low content of organic matter	0.50	Low strength	0.00		
		Water erosion	0.90				
OtA, OtB:							
Otwood	90	Fair		Poor		Fair	
		Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.32
		Too acid	0.50	Depth to saturated zone	0.32	Too acid	0.88
		Water erosion	0.90	Shrink-swell	0.87		
PbA:							
Pembroke	90	Fair		Poor		Fair	
		Too clayey	0.08	Low strength	0.00	Too clayey	0.05
		Low content of organic matter	0.12	Shrink-swell	0.94	Rock fragments	0.97
		Too acid	0.54			Too acid	0.98
Pm:							
Pits, loamy, frequently flooded	95	Not rated		Not rated		Not rated	
Pq:							
Pits, quarry	90	Not rated		Not rated		Not rated	
RaF:							
Ramsey	75	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
		Depth to bedrock	0.00	Low strength	0.00	Depth to bedrock	0.00
		Low content of organic matter	0.12	Slope	0.00	Rock fragments	0.88
		Too acid	0.50			Too acid	0.88

Table 17.—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
RaF:							
Frondorf	20	Fair		Poor		Poor	
		Depth to bedrock	0.21	Depth to bedrock	0.00	Slope	0.00
		Too acid	0.50	Low strength	0.00	Depth to bedrock	0.21
		Droughty	0.59	Slope	0.00	Too acid	0.88
		Water erosion	0.99				
Ro:							
Robertsville	90	Fair		Poor		Poor	
		Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
		Too acid	0.32	Low strength	0.00	Too acid	0.88
		Water erosion	0.90				
RxF:							
Rock outcrop	55	Not rated		Not rated		Not rated	
Caneyville	33	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Slope	0.00
		Droughty	0.05	Low strength	0.00	Too clayey	0.00
		Low content of organic matter	0.12	Slope	0.00	Depth to bedrock	0.29
				Shrink-swell	0.87		
		Depth to bedrock	0.29				
		Too acid	0.74				
		Water erosion	0.90				
SaA, SaB:							
Sadler	85	Fair		Poor		Fair	
		Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.32
				Depth to saturated zone	0.32		
		Too acid	0.32			Too acid	0.88
		Water erosion	0.90				
VrC3:							
Vertrees	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Low content of organic matter	0.12	Shrink-swell	0.87	Slope	0.96
						Rock fragments	0.97
		Too acid	0.54				
W:							
Water	100	Not rated		Not rated		Not rated	
WeB:							
Wellston	90	Fair		Poor		Fair	
		Low content of organic matter	0.50	Low strength	0.00	Rock fragments	0.88
				Depth to bedrock	0.23	Too acid	0.98
		Too acid	0.54				
		Water erosion	0.99				
WeC2:							
Wellston	85	Fair		Poor		Fair	
		Low content of organic matter	0.50	Low strength	0.00	Rock fragments	0.88
				Depth to bedrock	0.23	Slope	0.96
		Too acid	0.54			Too acid	0.98
		Water erosion	0.99				

Table 17.—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
ZaB:							
Zanesville----------	85	Fair		Poor		Fair	
		Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.32
		Too acid	0.32	Depth to saturated zone	0.32	Too acid	0.88
		Water erosion	0.90	Depth to bedrock	0.95	Hard to reclaim	0.98
ZaC2:							
Zanesville----------	80	Fair		Poor		Fair	
		Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.32
		Too acid	0.32	Depth to saturated zone	0.32	Too acid	0.88
		Water erosion	0.90	Depth to bedrock	0.95	Slope	0.96
						Hard to reclaim	0.98

Table 18.—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 units that have Urban land as a major component were not rated and are not included in this table)

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
BaB:							
Baxter	90	Somewhat limited		Not limited		Very limited	
		Seepage	0.03			Depth to water	1.00
BaC:							
Baxter	85	Somewhat limited		Not limited		Very limited	
		Seepage	0.03			Depth to water	1.00
BaD:							
Baxter	85	Somewhat limited		Not limited		Very limited	
		Slope	0.04			Depth to water	1.00
		Seepage	0.03				
BaE:							
Baxter	80	Somewhat limited		Not limited		Very limited	
		Slope	0.28			Depth to water	1.00
		Seepage	0.03				
BbC3:							
Baxter	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.03	Hard to pack	0.26	Depth to water	1.00
BbD3:							
Baxter	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Hard to pack	0.26	Depth to water	1.00
		Seepage	0.03				
CaB, CaC:							
Caneyville	85	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.93	Thin layer	0.93	Depth to water	1.00
				Hard to pack	0.51		
CaC3:							
Caneyville	85	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.93	Hard to pack	0.96	Depth to water	1.00
				Thin layer	0.93		
CnD:							
Caneyville	65	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.93	Thin layer	0.93	Depth to water	1.00
		Slope	0.01	Hard to pack	0.51		
Rock outcrop	25	Very limited		Not rated		Not rated	
		Depth to bedrock	1.00				
		Slope	0.01				
CnF:							
Caneyville	65	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.93	Thin layer	0.93	Depth to water	1.00
		Slope	0.88	Hard to pack	0.51		
Rock outcrop	25	Very limited		Not rated		Not rated	
		Depth to bedrock	1.00				
		Slope	0.88				

Table 18.—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
CrB:							
Crider	90	Somewhat limited		Not limited		Very limited	
		Seepage	0.72			Depth to water	1.00
CrC:							
Crider	85	Somewhat limited		Not limited		Very limited	
		Seepage	0.72			Depth to water	1.00
DAM:							
Dam, large	100	Not rated		Not rated		Not rated	
Du:							
Dunning	85	Not limited		Very limited		Somewhat limited	
				Ponding	1.00	Slow refill	0.28
				Depth to saturated zone	1.00	Cutbanks cave	0.10
				Hard to pack	0.36		
EkB:							
Elk	80	Somewhat limited		Very limited		Very limited	
		Seepage	0.72	Piping	1.00	Depth to water	1.00
EpB:							
Epley	85	Somewhat limited		Very limited		Very limited	
		Seepage	0.72	Depth to saturated zone	1.00	Depth to water	1.00
FeB:							
Fredonia	50	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.61	Thin layer	0.61	Depth to water	1.00
		Seepage	0.02	Hard to pack	0.49		
Vertrees	35	Not limited		Somewhat limited		Very limited	
				Hard to pack	0.77	Depth to water	1.00
FeC:							
Fredonia	50	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.61	Thin layer	0.61	Depth to water	1.00
		Seepage	0.02	Hard to pack	0.49		
Vertrees	30	Not limited		Somewhat limited		Very limited	
				Hard to pack	0.77	Depth to water	1.00
FrC:							
Frondorf	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Thin layer	0.95	Depth to water	1.00
		Depth to bedrock	0.23	Piping	0.95		
FrD:							
Frondorf	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Thin layer	0.95	Depth to water	1.00
		Depth to bedrock	0.23	Piping	0.95		
		Slope	0.04				
Gr:							
Grigsby	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	Depth to water	1.00
				Seepage	0.03		

Table 18.—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
HaB:							
Hammack	85	Somewhat limited		Not limited		Very limited	
		Seepage	0.72			Depth to water	1.00
La:							
Lawrence	90	Not limited		Very limited		Very limited	
				Depth to saturated zone	1.00	Depth to water	1.00
				Piping	0.94		
Ld:							
Lindside	90	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
						Cutbanks cave	0.10
				Piping	0.99		
Me:							
Melvin	80	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
						Cutbanks cave	0.10
				Piping	0.95		
Ne:							
Newark	90	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
						Cutbanks cave	0.10
				Piping	1.00		
Nf:							
Newark	90	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.72	Ponding	1.00	Slow refill	0.28
				Depth to saturated zone	1.00	Cutbanks cave	0.10
				Piping	1.00		
NhA, NhB:							
Nicholson	80	Somewhat limited		Very limited		Very limited	
		Seepage	0.72	Depth to saturated zone	1.00	Depth to water	1.00
				Piping	0.06		
NhC:							
Nicholson	85	Somewhat limited		Very limited		Very limited	
		Seepage	0.72	Depth to saturated zone	1.00	Depth to water	1.00
				Piping	0.06		
No:							
Nolin	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.80	Depth to water	1.00
Np:							
Nolin	90	Somewhat limited		Very limited		Very limited	
		Seepage	0.72	Ponding	1.00	Depth to water	1.00
				Piping	0.80		
OtA, OtB:							
Otwood	90	Somewhat limited		Very limited		Very limited	
		Seepage	0.72	Depth to saturated zone	1.00	Depth to water	1.00
				Piping	0.57		

Table 18.—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
PbA:							
Pembroke	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Hard to pack	0.31	Depth to water	1.00
Pm:							
Pits, loamy, frequently flooded	95	Not rated		Not rated		Not rated	
Pq:							
Pits, quarry	90	Not rated		Not rated		Not rated	
RaF:							
Ramsey	75	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
		Slope	0.88	Piping	1.00		
Frondorf	20	Somewhat limited		Very limited		Very limited	
		Slope	0.88	Piping	1.00	Depth to water	1.00
		Seepage	0.72	Thin layer	0.95		
		Depth to bedrock	0.23				
Ro:							
Robertsville	90	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.72	Ponding	1.00	Slow refill	0.28
				Depth to saturated zone	1.00	Cutbanks cave	0.10
				Piping	0.53		
RxF:							
Rock outcrop	55	Very limited		Not rated		Not rated	
		Depth to bedrock	1.00				
		Slope	0.88				
Caneyville	33	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.93	Thin layer	0.93	Depth to water	1.00
		Slope	0.88	Hard to pack	0.51		
SaA, SaB:							
Sadler	85	Somewhat limited		Very limited		Very limited	
		Seepage	0.72	Depth to saturated zone	1.00	Depth to water	1.00
				Piping	0.98		
VrC3:							
Vertrees	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.04	Hard to pack	0.83	Depth to water	1.00
W:							
Water	100	Not rated		Not rated		Not rated	
WeB:							
Wellston	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.98	Depth to water	1.00
		Depth to bedrock	0.22	Thin layer	0.22		
WeC2:							
Wellston	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.99	Depth to water	1.00
		Depth to bedrock	0.22	Thin layer	0.22		

Table 18.—Water Management—Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas: Rating class and limiting features	Pond reservoir areas: Value	Embankments, dikes, and levees: Rating class and limiting features	Embankments, dikes, and levees: Value	Aquifer-fed excavated ponds: Rating class and limiting features	Aquifer-fed excavated ponds: Value
ZaB:							
Zanesville----------	85	Somewhat limited		Very limited		Very limited	
		Seepage	0.72	Depth to saturated zone	1.00	Depth to water	1.00
		Depth to bedrock	0.01				
				Piping	0.99		
ZaC2:							
Zanesville----------	80	Somewhat limited		Very limited		Very limited	
		Seepage	0.72	Depth to saturated zone	1.00	Depth to water	1.00
		Depth to bedrock	0.01				
				Piping	0.99		

Table 19.—Engineering Index Properties

(Absence of an entry indicates that the data were not estimated. Map units that have Urban land as a major component were not rated and are not included in this table)

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	
BaB, BaC, BaD, BaE:												
Baxter	0-8	Gravelly silt loam	CL-ML, GC-GM, ML	A-4	0	0-10	60-90	55-80	45-70	45-70	25-35	4-10
	8-15	Gravelly silty clay loam, gravelly silt loam	CL, CL-ML, GC, GC-GM	A-4, A-6	0	0-10	60-90	55-80	55-80	45-80	25-40	5-20
	15-61	Gravelly clay, gravelly silty clay	CH, CL, GC	A-7	0	0-10	55-90	45-85	45-85	45-80	40-60	20-35
	61-81	Very gravelly clay, gravelly silty clay	CH, CL, GC	A-7	0	0-10	55-90	45-85	45-85	45-80	40-60	20-35
BbC3, BbD3:												
Baxter	0-3	Gravelly silty clay loam	CL	A-6	0	0-10	60-85	55-75	55-75	55-75	30-40	15-22
	3-61	Gravelly silty clay, gravelly clay	CH, CL, GC	A-7	0	0-10	55-90	45-85	45-85	45-80	40-60	20-35
	61-81	Very gravelly clay, gravelly silty clay	CH, CL, GC	A-7	0	0-10	55-90	45-85	45-85	45-80	40-60	20-35
CaB, CaC:												
Caneyville	0-6	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0-3	90-100	85-100	75-100	60-95	20-35	2-12
	6-11	Silty clay, clay, silty clay loam	CH, CL	A-7	0	0-3	90-100	85-100	75-100	65-100	42-70	20-45
	11-27	Clay, silty clay	CH	A-7	0	0-3	90-100	85-100	75-100	65-100	50-75	30-45
	27-29	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 19.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
CaC3:												
Caneyville------	0-3	Silty clay	CH, CL	A-7	0	0-3	90-100	85-100	80-100	75-100	45-65	25-45
	3-27	Clay, silty clay	CH	A-7	0	0-3	90-100	85-100	75-100	65-100	50-75	30-45
	27-31	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
CnD, CnF:												
Caneyville------	0-6	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0-3	90-100	85-100	75-100	60-95	20-35	2-12
	6-11	Silty clay, clay, silty clay loam	CH, CL	A-7	0	0-3	90-100	85-100	75-100	65-100	42-70	20-45
	11-27	Clay, silty clay	CH	A-7	0	0-3	90-100	85-100	75-100	65-100	50-75	30-45
	27-31	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Rock outcrop.												
CrB, CrC:												
Crider----------	0-9	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	85-100	25-35	4-12
	9-28	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6, A-7	0	0	100	95-100	90-100	85-100	25-42	4-20
	28-50	Silty clay loam, silty clay, clay	CH, CL	A-6, A-7	0	0-5	85-100	75-100	70-100	60-100	35-65	15-40
	50-80	Clay, silty clay, silty clay loam	CH, CL	A-6, A-7	0	0-5	85-100	75-100	70-100	60-100	35-65	15-40
DAM.												
Dam, large												
Du:												
Dunning---------	0-9	Silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100	85-95	34-42	15-22
	9-25	Silty clay, clay, silty clay loam	CH, CL	A-7	0	0	95-100	95-100	90-100	85-100	45-70	20-40
	25-71	Clay, silty clay, silty clay loam	CH, CL	A-7	0	0	95-100	95-100	90-100	85-100	45-70	20-40

Table 19.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
EkB:												
Elk	0-10	Silt loam	ML	A-4	0	0	95-100	95-100	85-100	70-95	25-35	3-10
	10-20	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	85-100	75-100	25-40	5-15
	20-65	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	85-100	75-100	25-40	5-15
EpB:												
Epley	0-9	Silt loam	ML	A-4	0	0	95-100	95-100	90-100	80-100	25-35	3-10
	9-24	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	80-100	25-40	5-20
	24-41	Silty clay, clay	CH, CL	A-6, A-7	0	0	95-100	95-100	90-100	85-100	35-65	20-35
	41-65	Silty clay, clay, channery clay	CH, CL, GC, SC	A-7	0	0-20	60-100	40-100	40-100	40-95	40-70	20-40
FeB, FeC:												
Fredonia	0-5	Silt loam	CL	A-4, A-6	0	0-5	95-100	90-100	85-100	75-100	25-40	8-20
	5-22	Silty clay, clay	CH, CL	A-7	0	0-5	95-100	90-100	85-100	80-100	45-75	20-45
	22-37	Silty clay, clay	CH, CL	A-7	0	0-5	95-100	90-100	85-100	80-100	45-75	20-45
	37-39	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Vertrees	0-6	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	85-100	80-100	70-95	55-90	20-40	3-20
	6-15	Silty clay loam, silty clay	CH, CL	A-7	0	0	85-100	75-100	70-95	65-95	41-70	25-45
	15-80	Silty clay, gravelly clay	CH	A-7	0	0-10	75-100	75-100	70-90	65-80	50-70	25-45

Table 19.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
FrC, FrD:												
Frondorf--------	0-5	Silt loam	CL, CL-ML	A-4	0	0-5	90-100	90-100	85-100	75-100	25-35	5-10
	5-18	Channery silty clay loam, silty clay loam, channery silt loam, channery loam	CL	A-2, A-4, A-6, A-7	0-5	10-40	55-90	50-85	40-80	30-75	15-45	NP-25
	18-26	Very channery silty clay loam, channery silt loam, channery loam	CL	A-2, A-4, A-6, A-7	0-5	10-40	55-90	50-85	40-80	30-75	15-45	NP-25
	26-30	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
Gr:												
Grigsby---------	0-9	Sandy loam	SC-SM, SM	A-2, A-4	0	0-5	80-100	80-100	50-95	25-50	15-20	NP-5
	9-41	Sandy loam, fine sandy loam, loam	SC-SM, SM	A-2, A-4	0	0-5	80-100	80-100	70-100	30-70	15-20	NP-5
	41-80	Fine sandy loam, loam, sandy clay loam	CL-ML, ML, SC-SM, CL	A-4	0	0	80-100	70-100	40-80	40-75	0-35	NP-15
HaB:												
Hammack---------	0-9	Silt loam	CL-ML, ML	A-4	0	0	100	95-100	90-100	85-100	25-35	4-10
	9-30	Silt loam, silty clay loam	CL, ML	A-4, A-6, A-7	0	0	100	95-100	90-100	85-95	30-45	6-20
	30-41	Very gravelly silt loam, very gravelly silty clay loam	CL, GC, GM, ML	A-2, A-4, A-6, A-7	0	15-35	25-80	22-75	22-75	18-70	30-45	6-20
	41-84	Gravelly clay, very gravelly clay, very gravelly silty clay, clay	CH, CL, GC	A-2, A-7	0	10-40	40-75	30-75	30-70	25-70	45-70	20-40

Table 19.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
La:												
Lawrence--------	0-7	Silt loam	ML	A-4	0	0	100	95-100	90-100	80-100	25-35	2-10
	7-18	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6, A-7	0	0	100	95-100	90-100	80-100	25-42	5-20
	18-65	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6, A-7	0	0	100	95-100	90-100	80-100	25-42	5-20
Ld:												
Lindside--------	0-10	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	80-100	55-90	20-35	2-15
	10-42	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	70-95	25-40	4-18
	42-65	Silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	80-100	55-95	25-40	2-20
Me:												
Melvin----------	0-9	Silt loam	ML, CL-ML	A-4	0	0	95-100	90-100	80-100	80-95	25-35	4-10
	9-62	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	80-95	25-40	5-20
Ne, Nf:												
Newark----------	0-11	Silt loam	CL, CL-ML, ML	A-4	0	0	95-100	90-100	80-100	55-95	15-32	NP-10
	11-65	Silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6, A-7	0	0	95-100	90-100	85-100	70-100	22-42	3-20
NhA, NhB, NhC:												
Nicholson-------	0-6	Silt loam	CL, CL-ML, ML	A-4	0	0	95-100	95-100	85-100	80-95	25-35	5-10
	6-25	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6, A-7	0	0	95-100	85-100	85-100	80-100	25-45	5-20
	25-37	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6, A-7	0	0	95-100	90-100	80-100	75-100	25-45	5-20
	37-62	Clay, silty clay, gravelly silty clay	CH, CL	A-6, A-7	0	0-10	80-100	70-100	60-100	55-100	34-70	16-40

Table 19.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
No, Np:												
Nolin-----------	0-9	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	80-100	25-40	5-18
	9-65	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6, A-7	0	0	100	95-100	85-100	75-100	25-46	5-23
OtA, OtB:												
Otwood----------	0-6	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-95	25-35	5-15
	6-28	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-95	25-40	5-20
	28-37	Silt loam, silty clay loam, loam	CL	A-6, A-7	0	0	95-100	95-100	85-100	65-90	35-50	15-30
	37-80	Silt loam	CL	A-6, A-7	0	0	95-100	75-100	75-100	65-95	35-50	15-30
PbA:												
Pembroke--------	0-9	Silt loam	CL, ML	A-4, A-6	0	0	95-100	90-100	80-100	70-100	25-40	3-16
	9-18	Silt loam, silty clay loam	CL	A-6, A-7	0	0	95-100	90-100	85-100	75-100	30-45	11-25
	18-62	Silty clay loam, silty clay	CH, CL	A-6, A-7	0	0	90-100	75-100	75-100	65-100	35-65	20-45
	62-80	Silty clay, clay	CH, CL	A-7	0	0	85-100	75-100	70-100	60-95	45-70	20-45
Pm. Pits, loamy, frequently flooded												
Pq. Pits, quarry												
RaF:												
Ramsey----------	0-4	Loam	CL, CL-ML, ML, SM	A-2, A-4	0	0-10	85-100	75-95	60-75	34-70	15-25	2-8
	4-19	Channery loam, sandy loam, fine sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0	0-10	85-100	75-95	60-75	30-70	15-25	NP-8
	19-20	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 19.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
RaF:												
Frondorf--------	0-18	Silt loam	CL-ML, ML, CL	A-4	0	0-5	90-100	90-100	85-100	75-100	25-35	5-10
	18-26	Very channery silty clay loam, channery silt loam, channery loam	CL, GC, GM, ML	A-4, A-6, A-7, A-2	0-5	10-40	55-90	50-85	40-80	30-75	15-45	NP-25
	26-30	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Ro:												
Robertsville----	0-10	Silt loam	ML	A-4	0	0	95-100	95-100	85-100	75-100	25-35	2-10
	10-28	Silt loam, silty clay loam	CL, ML	A-4, A-6	0	0	95-100	95-100	90-100	80-100	25-45	3-20
	28-40	Silty clay loam, silt loam	CL, ML	A-4, A-6	0	0	95-100	95-100	90-100	80-100	25-45	3-20
	40-70	Silty clay loam, silty clay, silt loam	CH, CL, CL-ML	A-4, A-6, A-7	0	0-5	80-100	75-100	70-100	60-100	25-60	5-35
RxF:												
Rock outcrop.												
Caneyville------	0-6	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0-3	90-100	85-100	75-100	60-95	20-35	2-12
	6-11	Silty clay, clay, silty clay loam	CH, CL	A-7	0	0-3	90-100	85-100	75-100	65-100	42-70	20-45
	11-27	Clay, silty clay	CH	A-7	0	0-3	90-100	85-100	75-100	65-100	50-75	30-45
	27-29	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 19.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
SaA, SaB:												
Sadler----------	0-9	Silt loam	CL-ML, ML	A-4	0	0	95-100	95-100	85-100	80-100	25-35	4-10
	9-26	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	85-100	75-100	25-40	5-20
	26-56	Silt loam, silty clay loam, loam	CL, CL-ML, ML	A-4, A-6	0	0-10	85-100	80-100	70-100	55-95	20-40	2-20
	56-65	Loam, silty clay loam, silt loam, gravelly loam	CL, GM, ML, SM	A-4, A-6, A-7	0	0-20	65-100	60-95	50-95	36-90	20-50	2-30
	65-67	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
VrC3:												
Vertrees--------	0-3	Silty clay loam	CL	A-6	0	0	85-100	80-100	70-95	65-95	30-40	12-20
	3-20	Clay, silty clay	CH, CL	A-7	0	0	85-100	75-100	70-95	65-95	41-70	25-45
	20-80	Clay, gravelly clay	CH	A-7	0	0-10	75-100	75-100	70-90	65-80	50-70	25-45
W.												
Water												
WeB:												
Wellston--------	0-8	Silt loam	ML	A-4	0	0	95-100	90-100	85-100	70-95	25-35	3-10
	8-13	Silt loam	CL, CL-ML	A-4, A-6	0	0	75-100	70-100	60-95	60-90	25-40	5-20
	13-30	Silty clay loam	CL, CL-ML	A-4, A-6	0	0	75-100	70-100	60-95	60-90	25-40	5-20
	30-46	Gravelly clay loam, loam, silt loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0-10	65-90	65-90	60-90	40-65	20-35	5-15
	46-48	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
WeC2:												
Wellston--------	0-5	Silt loam	ML	A-4	0	0	95-100	90-100	85-100	70-95	25-35	3-10
	5-30	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	75-100	70-100	60-95	60-90	25-40	5-20
	30-46	Gravelly loam, loam, silt loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0-10	65-90	65-90	60-90	40-65	20-35	5-15
	46-50	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 19.—Engineering Index Properties—Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
ZaB:												
Zanesville------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	80-100	25-40	4-15
	8-23	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	80-100	25-40	5-20
	23-45	Silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	0	0-3	90-100	85-100	80-100	60-100	20-40	2-20
	45-56	Sandy clay loam, clay loam, channery sandy clay loam, silty clay loam	CL, GM, SC, SM	A-1-b, A-2, A-4, A-6	0	0-10	65-100	50-95	40-95	20-85	20-40	2-20
	56-58	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
ZaC2:												
Zanesville------	0-5	Silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	80-100	25-40	4-15
	5-20	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	80-100	25-40	5-20
	20-45	Silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6	0	0-3	90-100	85-100	80-100	60-100	20-40	2-20
	45-56	Sandy clay loam, clay loam, channery sandy clay loam, silty clay loam	CL, GM, SC, SM	A-1-b, A-2, A-4, A-6	0	0-10	65-100	50-95	40-95	20-85	20-40	2-20
	56-58	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 20.—Physical Properties of the Soils

(Entries under "Erosion factors--T" apply to the entire profile. Absence of an entry indicates that data were not estimated. See table 21 for ratings for map units that have Urban land as a major component)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct			
BaB, BaC, BaD, BaE:												
Baxter------------------	0-8	10-50	50-80	12-27	1.20-1.40	0.60-2.00	0.14-0.18	0.0-2.9	2.0-4.0	.28	.37	5
	8-15	0-19	40-73	18-40	1.30-1.55	0.60-2.00	0.14-0.18	3.0-5.9	0.0-1.0	.24	.32	
	15-61	0-45	0-39	40-60	1.30-1.55	0.20-0.57	0.10-0.14	3.0-5.9	0.0-0.8	.24	.28	
	61-81	0-45	0-39	40-60	1.30-1.55	0.20-0.57	0.10-0.14	3.0-5.9	0.0-0.8	.24	.28	
BbC3, BbD3:												
Baxter------------------	0-3	0-19	40-73	27-40	1.20-1.45	0.60-2.00	0.12-0.18	0.0-2.9	0.5-3.0	.24	.32	5
	3-61	0-19	40-60	40-60	1.30-1.55	0.20-0.57	0.10-0.14	3.0-5.9	0.0-0.8	.24	.28	
	61-81	0-44	0-39	40-60	1.30-1.55	0.20-0.57	0.10-0.14	3.0-5.9	0.0-0.8	.24	.28	
CaB, CaC:												
Caneyville--------------	0-6	10-50	50-80	10-27	1.20-1.40	0.60-2.00	0.15-0.22	0.0-2.9	2.0-4.0	.43	.43	3
	6-11	0-19	40-60	36-60	1.35-1.60	0.06-0.20	0.12-0.18	3.0-5.9	0.0-1.0	.28	.28	
	11-27	0-44	0-39	40-60	1.35-1.60	0.00-0.20	0.12-0.18	3.0-8.9	0.0-0.8	.28	.28	
	27-29	---	---	---	---	0.00-0.00	---	---	---	---	---	
CaC3:												
Caneyville--------------	0-3	0-19	40-60	40-60	1.30-1.55	0.06-0.20	0.13-0.18	3.0-5.9	0.5-2.0	.32	.32	2
	3-27	0-44	0-39	40-60	1.35-1.60	0.00-0.20	0.12-0.18	3.0-8.9	0.0-0.8	.28	.28	
	27-31	---	---	---	---	0.00-0.00	---	---	---	---	---	
CnD, CnF:												
Caneyville--------------	0-6	10-50	50-80	10-27	1.20-1.40	0.60-2.00	0.15-0.22	0.0-2.9	2.0-4.0	.43	.43	3
	6-11	0-19	40-60	36-60	1.35-1.60	0.06-0.20	0.12-0.18	3.0-5.9	0.0-1.0	.28	.28	
	11-27	0-44	0-39	40-60	1.35-1.60	0.00-0.20	0.12-0.18	3.0-8.9	0.0-0.8	.28	.28	
	27-31	---	---	---	---	0.00-0.00	---	---	---	---	---	
Rock outcrop.												
CrB, CrC:												
Crider------------------	0-9	10-50	50-80	15-27	1.20-1.40	0.60-2.00	0.19-0.23	0.0-2.9	2.0-4.0	.32	.32	5
	9-28	0-19	40-73	18-35	1.20-1.45	0.60-2.00	0.18-0.23	0.0-2.9	0.0-1.0	.28	.28	
	28-50	0-19	40-73	28-40	1.20-1.55	0.60-2.00	0.12-0.18	3.0-5.9	0.0-0.8	.28	.28	
	50-80	0-44	0-39	40-60	1.20-1.55	0.20-0.57	0.12-0.18	3.0-5.9	0.0-0.8	.28	.28	
DAM.												
Dam, large												
Du:												
Dunning-----------------	0-9	0-19	40-73	27-40	1.20-1.40	0.60-2.00	0.19-0.23	3.0-5.9	1.0-4.0	.32	.32	5
	9-25	0-19	40-60	35-60	1.40-1.65	0.06-0.20	0.14-0.18	3.0-5.9	0.2-1.0	.28	.28	
	25-71	0-44	0-39	35-60	1.40-1.65	0.06-0.20	0.14-0.18	3.0-5.9	0.0-0.8	.28	.28	

Table 20.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct			
EkB:												
Elk	0-10	10-50	50-80	10-27	1.20-1.40	0.60-2.00	0.19-0.23	0.0-2.9	0.5-3.0	.37	.37	5
	10-20	0-50	50-80	18-34	1.20-1.50	0.60-2.00	0.18-0.22	0.0-2.9	0.0-0.8	.28	.28	
	20-65	0-19	40-73	18-34	1.20-1.50	0.60-2.00	0.18-0.22	0.0-2.9	0.0-0.8	.28	.28	
EpB:												
Epley	0-9	5-50	50-80	12-27	1.20-1.40	0.60-2.00	0.19-0.23	0.0-2.9	2.0-4.0	.43	.43	3
	9-24	0-19	40-73	18-40	1.20-1.45	0.60-2.00	0.18-0.22	0.0-2.9	0.0-1.0	.37	.37	
	24-41	0-19	40-60	40-60	1.30-1.55	0.00-0.20	0.13-0.18	3.0-5.9	0.0-0.8	.28	.28	
	41-65	0-44	0-39	40-60	1.35-1.60	0.00-0.20	0.08-0.18	3.0-5.9	0.0-0.8	.28	.28	
FeB, FeC:												
Fredonia	0-5	10-50	50-80	15-27	1.30-1.50	0.60-2.00	0.18-0.22	0.0-2.9	2.0-4.0	.37	.37	3
	5-22	0-19	40-60	40-60	1.30-1.60	0.06-0.60	0.13-0.18	3.0-5.9	0.0-0.8	.28	.28	
	22-37	0-44	0-39	40-60	1.30-1.60	0.06-0.20	0.13-0.18	3.0-5.9	0.0-0.8	.28	.28	
	37-39	---	---	---	---	---	---	---	---	---	---	
Vertrees	0-6	---	---	15-27	1.20-1.40	0.60-2.00	0.18-0.22	0.0-2.9	1.0-3.0	.37	.37	5
	6-15	---	---	35-60	1.40-1.65	0.20-0.60	0.14-0.18	3.0-5.9	0.0-0.8	.28	.28	
	15-80	---	---	40-60	1.45-1.65	0.06-0.20	0.10-0.16	3.0-5.9	0.0-0.8	.28	.28	
FrC, FrD:												
Frondorf	0-5	10-50	50-80	18-27	1.20-1.40	0.60-2.00	0.18-0.22	0.0-2.9	0.5-3.0	.37	.37	3
	5-18	0-19	40-73	18-35	1.20-1.45	0.60-2.00	0.08-0.16	0.0-2.9	0.0-0.8	.17	.28	
	18-26	0-19	40-73	18-35	1.20-1.45	0.60-2.00	0.08-0.16	0.0-2.9	0.0-0.8	.17	.28	
	26-30	---	---	---	---	0.00-0.06	---	---	---	---	---	
Gr:												
Grigsby	0-9	43-85	0-49	5-10	1.20-1.50	2.00-6.00	0.14-0.18	0.0-2.9	1.0-4.0	.28	.28	5
	9-41	43-85	0-49	5-18	1.20-1.50	2.00-6.00	0.12-0.16	0.0-2.9	0.0-0.8	.28	.32	
	41-80	23-52	28-50	10-35	1.20-1.50	2.00-6.00	0.12-0.16	0.0-2.9	0.0-0.8	.28	.32	
HaB:												
Hammack	0-9	10-50	50-80	12-27	1.20-1.40	0.60-2.00	0.19-0.23	0.0-2.9	2.0-4.0	.37	.37	4
	9-30	0-50	50-80	18-35	1.20-1.45	0.60-2.00	0.18-0.23	0.0-2.9	0.0-0.8	.32	.32	
	30-41	0-50	50-80	18-35	1.20-1.45	0.60-2.00	0.05-0.10	0.0-2.9	0.0-0.8	.24	.32	
	41-84	0-39	0-39	40-60	1.35-1.65	0.20-0.57	0.08-0.12	3.0-5.9	0.0-0.8	.24	.28	
La:												
Lawrence	0-7	10-50	50-80	12-27	1.20-1.40	0.60-2.00	0.19-0.23	0.0-2.9	1.0-4.0	.43	.43	3
	7-18	0-19	40-73	18-35	1.40-1.60	0.60-2.00	0.18-0.22	0.0-2.9	0.0-0.8	.37	.37	
	18-65	0-19	40-73	18-35	1.50-1.70	0.00-0.20	0.00-0.02	0.0-2.9	0.0-0.8	.43	.43	

Table 20.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct			
Ld:												
Lindside	0-10	10-50	50-80	15-27	1.20-1.40	0.60-2.00	0.20-0.26	0.0-2.9	2.0-4.0	.32	.32	5
	10-42	0-19	40-73	18-35	1.20-1.40	0.60-2.00	0.17-0.22	0.0-2.9	0.0-0.8	.37	.37	
	42-65	0-50	50-80	18-35	1.20-1.40	0.60-2.00	0.17-0.22	0.0-2.9	0.0-0.8	.32	.32	
Me:												
Melvin	0-9	0-50	50-80	12-18	1.20-1.60	0.60-2.00	0.18-0.23	0.0-2.9	0.5-3.0	.43	.43	5
	9-62	0-19	40-73	12-35	1.30-1.60	0.60-2.00	0.18-0.23	0.0-2.9	0.0-0.8	.43	.43	
Ne, Nf:												
Newark	0-11	10-50	50-80	7-27	1.20-1.40	0.60-2.00	0.15-0.23	0.0-2.9	1.0-4.0	.43	.43	5
	11-65	0-50	50-80	18-35	1.20-1.45	0.60-2.00	0.18-0.23	0.0-2.9	0.0-0.8	.43	.43	
NhA, NhB, NhC:												
Nicholson	0-6	0-50	50-80	12-27	1.20-1.40	0.60-2.00	0.19-0.23	0.0-2.9	2.0-4.0	.43	.43	3
	6-25	0-19	40-73	18-35	1.40-1.60	0.60-2.00	0.18-0.22	0.0-2.9	0.0-0.8	.43	.43	
	25-37	0-50	50-80	18-35	1.50-1.70	0.00-0.20	0.00-0.02	0.0-2.9	0.0-0.8	.43	.43	
	37-62	0-44	0-39	35-60	1.40-1.60	0.06-0.20	0.00-0.02	3.0-5.9	0.0-0.8	.28	.28	
No, Np:												
Nolin	0-9	0-50	50-80	12-27	1.20-1.40	0.60-2.00	0.18-0.23	0.0-2.9	2.0-4.0	.43	.43	5
	9-65	0-50	50-80	18-35	1.25-1.50	0.60-2.00	0.18-0.23	0.0-2.9	0.0-0.8	.43	.43	
OtA, OtB:												
Otwood	0-6	0-50	50-80	18-27	1.25-1.40	0.60-2.00	0.22-0.24	0.0-2.9	0.5-2.0	.43	.43	3
	6-28	0-50	50-80	18-35	1.30-1.50	0.60-2.00	0.18-0.22	3.0-5.9	0.0-0.8	.43	.43	
	28-37	0-50	50-80	18-35	1.60-1.80	0.00-0.20	0.00-0.02	3.0-5.9	0.0-0.8	.43	.43	
	37-80	0-50	50-80	20-35	1.50-1.65	0.06-0.20	0.00-0.02	3.0-5.9	0.0-0.8	.43	.43	
PbA:												
Pembroke	0-9	10-50	50-80	15-27	1.30-1.50	0.60-2.00	0.18-0.23	0.0-2.9	2.0-4.0	.32	.32	5
	9-18	0-50	50-80	20-35	1.30-1.50	0.60-2.00	0.18-0.22	0.0-2.9	0.5-1.0	.28	.28	
	18-62	0-19	40-73	36-60	1.35-1.65	0.60-2.00	0.13-0.19	3.0-5.9	0.0-0.8	.28	.28	
	62-80	0-44	40-60	40-60	1.35-1.70	0.20-0.57	0.12-0.17	3.0-5.9	0.0-0.8	.28	.28	
Pm.												
Pits, loamy, frequently flooded												
Pq.												
Pits, quarry												
RaF:												
Ramsey	0-4	23-52	28-50	8-25	1.25-1.50	6.00-20.00	0.09-0.12	0.0-2.9	1.0-3.0	.20	.20	1
	4-19	23-52	28-50	8-25	1.20-1.40	6.00-20.00	0.09-0.12	0.0-2.9	0.0-0.8	.17	.20	
	19-20	---	---	---	---	0.00-0.06	0.00-0.01	---	---	---	---	

Table 20.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct			
RaF:												
Frondorf	0-5	10-50	50-80	18-27	1.20-1.40	0.60-2.00	0.18-0.22	0.0-2.9	0.5-3.0	.37	.37	3
	5-18	0-19	40-73	18-35	1.20-1.45	0.60-2.00	0.08-0.16	0.0-2.9	0.0-0.8	.17	.28	
	18-26	0-19	40-73	18-35	1.20-1.45	0.60-2.00	0.08-0.16	0.0-2.9	0.0-0.8	.17	.28	
	26-30	---	---	---	---	0.00-0.06	---	---	---	---	---	
Ro:												
Robertsville	0-10	10-50	50-80	12-27	1.30-1.50	0.60-2.00	0.19-0.23	0.0-2.9	1.0-3.0	.43	.43	3
	10-28	0-50	50-80	15-35	1.40-1.60	0.60-2.00	0.18-0.22	0.0-2.9	0.0-0.8	.43	.43	
	28-40	0-19	40-73	18-35	1.50-1.65	0.00-0.20	0.00-0.02	0.0-2.9	0.0-0.8	.43	.43	
	40-70	0-19	40-60	15-45	1.40-1.60	0.06-0.20	0.00-0.02	0.0-2.9	0.0-0.8	.37	.37	
RxF:												
Rock outcrop.												
Caneyville	0-6	10-50	50-80	10-27	1.20-1.40	0.60-2.00	0.15-0.22	0.0-2.9	2.0-4.0	.43	.43	3
	6-11	0-19	40-60	36-60	1.35-1.60	0.06-0.20	0.12-0.18	3.0-5.9	0.0-1.0	.28	.28	
	11-27	0-44	0-39	40-60	1.35-1.60	0.00-0.20	0.12-0.18	3.0-8.9	0.0-0.8	.28	.28	
	27-29	---	---	---	---	0.00-0.00	---	---	---	---	---	
SaA, SaB:												
Sadler	0-9	10-50	50-80	12-27	1.30-1.50	0.60-2.00	0.19-0.23	0.0-2.9	0.5-3.0	.43	.43	3
	9-26	0-19	40-73	18-35	1.35-1.55	0.60-2.00	0.18-0.22	0.0-2.9	0.0-0.8	.43	.43	
	26-56	0-19	40-73	12-35	1.55-1.75	0.00-0.20	0.00-0.02	0.0-2.9	0.0-0.8	.43	.43	
	56-65	0-50	50-80	12-40	1.50-1.70	0.06-0.20	0.00-0.02	0.0-2.9	0.0-0.8	.43	.43	
	65-67	---	---	---	---	0.00-0.06	0.00-0.02	---	---	---	---	
VrC3:												
Vertrees	0-3	0-19	40-73	28-40	1.20-1.40	0.60-2.00	0.14-0.22	0.0-2.9	0.0-1.0	.32	.32	4
	3-20	0-44	0-39	35-60	1.40-1.65	0.20-0.60	0.10-0.16	3.0-5.9	0.0-0.8	.28	.28	
	20-80	0-44	0-39	40-60	1.45-1.65	0.06-0.20	0.10-0.16	3.0-5.9	0.0-0.8	.28	.28	
W.												
Water												
WeB:												
Wellston	0-8	10-50	50-80	13-27	1.30-1.50	0.60-2.00	0.18-0.22	0.0-2.9	1.0-3.0	.37	.37	4
	8-13	10-50	50-80	18-35	1.30-1.65	0.60-2.00	0.17-0.21	0.0-2.9	0.0-0.8	.37	.37	
	13-30	0-19	40-73	18-35	1.30-1.65	0.60-2.00	0.17-0.21	0.0-2.9	0.0-0.8	.37	.37	
	30-46	20-45	15-53	15-35	1.30-1.60	0.60-2.00	0.06-0.17	0.0-2.9	0.0-0.8	.37	.55	
	46-48	---	---	---	---	0.00-0.00	---	---	---	---	---	
WeC2:												
Wellston	0-5	10-50	50-80	13-27	1.30-1.50	0.60-2.00	0.18-0.22	0.0-2.9	1.0-3.0	.37	.37	4
	5-30	0-50	50-80	18-35	1.30-1.65	0.60-2.00	0.17-0.21	0.0-2.9	0.0-0.8	.37	.37	
	30-46	23-52	28-50	15-27	1.30-1.60	0.60-2.00	0.06-0.17	0.0-2.9	0.0-0.8	.37	.55	
	46-50	---	---	---	---	0.00-0.06	0.00-0.10	---	---	---	---	

Table 20.—Physical Properties of the Soils—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors		
										Kw	Kf	T
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct			
ZaB:												
Zanesville--------------	0-8	10-50	50-80	12-27	1.35-1.40	0.60-2.00	0.19-0.23	0.0-2.9	1.0-2.0	.43	.43	3
	8-23	0-19	40-73	18-35	1.35-1.45	0.60-2.00	0.17-0.22	0.0-2.9	0.0-0.8	.37	.37	
	23-45	0-19	40-73	18-33	1.50-1.75	0.00-0.20	0.00-0.02	0.0-2.9	0.0-0.8	.37	.37	
	45-56	20-45	15-53	20-40	1.50-1.70	0.20-0.57	0.00-0.02	0.0-2.9	0.0-0.8	.28	.32	
	56-58	---	---	---	---	0.00-0.00	0.00-0.02	---	---	---	---	
ZaC2:												
Zanesville--------------	0-5	10-80	50-80	12-27	1.35-1.40	0.60-2.00	0.19-0.23	0.0-2.9	1.0-2.0	.43	.43	3
	5-20	0-19	40-73	18-35	1.35-1.45	0.60-2.00	0.17-0.22	0.0-2.9	0.0-0.8	.37	.37	
	20-45	0-19	40-73	18-33	1.50-1.75	0.00-0.20	0.00-0.02	0.0-2.9	0.0-0.8	.37	.37	
	45-56	20-45	15-53	20-40	1.50-1.70	0.20-0.57	0.00-0.02	0.0-2.9	0.0-0.8	.28	.32	
	56-58	---	---	---	---	0.00-0.00	0.00-0.02	---	---	---	---	

Table 21.—Physical Properties of the Soils in Urban Areas

(Entries under "Erosion factors--T" apply to the entire profile. Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factor Kw	Erosion factor Kf	Erosion factor T
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct			
BrB, BrC, BrD:												
Baxter------------------	0-8	10-50	50-80	12-27	1.20-1.40	0.60-2.00	0.14-0.18	0.0-2.9	2.0-4.0	.28	.37	5
	8-15	0-19	40-73	18-40	1.30-1.55	0.60-2.00	0.14-0.18	3.0-5.9	0.0-1.0	.24	.32	
	15-61	0-45	0-39	40-60	1.30-1.55	0.20-0.57	0.10-0.14	3.0-5.9	0.0-0.8	.24	.28	
	61-81	0-45	0-39	40-60	1.30-1.55	0.20-0.57	0.10-0.14	3.0-5.9	0.0-0.8	.24	.28	
Urban land.												
CoD, CoE:												
Caneyville--------------	0-6	10-50	50-80	10-27	1.20-1.40	0.60-2.00	0.15-0.22	0.0-2.9	2.0-4.0	.43	.43	3
	6-11	0-19	40-60	36-60	1.35-1.60	0.06-0.20	0.12-0.18	3.0-5.9	0.0-1.0	.28	.28	
	11-27	0-44	0-39	40-60	1.35-1.60	0.00-0.20	0.12-0.18	3.0-8.9	0.0-0.8	.28	.28	
	27-29	---	---	---	---	0.00-0.00	---	---	---	---	---	
Urban land.												
Rock outcrop.												
CuB, CuC:												
Crider------------------	0-9	10-50	50-80	15-27	1.20-1.40	0.60-2.00	0.19-0.23	0.0-2.9	2.0-4.0	.32	.32	5
	9-28	0-19	40-73	18-35	1.20-1.45	0.60-2.00	0.18-0.23	0.0-2.9	0.0-1.0	.28	.28	
	28-50	0-19	40-73	28-40	1.20-1.55	0.60-2.00	0.12-0.18	3.0-5.9	0.0-0.8	.28	.28	
	50-80	0-44	0-39	40-60	1.20-1.55	0.20-0.57	0.12-0.18	3.0-5.9	0.0-0.8	.28	.28	
Urban land.												
FnB, FnC:												
Fredonia----------------	0-5	10-50	50-80	15-27	1.30-1.50	0.60-2.00	0.18-0.22	0.0-2.9	2.0-4.0	.37	.37	3
	5-22	0-19	40-60	40-60	1.30-1.60	0.06-0.60	0.13-0.18	3.0-5.9	0.0-0.8	.28	.28	
	22-37	0-44	0-39	40-60	1.30-1.60	0.06-0.20	0.13-0.18	3.0-5.9	0.0-0.8	.28	.28	
	37-39	---	---	---	---	---	---	---	---	---	---	
Vertrees----------------	0-6	10-50	50-80	15-27	1.20-1.40	0.60-2.00	0.18-0.22	0.0-2.9	1.0-3.0	.37	.37	5
	6-15	0-19	40-60	35-60	1.40-1.65	0.20-0.60	0.14-0.18	3.0-5.9	0.0-0.8	.28	.28	
	15-80	0-19	40-60	40-60	1.45-1.65	0.06-0.20	0.10-0.16	3.0-5.9	0.0-0.8	.28	.28	
Urban land.												

Table 21.—Physical Properties of the Soils in Urban Areas—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct			
FnC2:												
Fredonia----------------	0-3	10-50	50-80	18-27	1.30-1.50	0.60-2.00	0.18-0.22	0.0-2.9	2.0-4.0	.37	.37	3
	3-22	0-19	40-60	40-60	1.30-1.60	0.06-0.60	0.13-0.18	3.0-5.9	0.0-0.8	.28	.28	
	22-37	0-44	0-39	40-60	1.30-1.60	0.06-0.20	0.13-0.18	3.0-5.9	0.0-0.8	.28	.28	
	37-39	---	---	---	---	0.00-0.00	---	---	---	---	---	
Vertrees----------------	0-3	10-50	50-80	15-27	1.20-1.40	0.60-2.00	0.18-0.22	0.0-2.9	2.0-4.0	.37	.37	5
	3-15	0-19	40-60	35-60	1.40-1.65	0.20-0.60	0.14-0.18	3.0-5.9	0.0-0.8	.28	.28	
	15-80	0-44	0-39	40-60	1.45-1.65	0.06-0.20	0.10-0.16	3.0-5.9	0.0-0.8	.28	.28	
Urban land.												
PeA:												
Pembroke----------------	0-9	10-50	50-80	15-27	1.30-1.50	0.60-2.00	0.18-0.23	0.0-2.9	2.0-4.0	.32	.32	5
	9-18	0-50	50-80	20-35	1.30-1.50	0.60-2.00	0.18-0.22	0.0-2.9	0.5-1.0	.28	.28	
	18-62	0-19	40-73	36-60	1.35-1.65	0.60-2.00	0.13-0.19	3.0-5.9	0.0-0.8	.28	.28	
	62-80	0-44	40-60	40-60	1.35-1.70	0.20-0.57	0.12-0.17	3.0-5.9	0.0-0.8	.28	.28	
Urban land.												
UaC.												
Udorthents												
UaD.												
Udorthents, refuse substratum												
Ub:												
Urban land.												
Udorthents--------------	0-65	0-44	0-39	40-60	1.45-1.65	0.06-0.20	0.10-0.16	3.0-5.9	0.1-1.0	.28	.28	-
Uc:												
Urban land.												
Udorthents, clayey substratum, hard bedrock 0-5 feet-------	0-48	0-44	0-39	40-60	1.45-1.65	0.00-0.20	0.10-0.16	3.0-5.9	0.0-0.5	.28	.28	-
	48-50	---	---	---	---	---	---	---	---	---	---	

Table 21.—Physical Properties of the Soils in Urban Areas—Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct			
Ud:												
Urban land.												
Udorthents, clayey substratum, hard bedrock >5 feet	0-70	0-44	0-39	40-60	1.45-1.65	0.00-0.20	0.10-0.16	3.9-5.9	0.0-0.5	.28	.28	-
	70-72	---	---	---	---	---	---	---	---	---	---	
Us:												
Urban land.												
Udorthents, smoothed.												
VtC3:												
Vertrees	0-3	0-19	40-73	28-40	1.20-1.40	0.60-2.00	0.14-0.22	0.0-2.9	0.0-1.0	.32	.32	4
	3-20	0-44	0-39	35-60	1.40-1.65	0.20-0.60	0.10-0.16	3.0-5.9	0.0-0.8	.28	.28	
	20-80	0-44	0-39	40-60	1.45-1.65	0.06-0.20	0.10-0.16	3.0-5.9	0.0-0.8	.28	.28	
Urban land.												
ZuB:												
Zanesville	0-8	10-50	50-80	12-27	1.35-1.40	0.60-2.00	0.19-0.23	0.0-2.9	1.0-2.0	.43	.43	3
	8-23	0-19	40-73	18-35	1.35-1.45	0.60-2.00	0.17-0.22	0.0-2.9	0.0-0.8	.37	.37	
	23-45	0-19	40-73	18-33	1.50-1.75	0.00-0.20	0.00-0.02	0.0-2.9	0.0-0.8	.37	.37	
	45-56	20-45	15-53	20-40	1.50-1.70	0.20-0.57	0.00-0.02	0.0-2.9	0.0-0.8	.28	.32	
	56-58	---	---	---	---	0.00-0.00	0.00-0.02	---	---	---	---	
Urban land.												

Table 22.—Chemical Properties of the Soils

(Absence of an entry indicates that data were not estimated. Map units that have Urban land as a major component were not rated and are not included in this table)

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	In	meq/100 g	meq/100 g	pH
BaB, BaC, BaD, BaE:				
Baxter-----------------	0-8	5.0-15	2.0-10	4.5-6.5
	8-15	5.0-15	2.0-10	4.5-5.5
	15-61	5.0-15	2.0-10	4.5-5.5
	61-81	5.0-15	2.0-10	4.5-5.5
BbC3, BbD3:				
Baxter-----------------	0-3	5.0-15	2.0-10	4.5-6.5
	3-61	5.0-15	2.0-10	4.5-5.5
	61-81	5.0-15	2.0-10	4.5-5.5
CaB, CaC:				
Caneyville-------------	0-6	5.0-15	---	5.1-6.0
	6-11	10-20	---	5.1-6.0
	11-27	10-30	---	5.6-7.3
	27-29	---	---	---
CaC3:				
Caneyville-------------	0-3	5.0-15	---	5.1-6.0
	3-27	10-30	---	5.1-7.3
	27-31	---	---	---
CnD, CnF:				
Caneyville-------------	0-6	5.0-15	---	5.1-6.0
	6-11	10-20	---	5.1-6.0
	11-27	10-30	---	5.6-7.3
	27-31	---	---	---
Rock outcrop.				
CrB, CrC:				
Crider-----------------	0-9	5.0-15	---	5.1-7.3
	9-28	5.0-15	---	5.1-7.3
	28-50	5.0-20	---	4.5-6.0
	50-80	5.0-30	---	4.5-6.0
DAM.				
Dam, large				
Du:				
Dunning----------------	0-9	10-20	---	6.1-7.8
	9-25	10-20	---	6.1-7.8
	25-71	10-20	---	6.1-7.8
EkB:				
Elk--------------------	0-10	5.0-15	---	4.5-6.5
	10-20	5.0-15	---	4.5-6.5
	20-65	5.0-15	---	4.5-6.5
EpB:				
Epley------------------	0-9	5.0-15	---	4.5-7.3
	9-24	5.0-15	---	4.5-6.0
	24-41	10-30	---	4.5-6.0
	41-65	10-30	---	5.6-7.3

Table 22.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	In	meq/100 g	meq/100 g	pH
FeB:				
Fredonia	0-5	5.0-15	---	5.1-6.5
	5-22	10-20	---	5.1-7.3
	22-37	10-30	---	5.1-7.3
	37-39	---	---	---
Vertrees	0-6	5.0-15	---	4.5-7.3
	6-15	5.0-15	---	4.5-6.0
	15-80	5.0-20	---	4.5-7.3
FeC:				
Fredonia	0-5	5.0-15	---	5.1-6.0
	5-22	10-20	---	5.1-7.3
	22-37	10-30	---	5.1-7.3
	37-39	---	---	---
Vertrees	0-6	5.0-15	---	4.5-7.3
	6-15	5.0-15	---	4.5-6.0
	15-80	5.0-20	---	4.5-7.3
FrC, FrD:				
Frondorf	0-5	---	2.0-8.0	4.5-5.5
	5-18	---	2.0-6.0	4.5-5.5
	18-26	---	2.0-6.0	4.5-5.5
	26-30	---	---	---
Gr:				
Grigsby	0-9	5.0-10	---	5.6-7.3
	9-41	2.0-8.0	---	5.6-7.3
	41-80	2.0-5.0	---	5.6-7.3
HaB:				
Hammack	0-9	5.0-15	---	5.1-7.3
	9-30	5.0-15	---	5.1-6.5
	30-41	5.0-15	---	4.5-6.0
	41-84	5.0-20	---	4.5-6.0
La:				
Lawrence	0-7	5.0-15	---	4.5-6.5
	7-18	5.0-20	---	4.5-5.5
	18-65	5.0-20	---	4.5-5.5
Ld:				
Lindside	0-10	5.0-15	---	5.6-7.3
	10-42	5.0-20	---	5.6-7.3
	42-65	5.0-20	---	5.6-7.3
Me:				
Melvin	0-9	5.0-15	---	6.1-7.8
	9-62	5.0-20	---	6.1-7.3
Ne, Nf:				
Newark	0-11	5.0-15	---	5.6-7.8
	11-65	5.0-20	---	5.6-7.3
NhA, NhB, NhC:				
Nicholson	0-6	5.0-15	---	4.5-6.5
	6-25	5.0-15	---	4.5-6.5
	25-37	5.0-20	---	4.5-6.5
	37-62	5.0-20	---	5.1-7.8

Table 22.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	In	meq/100 g	meq/100 g	pH
No, Np:				
Nolin	0-9	5.0-15	---	5.6-7.3
	9-65	5.0-20	---	5.6-7.3
OtA, OtB:				
Otwood	0-6	5.0-15	2.0-10	4.5-7.3
	6-28	5.0-15	2.0-10	4.5-5.5
	28-37	5.0-20	2.0-10	4.5-5.5
	37-80	5.0-20	2.0-10	4.5-5.5
PbA:				
Pembroke	0-9	5.0-15	---	4.5-7.3
	9-18	5.0-15	---	4.5-6.0
	18-62	5.0-20	---	4.5-6.0
	62-80	5.0-30	---	4.5-6.0
Pm.				
Pits, loamy, frequently flooded				
Pq.				
Pits, quarry				
RaF:				
Ramsey	0-4	---	2.0-6.0	4.5-5.5
	4-19	---	1.0-3.0	4.5-5.5
	19-20	---	1.0-3.0	---
Frondorf	0-18	---	2.0-8.0	4.5-5.5
	18-26	---	2.0-6.0	4.5-5.5
	26-30	---	2.0-6.0	---
Ro:				
Robertsville	0-10	5.0-15	---	5.1-6.5
	10-28	5.0-15	---	4.5-5.5
	28-40	5.0-20	---	4.5-5.5
	40-70	5.0-20	---	4.5-7.3
RxF:				
Rock outcrop.				
Caneyville	0-6	5.0-15	---	5.1-6.0
	6-11	10-20	---	5.1-6.0
	11-27	10-30	---	5.6-7.3
	27-29	---	---	---
SaA, SaB:				
Sadler	0-9	5.0-15	---	4.5-7.3
	9-26	5.0-15	---	4.5-5.5
	26-56	5.0-15	---	4.5-5.5
	56-65	5.0-20	---	4.5-5.5
	65-67	---	---	---
VrC3:				
Vertrees	0-3	5.0-15	---	4.5-7.3
	3-20	5.0-15	---	4.5-6.0
	20-80	5.0-20	---	4.5-7.3

Table 22.—Chemical Properties of the Soils—Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction
	In	meq/100 g	meq/100 g	pH
W.				
Water				
WeB:				
Wellston	0-8	5.0-15	---	5.1-6.5
	8-13	5.0-15	---	4.5-6.0
	13-30	5.0-15	---	4.5-6.0
	30-46	5.0-15	---	4.5-6.0
	46-48	---	---	---
WeC2:				
Wellston	0-5	5.0-15	---	5.1-6.5
	5-30	5.0-15	---	4.5-6.0
	30-46	5.0-15	---	4.5-6.0
	46-50	---	---	---
ZaB:				
Zanesville	0-8	5.0-15	5.0-15	4.5-6.0
	8-23	5.0-15	5.0-15	4.5-5.5
	23-45	5.0-15	5.0-10	4.5-5.5
	45-56	5.0-20	2.0-10	4.5-5.5
	56-58	---	---	---
ZaC2:				
Zanesville	0-5	5.0-15	5.0-15	4.5-6.0
	5-20	5.0-15	5.0-15	4.5-5.5
	20-45	5.0-15	5.0-10	4.5-5.5
	45-56	5.0-20	2.0-10	4.5-5.5
	56-58	---	---	---

Table 23.—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 units that have Urban land as a major component were not rated and are not included in this table)

Map symbol and soil name	Hydro-logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
BaB, BaC, BaD, BaE, BbC3, BbD3:									
Baxter	B								
		Jan-Dec	---	---	---	---	None	---	None
CaB, CaC, CaC3:									
Caneyville	C								
		Jan-Dec	---	---	---	---	None	---	None
CnD, CnF:									
Caneyville	C								
		Jan-Dec	---	---	---	---	None	---	None
Rock outcrop	---								
		Jan-Dec	---	---	---	---	None	---	None
CrB, CrC:									
Crider	B								
		Jan-Dec	---	---	---	---	None	---	None
DAM:									
Dam, large	---								
		Jan-Dec	---	---	---	---	None	---	None
Du:									
Dunning	D								
		January	0.0	>6.0	0.5-2.0	Long	Frequent	---	None
		February	0.0	>6.0	0.5-2.0	Long	Frequent	---	None
		March	0.0	>6.0	0.5-2.0	Long	Frequent	---	None
		April	0.0	>6.0	0.5-2.0	Long	Frequent	---	None
		May	0.0	>6.0	0.5-2.0	Brief	Frequent	---	None
		December	0.0	>6.0	0.5-2.0	Long	Frequent	---	None

Table 23.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
EkB:									
Elk	B								
		January	---	---	---	---	None	---	Rare
		February	---	---	---	---	None	---	Rare
		March	---	---	---	---	None	---	Rare
		April	---	---	---	---	None	---	Rare
		May	---	---	---	---	None	---	Rare
		December	---	---	---	---	None	---	Rare
EpB:									
Epley	C								
		January	1.5-2.0	---	---	---	None	---	None
		February	1.5-2.0	---	---	---	None	---	None
		March	1.5-2.0	---	---	---	None	---	None
		April	1.5-2.0	---	---	---	None	---	None
		December	1.5-2.0	---	---	---	None	---	None
FeB, FeC:									
Fredonia	C								
		Jan-Dec	---	---	---	---	None	---	None
Vertrees	B								
		Jan-Dec	---	---	---	---	None	---	None
FrC, FrD:									
Frondorf	B								
		Jan-Dec	---	---	---	---	None	---	None
Gr:									
Grigsby	B								
		January	6.0-6.5	>6.0	---	---	None	Brief	Frequent
		February	6.0-6.5	>6.0	---	---	None	Brief	Frequent
		March	6.0-6.5	>6.0	---	---	None	Brief	Frequent
		April	6.0-6.5	>6.0	---	---	None	Brief	Frequent
		May	---	---	---	---	None	Very brief	Frequent
		December	6.0-6.5	>6.0	---	---	None	Brief	Frequent
HaB:									
Hammack	B								
		Jan-Dec	---	---	---	---	None	---	None

Table 23.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
La:									
Lawrence	C								
		January	1.0-1.5	---	---	---	None	---	Rare
		February	1.0-1.5	---	---	---	None	---	Rare
		March	1.0-1.5	---	---	---	None	---	Rare
		April	1.0-1.5	---	---	---	None	---	Rare
		December	1.0-1.5	---	---	---	None	---	Rare
Ld:									
Lindside	C								
		January	1.5-2.0	---	---	---	None	Very brief	Frequent
		February	1.5-2.0	---	---	---	None	Very brief	Frequent
		March	1.5-2.0	---	---	---	None	Very brief	Frequent
		April	1.5-2.0	---	---	---	None	Very brief	Frequent
		May	---	---	---	---	None	Very brief	Frequent
		December	1.5-2.0	---	---	---	None	Very brief	Frequent
Me:									
Melvin	D								
		January	0.0	>6.0	---	---	None	Long	Frequent
		February	0.0	>6.0	---	---	None	Long	Frequent
		March	0.0	>6.0	---	---	None	Long	Frequent
		April	0.0	>6.0	---	---	None	Long	Frequent
		May	0.0	>6.0	---	---	None	Brief	Frequent
		December	0.0	>6.0	---	---	None	Long	Frequent
Ne:									
Newark	C								
		January	1.0-1.5	>6.0	---	---	None	Brief	Frequent
		February	1.0-1.5	>6.0	---	---	None	Brief	Frequent
		March	1.0-1.5	>6.0	---	---	None	Brief	Frequent
		April	1.0-1.5	>6.0	---	---	None	Brief	Frequent
		May	1.0-1.5	>6.0	---	---	None	Very brief	Frequent
		December	1.0-1.5	>6.0	---	---	None	Brief	Frequent
Nf:									
Newark	C								
		January	1.0-1.5	>6.0	0.5-3.0	Long	Frequent	---	None
		February	1.0-1.5	>6.0	0.5-3.0	Long	Frequent	---	None
		March	1.0-1.5	>6.0	0.5-3.0	Long	Frequent	---	None
		April	1.0-1.5	>6.0	0.5-3.0	Brief	Frequent	---	None
		May	1.0-1.5	>6.0	0.5-3.0	Very brief	Frequent	---	None
		December	1.0-1.5	>6.0	0.5-3.0	Brief	Frequent	---	None

Table 23.—Water Features—Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
NhA, NhB, NhC:									
Nicholson	C								
		January	1.5-2.0	---	---	---	None	---	None
		February	1.5-2.0	---	---	---	None	---	None
		March	1.5-2.0	---	---	---	None	---	None
		April	1.5-2.0	---	---	---	None	---	None
		December	1.5-2.0	---	---	---	None	---	None
No:									
Nolin	B								
		January	---	---	---	---	None	Brief	Frequent
		February	---	---	---	---	None	Brief	Frequent
		March	---	---	---	---	None	Brief	Frequent
		April	---	---	---	---	None	Brief	Frequent
		May	---	---	---	---	None	Very brief	Frequent
		December	---	---	---	---	None	Brief	Frequent
Np:									
Nolin	B								
		January	---	---	0.5-2.0	Brief	Frequent	---	None
		February	---	---	0.5-2.0	Brief	Frequent	---	None
		March	---	---	0.5-2.0	Brief	Frequent	---	None
		April	---	---	0.5-2.0	Brief	Frequent	---	None
		May	---	---	0.5-2.0	Very brief	Frequent	---	None
		December	---	---	0.5-2.0	Brief	Frequent	---	None
OtA, OtB:									
Otwood	C								
		January	1.5-2.0	---	---	---	None	---	Rare
		February	1.5-2.0	---	---	---	None	---	Rare
		March	1.5-2.0	---	---	---	None	---	Rare
		April	1.5-2.0	---	---	---	None	---	Rare
		May	---	---	---	---	None	---	Rare
		December	1.5-2.0	---	---	---	None	---	Rare
PbA:									
Pembroke	B								
		Jan-Dec	---	---	---	---	None	---	None

Table 23.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
Pm:									
Pits, loamy, frequently flooded	---								
		January	---	---	---	---	None	Brief	Frequent
		February	---	---	---	---	None	Brief	Frequent
		March	---	---	---	---	None	Brief	Frequent
		April	---	---	---	---	None	Brief	Frequent
		May	---	---	---	---	None	Very brief	Frequent
		December	---	---	---	---	None	Brief	Frequent
Pq:									
Pits, quarry	---								
		Jan-Dec	---	---	---	---	None	---	None
RaF:									
Ramsey	D								
		Jan-Dec	---	---	---	---	None	---	None
Frondorf	B								
		Jan-Dec	---	---	---	---	None	---	None
Ro:									
Robertsville	D								
		January	0.0	>6.0	0.5-2.0	Long	Frequent	Brief	Occasional
		February	0.0	>6.0	0.5-2.0	Long	Frequent	Brief	Occasional
		March	0.0	>6.0	0.5-2.0	Long	Frequent	Brief	Occasional
		April	0.0	>6.0	0.5-2.0	Long	Frequent	Brief	Occasional
		May	0.0	>6.0	0.5-2.0	Brief	Frequent	---	None
		December	0.0	>6.0	0.5-2.0	Long	Frequent	Brief	Occasional
RxF:									
Rock outcrop	---								
		Jan-Dec	---	---	---	---	None	---	None
Caneyville	C								
		Jan-Dec	---	---	---	---	None	---	None
SaA, SaB:									
Sadler	C								
		January	1.5-2.0	---	---	---	None	---	None
		February	1.5-2.0	---	---	---	None	---	None
		March	1.5-2.0	---	---	---	None	---	None
		April	1.5-2.0	---	---	---	None	---	None
		December	1.5-2.0	---	---	---	None	---	None

Table 23.—Water Features—Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
VrC3:									
Vertrees	B								
		Jan-Dec	---	---	---	---	None	---	None
W:									
Water	---								
		Jan-Dec	---	---	---	---	None	---	None
WeB, WeC2:									
Wellston	B								
		Jan-Dec	---	---	---	---	None	---	None
ZaB, ZaC2:									
Zanesville	C								
		January	1.5-2.0	---	---	---	None	---	None
		February	1.5-2.0	---	---	---	None	---	None
		March	1.5-2.0	---	---	---	None	---	None
		April	1.5-2.0	---	---	---	None	---	None
		December	1.5-2.0	---	---	---	None	---	None

Table 24.—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. See table 25 for ratings for map units that have Urban land as a major component)

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
BaB, BaC, BaD, BaE, BbC3, BbD3:							
Baxter	---	---	---	---	None	High	High
CaB, CaC, CaC3:							
Caneyville	Bedrock (lithic)	20-40	---	Indurated	None	High	Moderate
CnD, CnF:							
Caneyville	Bedrock (lithic)	20-40	---	Indurated	None	High	Moderate
Rock outcrop	Bedrock (lithic)	0-0	---	Indurated	None	---	---
CrB, CrC:							
Crider	---	---	---	---	None	Moderate	Moderate
DAM:							
Dam, large	---	---	---	---	None	---	---
Du:							
Dunning	---	---	---	---	None	High	Moderate
EkB:							
Elk	---	---	---	---	None	Moderate	Moderate
EpB:							
Epley	Bedrock (lithic)	48-80	---	Indurated	None	High	Moderate
FeB, FeC:							
Fredonia	Bedrock (lithic)	20-40	---	Indurated	None	High	Moderate
Vertrees	---	---	---	---	None	Moderate	Moderate
FrC, FrD:							
Frondorf	Bedrock (paralithic)	20-40	---	Very strongly cemented	None	Moderate	High
Gr:							
Grigsby	---	---	---	---	None	Low	Moderate
HaB:							
Hammack	---	---	---	---	None	Moderate	Moderate

Table 24.—Soil Features—Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Thickness	Restrictive layer: Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In				
La:							
Lawrence	Fragipan	18-32	---	Noncemented	None	High	High
Ld:							
Lindside	---	---	---	---	None	Moderate	Low
Me:							
Melvin	---	---	---	---	None	High	Low
Ne, Nf:							
Newark	---	---	---	---	None	High	Low
NhA, NhB, NhC:							
Nicholson	Fragipan	18-30	---	Noncemented	None	High	Moderate
No, Np:							
Nolin	---	---	---	---	None	Low	Moderate
OtA, OtB:							
Otwood	Fragipan	20-36	---	Noncemented	None	Moderate	High
PbA:							
Pembroke	---	---	---	---	None	Moderate	Moderate
Pm:							
Pits, loamy, frequently flooded	---	---	---	---	None	---	---
Pq:							
Pits, quarry	---	---	---	---	None	---	---
RaF:							
Ramsey	Bedrock (lithic)	10-20	---	Indurated	None	Low	Moderate
Frondorf	Bedrock (paralithic)	20-40	---	Indurated	None	Moderate	High
Ro:							
Robertsville	Fragipan	18-32	---	Noncemented	None	High	High
RxF:							
Rock outcrop	Bedrock (lithic)	0-0	---	Indurated	None	---	---
Caneyville	Bedrock (lithic)	20-40	---	Indurated	None	High	Moderate

Table 24.—Soil Features—Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
SaA, SaB:							
Sadler	Fragipan	18-32	---	Noncemented	None	Moderate	High
	Bedrock (lithic)	50-80		Indurated			
VrC3:							
Vertrees	---	---	---	---	None	Moderate	Moderate
W:							
Water	---	---	---	---	None	---	---
WeB, WeC2:							
Wellston	Bedrock (lithic)	40-72	---	Indurated	None	Moderate	High
ZaB, ZaC2:							
Zanesville	Fragipan	20-32	---	Noncemented	None	Moderate	High
	Bedrock (lithic)	40-60		Indurated			

Table 25.—Soil Features for Urban Areas

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
BrB, BrC, BrD:							
Baxter	---	---	---	---	None	High	High
Urban land	---	---	---	---	None	---	---
CoD, CoE:							
Caneyville	Bedrock (lithic)	20-40	---	Indurated	None	High	Moderate
Urban land	---	---	---	---	None	---	---
Rock outcrop	Bedrock (lithic)	0-0	---	Indurated	None	---	---
CuB, CuC:							
Crider	---	---	---	---	None	Moderate	Moderate
Urban land	---	---	---	---	None	---	---
FnB, FnC, FnC2:							
Fredonia	Bedrock (lithic)	20-40	---	Indurated	None	High	Moderate
Vertrees	---	---	---	---	None	Moderate	Moderate
Urban land	---	---	---	---	None	---	---
PeA:							
Pembroke	---	---	---	---	None	Moderate	Moderate
Urban land	---	---	---	---	None	---	---
UaC:							
Udorthents	---	---	---	---	None	Unknown	Unknown
UaD:							
Udorthents, refuse substratum	---	---	---	---	None	Unknown	Unknown
Ub:							
Urban land	---	---	---	---	None	---	---
Udorthents	---	---	---	---	None	Unknown	Unknown

Table 25.—Soil Features for Urban Areas—Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
Uc:							
Urban land	---	---	---	---	None	---	---
Udorthents, clayey substratum, hard bedrock 0-5 feet	Bedrock (lithic)	12-60	---	Indurated	None	Moderate	Moderate
Ud:							
Urban land	---	---	---	---	None	---	---
Udorthents, clayey substratum, hard bedrock >5 feet	Bedrock (lithic)	60-80	---	Indurated	None	Moderate	Moderate
Us:							
Urban land	---	---	---	---	None	---	---
Udorthents, smoothed	---	---	---	---	None	Unknown	Unknown
VtC3:							
Vertrees	---	---	---	---	None	Moderate	Moderate
Urban land	---	---	---	---	None	---	---
ZuB:							
Zanesville	Fragipan Bedrock (lithic)	20-32 40-60	---	Noncemented Indurated	None	Moderate	High
Urban land	---	---	---	---	None	---	---

Table 26.—Classification of the Soils

Soil name	Family or higher taxonomic class
Baxter	Fine, mixed, semiactive, mesic Typic Paleudalfs
Caneyville	Fine, mixed, active, mesic Typic Hapludalfs
Crider	Fine-silty, mixed, active, mesic Typic Paleudalfs
Dunning	Fine, mixed, active, mesic Fluvaquentic Endoaquolls
Elk	Fine-silty, mixed, active, mesic Ultic Hapludalfs
Epley	Fine-silty, mixed, semiactive, mesic Oxyaquic Hapludalfs
Fredonia	Fine, mixed, active, mesic Typic Hapludalfs
Frondorf	Fine-loamy, mixed, active, mesic Ultic Hapludalfs
Grigsby	Coarse-loamy, mixed, active, mesic Dystric Fluventic Eutrudepts
Hammack	Fine-silty, mixed, semiactive, mesic Glossic Paleudalfs
Lawrence	Fine-silty, mixed, semiactive, mesic Aquic Fragiudalfs
Lindside	Fine-silty, mixed, active, mesic Fluvaquentic Eutrudepts
Melvin	Fine-silty, mixed, active, nonacid, mesic Fluvaquentic Endoaquepts
Newark	Fine-silty, mixed, active, nonacid, mesic Fluventic Endoaquepts
Nicholson	Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs
Nolin	Fine-silty, mixed, active, mesic Dystric Fluventic Eutrudepts
Otwood	Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs
Pembroke	Fine-silty, mixed, active, mesic Mollic Paleudalfs
Ramsey	Loamy, siliceous, subactive, mesic Lithic Dystrudepts
Robertsville	Fine-silty, mixed, semiactive, mesic Typic Fragiaqualfs
Sadler	Fine-silty, mixed, semiactive, mesic Oxyaquic Fraglossudalfs
Udorthents	Udorthents
Vertrees	Fine, mixed, semiactive, mesic Typic Paleudalfs
Wellston	Fine-silty, mixed, active, mesic Ultic Hapludalfs
Zanesville	Fine-silty, mixed, active, mesic Typic Fragiudalfs

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