United States
Department of
Agriculture

Natural
Resources
Conservation
Service

In cooperation with
Ohio Department of
Natural Resources,
Division of Soil and Water
Conservation; Ohio
Agricultural Research
and Development Center;
Ohio State University Extension;
Montgomery Soil and Water Conservation
District; and Montgomery County
Commissioners

Soil Survey of Montgomery County, Ohio

Supplement
March 2004

How to use this survey

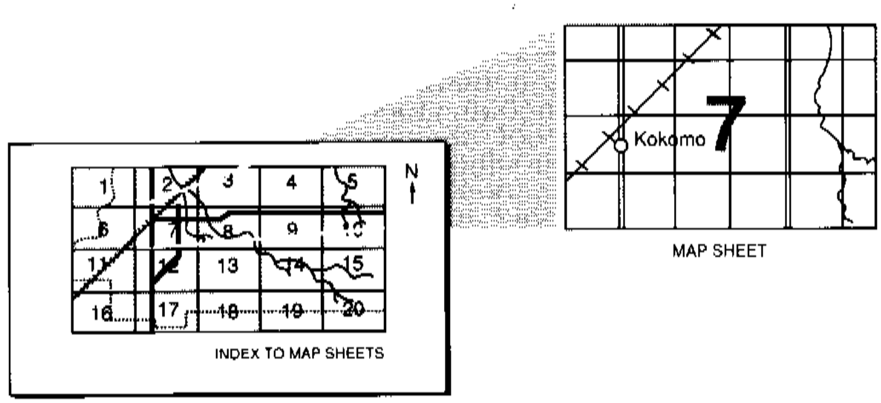
General Soil Map

The general soil map (p. 506), which is the color map at the end of this document, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

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

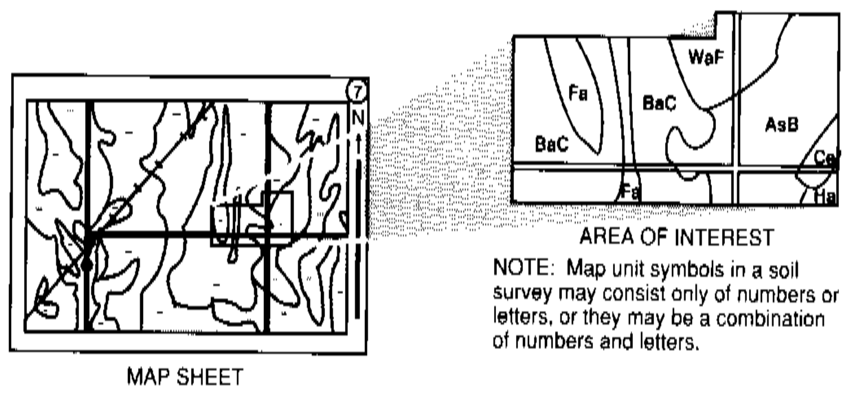
Detailed Soil Maps

The detailed soil maps which accompany this publication are 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**, which accompanies the soil maps. Note the number of the map sheet, and select 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** also shows which table has data on a specific land use for each detailed soil map unit. See **Contents** for sections of this publication that may address your specific needs.

This revised 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 1967. Soil names and descriptions were approved in 1969. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1966. The 1976 survey was made cooperatively by the Natural Resources Conservation Service, Ohio Department of Natural Resources, Division of Soil and Water Conservation, Ohio Agricultural Research and Development Center, the Ohio State University Extension, the Montgomery Soil and Water Conservation District and the Montgomery County Commissioners. This survey is part of the technical assistance furnished to the Montgomery Soil and Water Conservation District.

Cover: This area of Brookston silty clay loam is an ideal wetland wildlife habitat when undrained.

Contents

Preface

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

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and homebuyers 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 Ohio State University Extension.

Soil Survey of Montgomery County, Ohio

By Paul E. Davis, Norbert Lerch, Larry Tornes, Joseph Steiger, Neil Smeck, Howard Andrus, John Trimmer, and George Bottrell, Soil Conservation Service (presently Natural Resources Conservation Service)

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Soil Conservation Service, in Cooperation with The Ohio Department of Natural Resources, Division of Lands and Soil, and The Ohio Agricultural Research and Development Center

Montgomery County, in the southwestern part of Ohio, occupies 465 square miles, or 297,152 acres.

The county lies entirely in the region in Ohio that was glaciated during the Wisconsinan Age. The northern and western parts of the county are nearly level or gently rolling till plains. Elevation ranges from 680 to 1,100 feet above sea level. The Miami River and its tributaries dissect and drain most of the county, except for the southeastern corner, which is part of the Little Miami watershed.

General Nature of the County

In general, Montgomery County can be characterized as a broad, nearly level to gently rolling till plain. Glaciation has altered the former rolling to moderately steep limestone topography by a grinding-down and filling-in process. Glacial action and subsequent stream development resulted in the Mad River, Stillwater River, Twin Creek, Wolf Creek, and the Miami River. The Miami River flows through the middle of the county, north to south, toward the Ohio River. Maximum relief within the county is about 420 feet. About 300 feet of this can be accounted for by the abrupt descent from the uplands onto the main river bottoms.

Most of the county is uplands, and local relief is 10 to 50 feet within 1 mile. The soils, developed over moderately slowly permeable glacial till, are in sizable areas that are naturally very poorly drained. Tile drainage must be carefully planned to gain a suitable outlet in many places.

Climate

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

Climate Tables are created from climate station Dayton, Ohio.

Thunderstorm days, relative humidity, percent sunshine, and wind information are estimated from First Order station Dayton, Ohio.

Table 1 (p, 229) gives data on temperature and precipitation for the survey area as recorded at Dayton in the period 1971 to 2000. Table 2 (p. 230) shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 (p. 230)provides data on the length of the growing season.

In winter, the average temperature is 31.0 degrees F and the average daily minimum temperature is 23.4 degrees. The lowest temperature on record, which occurred at Dayton on January 20, 1985, was -21 degrees. In summer, the average temperature is 75.0 degrees and the average daily maximum temperature is 85.3 degrees. The highest temperature, which occurred at Dayton on July 22, 1934, was 105 degrees.

Growing degree days are shown in Table 1 (p, 229). They are equivalent to "heat units". During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The average annual total precipitation is about 39.46 inches. Of this, about 25.09 inches, or 64 percent, usually falls in April through October. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 4.65 inches at Dayton on September 14, 1979. Thunderstorms occur on about 40 days each year, and most occur in June and July.

The average seasonal snowfall is 15.6 inches. The greatest snow depth at any one time during the period of record was 21 inches recorded on

January 27, 1978. On an average, 22 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 10.5 inches recorded on November 26, 1950.

The average relative humidity in mid-afternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 67 percent of the time in summer and 41 percent in winter. The prevailing wind is from the south-southwest. Average wind speed is highest, around 12 miles per hour, in March.

Geology

The parent material for the soils in Montgomery County originated from bedrock, from ice- and water-transported glacial drift, from wind-deposited loess, or from a combination of these. The thick mantle of assorted unconsolidated gravel, sand, clay, stones, and boulders that now covers the county was left by two major glacial ice sheets of the Pleistocene age. The Wisconsin age had the greatest effect on the county, and it was largely responsible for the present distribution of the mantle over the bedrock. The loess was blown in and deposited in a post-glacial era. Loess deposits more than 36 inches thick occur only in the southeastern corner of the county.

The underlying bedrock structure helps to determine the direction of stream drainage (30). The crest of a giant underground hump of rock layers, called the Cincinnati arch, crosses Montgomery County in a northeasterly direction. Rock layers near the top of this crest drop from the northeast at about 5 feet per mile. Out on the edge of the hump (anticline), the dip is less than 1 foot per mile. The youngest bedrock formations are of the Niagara Group in the Silurian System. These formations are the upper layers of bedrock on the arch and are mostly limestones and dolomites. The oldest rocks, exposed in the valleys, are those of the Maysville Group of the Ordovician system. The Ordovician bedrock is shale with thin, interbedded limestone strata. All bedrock strata exposed in the county are sedimentary rocks.

Most of the mantle in the county is in the form of stream-dissected glacial till plains. Parts of these plains are crossed by recessional moraines marked by hummocky topography or by the presence of many boulders in the glacial till. Till deposits range from less than 1 foot in thickness near bedrock exposures to 150 to 300 feet in thickness where these deposits fill preglacial valleys. Average thickness of glacial till on the till plain is about 20 feet.

Another result of glacial activity is the outwash observed in the form of stream-sorted deposits of gravel, sand, and even clay in kames and on valley-train terraces along the major streams of the county. Outwash also is variable in depth. It exists in deposits ranging from thin lenses to huge areas 180 feet thick in the Southern Hills and Oakwood Heights sections of south Dayton.

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

Figure 2. Sloan soils are ideally suited for warm season grasses and wildflowers.

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.

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

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

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

Some soil boundaries and soil names in this survey area do not fully match those in adjacent survey areas that were published at an earlier date. Differences are the result of changes and refinements in soil series concepts, updated soil taxonomy, slightly different map unit composition in survey areas, and the use of the State Soil Geographic data (STATSGO) map as the base for the general soil map in this publication.

General Soil Map

The general soil map at the end of this publication shows, in color, the soil associations in Montgomery County. A soil association is a landscape that has a distinctive pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern.

A map showing soil associations is useful to people who want a general idea of the soils in a county, who want to compare different parts of a county, or who want to know the location of large tracts that are suitable for a certain kind of land use. Such a map is a useful general guide in managing a watershed, a wooded tract, or a wildlife area, or in planning engineering works, recreational facilities, and community developments. It is not a suitable map for planning the management of a farm or field or for selecting the exact location of a road, building, or similar structure, because the soils in any one association ordinarily differ in slope, depth, stoniness, drainage, and other characteristics that affect their management.

The nine soil associations in Montgomery County are discussed in the following pages. It should be noted that the soil associations shown on the general soil map of this county do not exactly match those on the general soil maps of the Preble County and Warren County published soil surveys. The major soils are similar or the same, but they occur in a slightly different pattern.

1. Lewisburg-Brookston-Pyrmont association

Deep, nearly level to moderately steep, moderately well drained to very poorly drained soils that have a moderately fine textured and fine textured subsoil; formed in thin loess and glacial till

This association consists of soils that dominantly are nearly level to gently sloping and occur on stream-dissected till plains, or they are gently sloping to moderately steep along the larger waterways.

This association occupies less than 1 percent of the county. About 30 percent of this is Lewisburg soils, 30 percent is Brookston soils, 20 percent is Pyrmont soils, and the remaining 20 percent is other soils.

The moderately well drained Lewisburg soils and the somewhat poorly drained Pyrmont soils have a thin, clayey subsoil and are shallow over calcareous till. Lewisburg soils are on knolls between drainageways and are gently sloping adjacent to larger drainageways. Pyrmont soils are nearly level. Brookston soils are deep, nearly level to depressional, dark colored, and very poorly drained. The Brookston soils are adjacent to the lighter colored Lewisburg and Pyrmont soils.

Other soils in this association are the moderately well drained Celina soils, the well drained Miamian soils, and the somewhat poorly drained Crosby soils.

Brookston and Pyrmont soils are seasonally wet and need to be artificially drained. Erosion is a hazard on Lewisburg soils.

Moderately slow or slow permeability and seasonal wetness are the major limitations for farm crops.

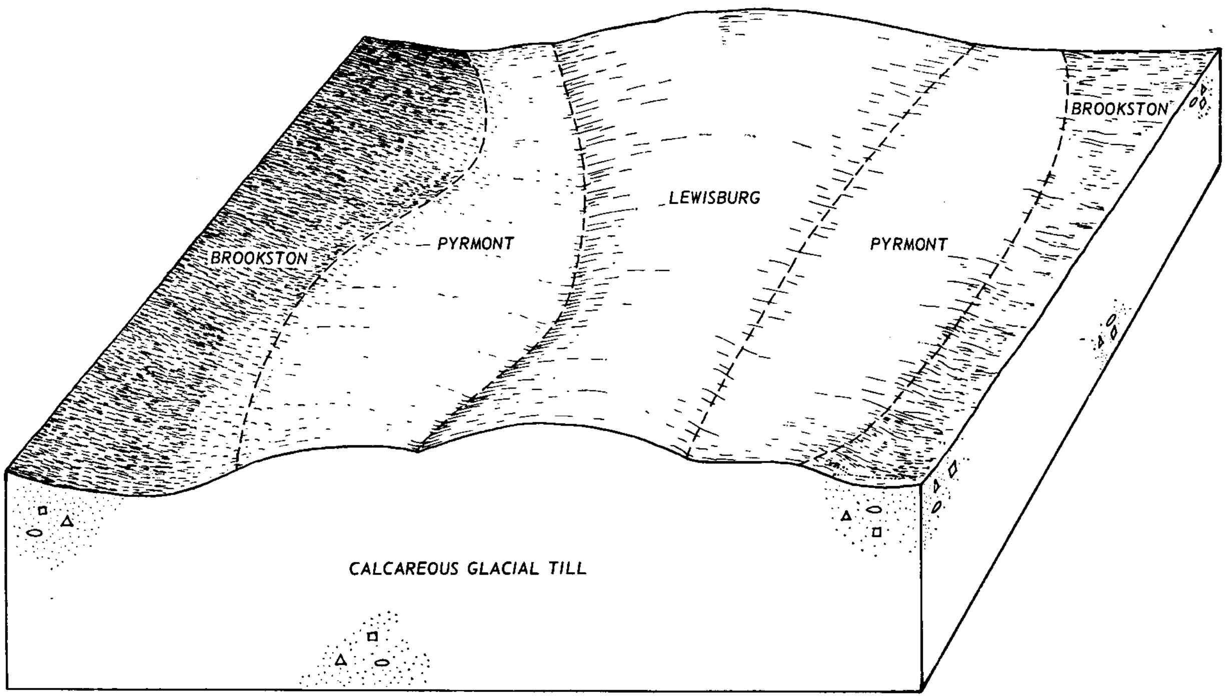

Figure 3. Typical pattern of soils and underlying material in association 1.

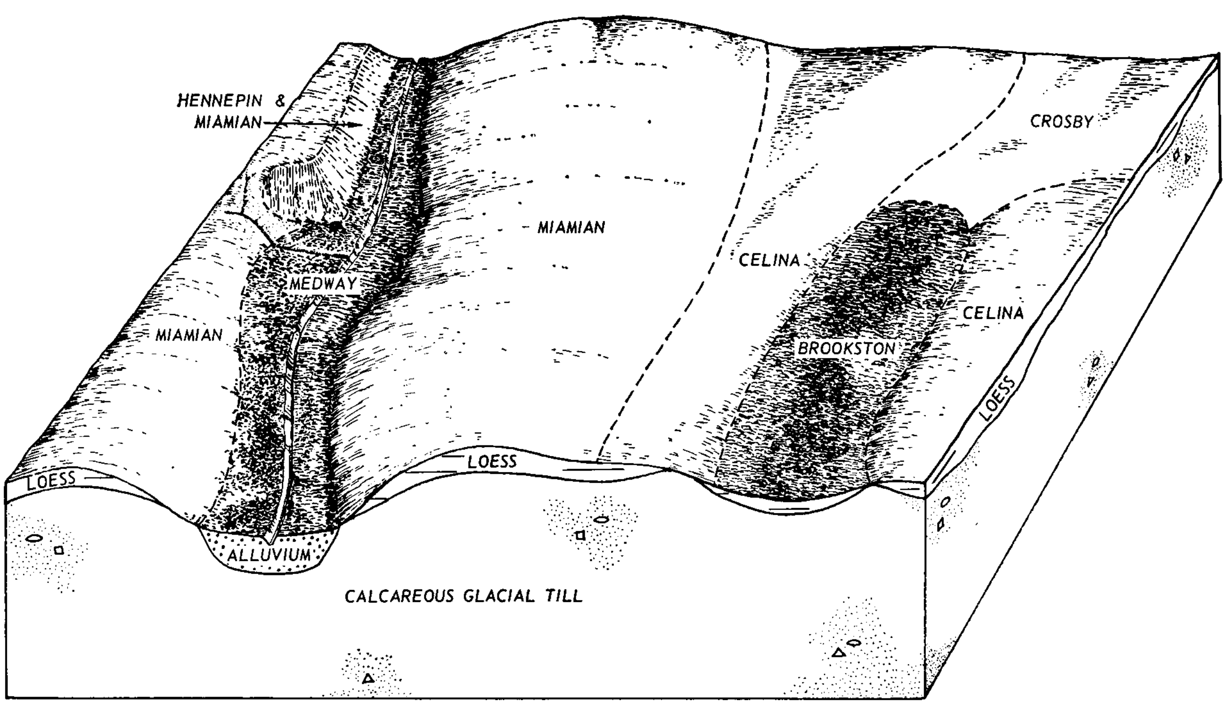

Figure 4. Typical pattern of soils and underlying material in association 2.

2. Miamian-Celina association

Deep, mainly gently sloping to moderately steep, well drained and moderately well drained soils that have a moderately fine textured and fine textured subsoil; formed in thin loess and glacial till

This association consists of nearly level to rolling areas on the glacial till plain and hilly moraines dissected by streams. It is in all parts of the county except in the northwestern and southeastern corners.

This association occupies about 51 percent of Montgomery County. About 55 percent of this is

Miamian soils, 20 percent is Celina soils, and 25 percent is other soils. The Miamian and Celina soils are moderately deep to calcareous till. The Miamian soils are well drained, and the Celina soils are moderately well drained. The Miamian soils typically occupy knolls and are rolling to moderately steep adjacent to drainageways. The Celina soils are gently sloping.

Other soils in this association are the somewhat poorly drained Crosby soils, the dark-colored, very poorly drained Brookston soils, the moderately well drained Medway soils, and the shallow, well drained Hennepin soils.

The control of runoff and erosion is the main concern in managing the soils of this association for farming. Moderately slow permeability and slope are dominant limitations to many nonfarm uses.

3. Brookston-Crosby association

Deep, mainly nearly level to gently sloping, very poorly drained and somewhat poorly drained soils that have a moderately fine textured and fine textured subsoil; formed in thin loess and glacial till

This association occurs in one large, nearly level to undulating area in the northwestern corner of the county and in medium-sized to small areas scattered throughout the rest of the county. This association occupies about 18 percent of the county. About 60 percent of this is Brookston soils, 25 percent is Crosby soils, and the remaining 15 percent is other soils.

The Brookston soils are dark colored, very poorly drained, and typically nearly level to depressional. The somewhat poorly drained Crosby soils occur on gently undulating, low knolls. They are lighter colored than the Brookston soils and are nearly level to gently sloping.

Among the other soils in the association are Miamian and Celina soils that are steeper than the Brookston and Crosby soils.

The dominant soils in this association are seasonally wet. Farming is delayed in spring unless the soils are artificially drained. Much of the association is artificially drained by tile. Moderately slow permeability and a seasonal high water table are soil limitations for many nonfarm uses.

4. Brookston-Fincastle association

Deep, mainly nearly level to gently sloping, very poorly drained and somewhat poorly drained soils that have a moderately fine textured subsoil; formed in thick loess and glacial till

This association occurs as small, scattered areas in the southeastern part of the county. The major soils of the association are nearly level to

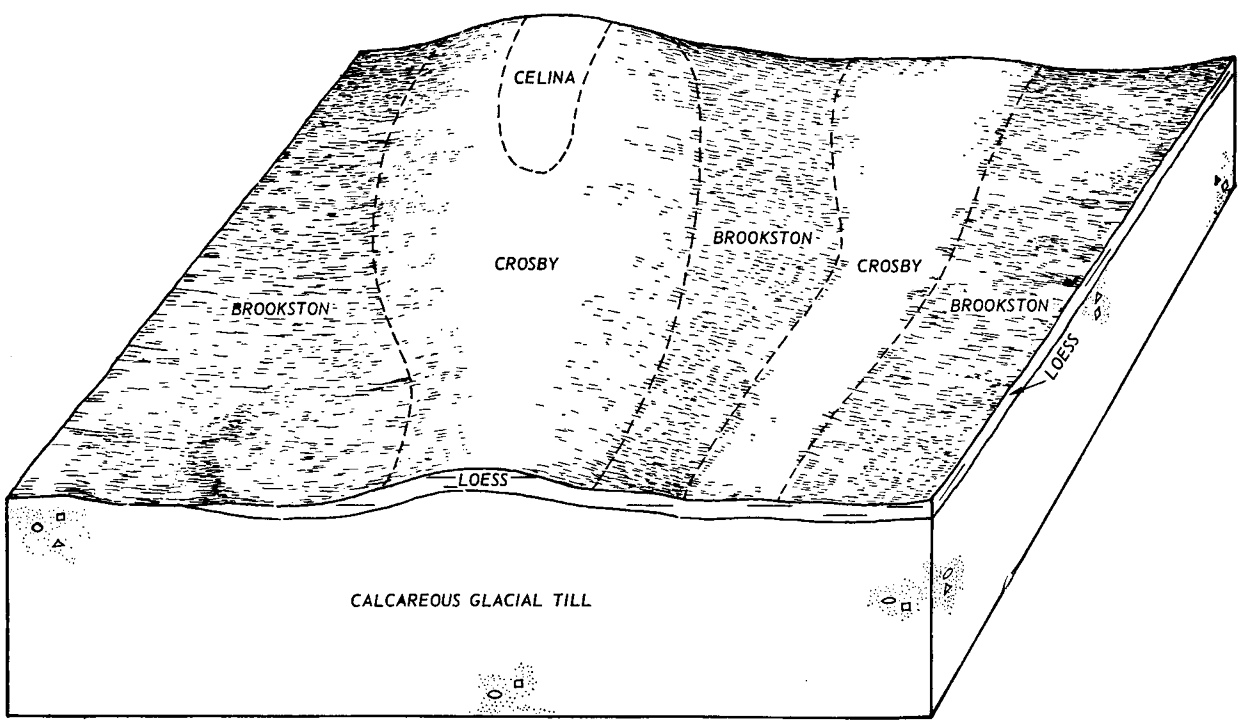

Figure 5. Typical pattern of soils and underlying material in association 3.

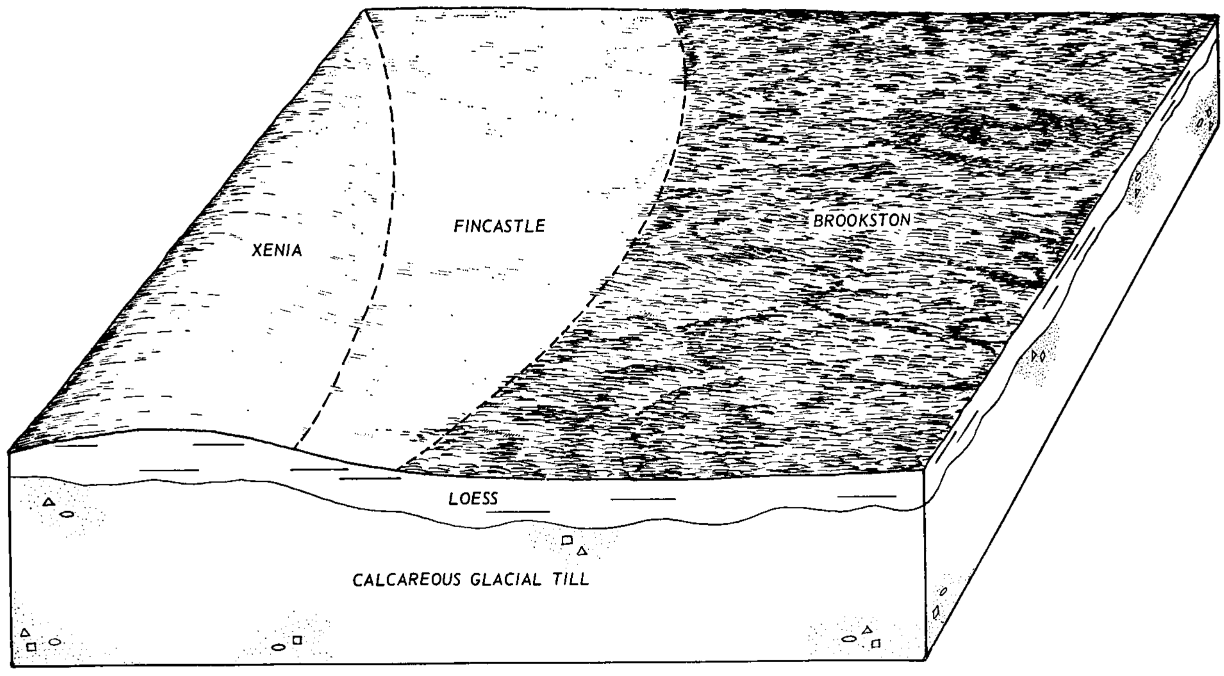

Figure 6. Typical pattern of soils and underlying material in association 4.

undulating and are on till plains. They have a silt or loess capping 18 to 40 inches thick or more.

This association occupies slightly more than 1 percent of the county. About 55 percent of this is Brookston soils, 40 percent is Fincastle soils, and the remaining 5 percent is other soils.

The Brookston soils are deep, dark colored, and very poorly drained. They are nearly level to depressional. The Fincastle soils are deep and somewhat poorly drained. They occupy the slight rises or low knolls between areas of Brookston soils and Xenia soils and have better drainage and a lighter color than Brookston soils. The rest of the association consists of smaller areas of the moderately well drained Xenia and other soils.

The major soils in this association are seasonally wet. Farming is delayed in spring unless the soils are artificially drained. Much of the association is drained for farming. Moderately slow permeability and a seasonal high water table are the major limitations of the dominant soils for many nonfarm uses.

5. Xenia-Russell association

Very deep, mainly nearly level to gently sloping, moderately well drained and well drained soils that have a moderately fine textured subsoil; formed in thick loess and glacial till

This association is in the southeastern part of the county. Most of the association consists of nearly level to gently sloping soils on a till plain. The dominant soils have a silt or loess capping 18 to 40 inches thick. In small areas of this association there are strongly sloping soils along drainageways.

This association occupies slightly more than 6 percent of the county. About 25 percent of this is Xenia soils, 25 percent is Russell soils, and the remaining 50 percent is other soils.

The Xenia soils are very deep and moderately well drained. The Russell soils are very deep and well drained. Russell soils are steeper than Xenia soils and occupy more elevated positions on the landscape.

Among the other soils in this association are the somewhat poorly drained Fincastle soils and the very poorly drained Brookston soils. Also, the Brookston-Urban land complex and the Miamian-Urban land complex occupy sizable acreages.

Control of surface runoff and erosion is the main management concern in the use of the soils of this association for farming. Moderately slow permeability is a limitation for some nonfarm uses.

6. Milton-Ritchey-Millsdale association

Moderately deep and shallow, nearly level to very steep, well drained and very poorly drained soils that have a moderately fine textured and fine textured subsoil; formed in glacial till over limestone

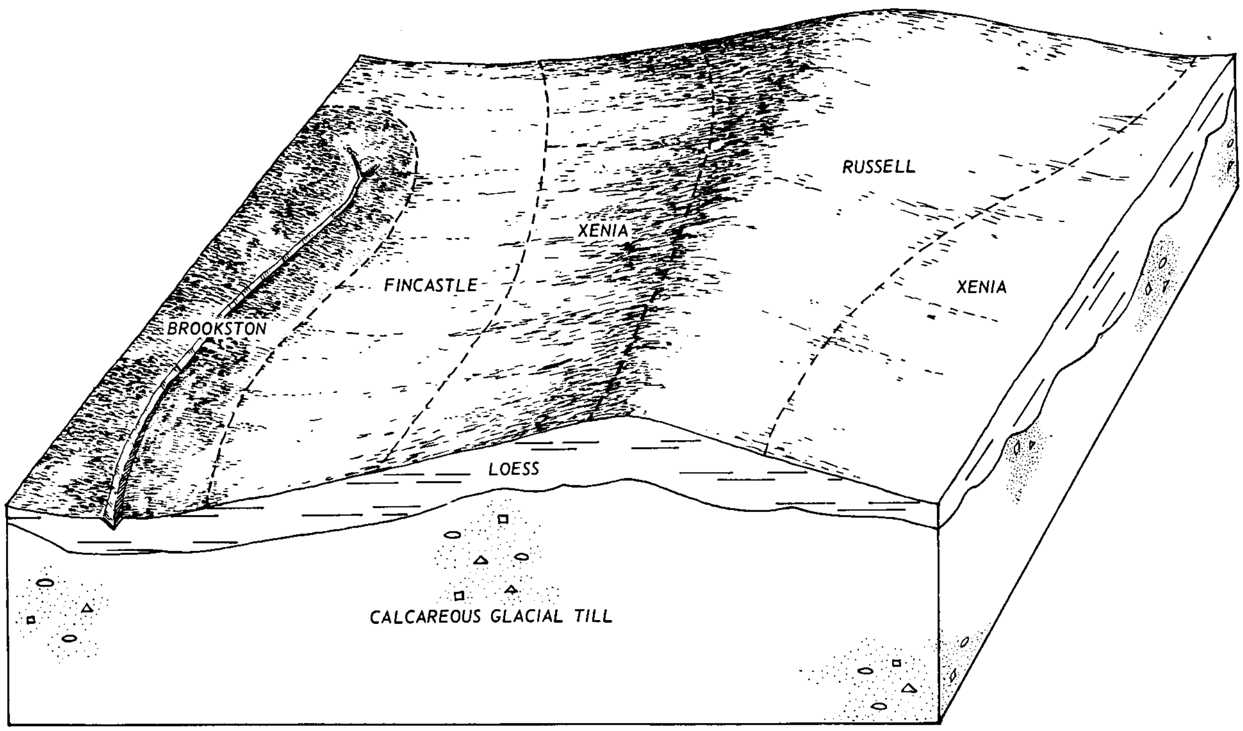

Figure 7. Typical pattern of soils and underlying material in association 5.

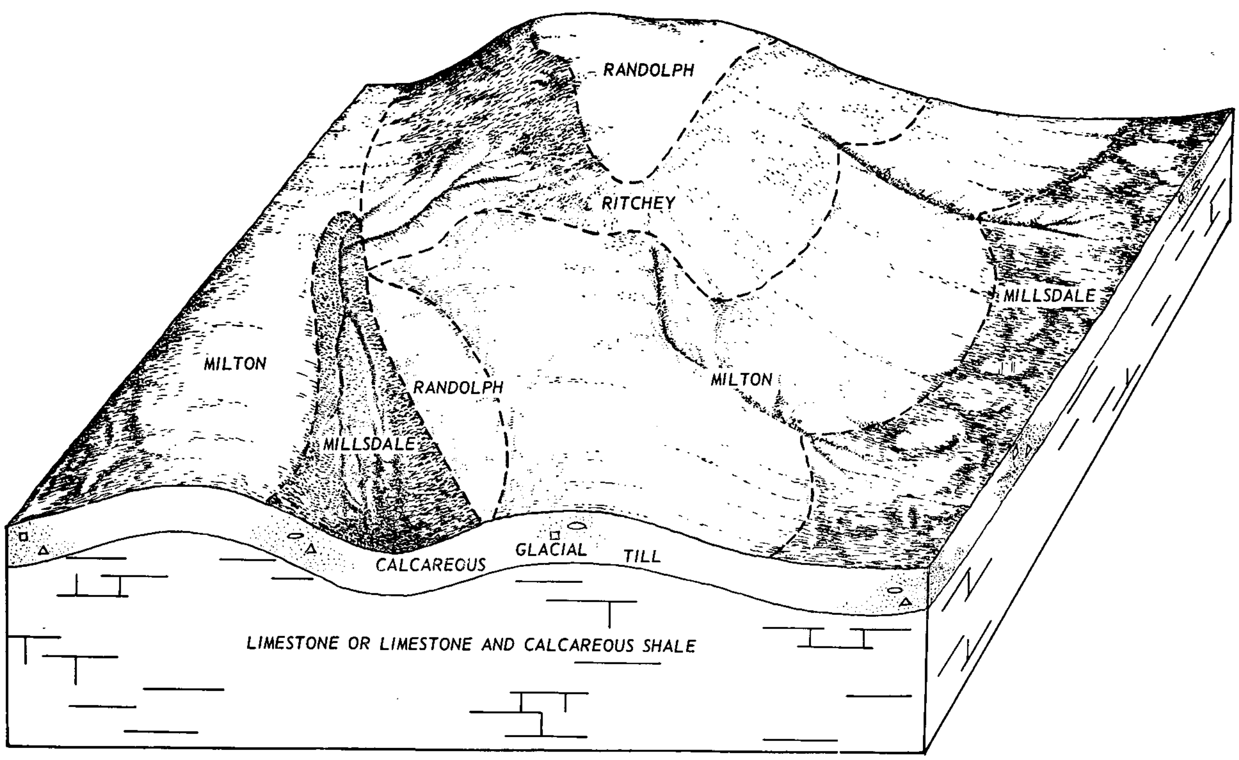

Figure 8. Typical pattern of soils and underlying material in association 6.

This association occurs in small, scattered areas throughout the county. It consists of bedrock-controlled hills that rise above the till plain and of the walls of stream-cut valleys.

This association occupies about 5 percent of the county. About 55 percent of this is Milton soils, 15 percent is Ritchey soils, and 10 percent is Millsdale soils. The remaining 20 percent is other

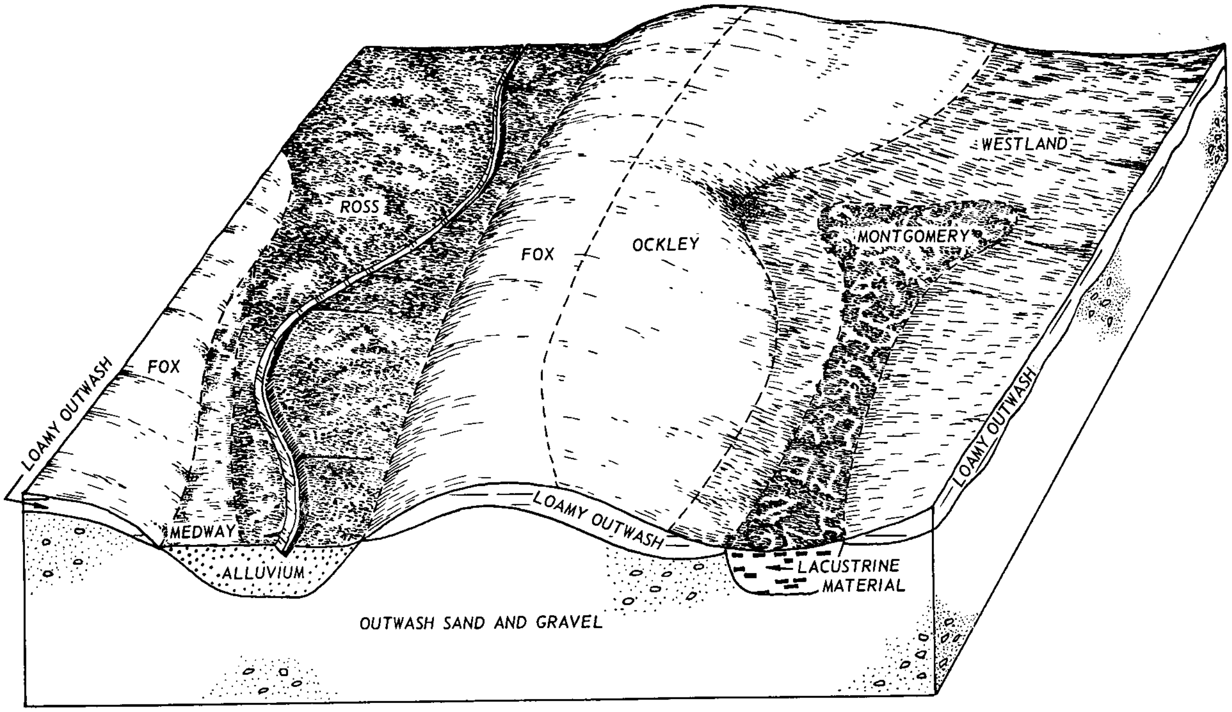

Figure 9. Typical pattern of soil and underlying material in associations 7, 8, and 9.

soils.

The Milton soils are moderately deep, well drained, and nearly level to moderately steep. Limestone bedrock occurs at a depth of 20 to 40 inches. The Ritchey soils are shallow, well drained, and nearly level to very steep. Limestone bedrock occurs within a depth of 20 inches. Millsdale soils are dark colored, very poorly drained, and nearly level to gently sloping. Limestone bedrock occurs at a depth of 20 to 40 inches.

The remainder of the association is made up of the well drained, sloping to very steep Fairmount soils; the somewhat poorly drained, nearly level Randolph soils; the dark-colored, well drained, gently sloping Plattville soils; and other less extensive soils.

Surface runoff and erosion are the major concerns in management if the Milton and Ritchey soils are farmed. Seasonal wetness is the dominant limitation of the very poorly drained Millsdale soils.

Limestone quarries are in this association. In the Milton, Ritchey, and Millsdale soils, limestone near the surface limits farm and nonfarm uses.

7. Fox-Ockley association

Very deep, nearly level to moderately steep, well drained soils that have a moderately fine textured subsoil; formed in *loess and loamy outwash underlain* by *calcareous* sand *and gravel*

This association occupies the nearly level to moderately steep terraces along the major streams and their larger tributaries.

This association occupies about 9 percent of the county. About 75 percent of this is Fox soils, 10 percent is Ockley and Wea soils, and the remaining 15 percent is other soils.

The Fox soils are well drained and moderately deep to calcareous sand and gravel. They are nearly level to moderately steep. Ockley soils are deep to sand and gravel. They are well drained soils that are nearly level and gently sloping.

The Wea soils are similar to the Ockley soils but are darker colored. Occupying small areas in the association are the Warsaw, Tippecanoe, Thackery, Westland, Rodman, and Lorenzo soils. Some of these soils are shallow to sand and gravel, and some are less well drained than the Fox and Ockley soils.

The Fox and Ockley soils are well suited to most farm crops. They are, however, susceptible to erosion where they are sloping or moderately steep. Other than slope, they have few limitations for many nonfarm uses. The small areas of Westland soils are very poorly drained and have a seasonal high water table.

This association is a prime source of sand and gravel for construction. Practically all of the soils are underlain by thick deposits of sand and gravel.

8. Westland-Montgomery association

Very deep, nearly level to depressional, very poorly drained soils that have a dominantly moderately fine textured and fine *textured subsoil; formed* in *loamy outwash and clayey lacustrine material*

This association occupies the level and depressional areas of undulating terraces.

This association makes up less than 1 percent of the county. About 50 percent of this is Westland soils, 40 percent is Montgomery soils, and the remaining 10 percent is other soils.

The Westland soils are very deep and very poorly drained. They have a dark-colored surface layer and are underlain by calcareous sand and gravel. The Montgomery soils are very deep and very poorly drained. They have a dark-colored surface layer and a clayey subsoil that is underlain by clayey sediments of old lake bottoms.

Among the other soils in this association are Carlisle muck and the very poorly drained Sloan soils.

The major soils in this association are seasonally wet. Farming is delayed in spring unless the soils are artificially drained. The seasonally high water table is a limitation for many uses other than farming.

9. Ross-Medway association

Very deep, nearly level, well drained and moderately well drained soils that have a dominantly moderately coarse textured and medium textured subsoil or underlying material; formed in loamy alluvium

This association occupies the nearly level flood plains along most of the streams in the county.

This association makes up 8 percent of the county. About 60 percent of this is Ross soils, 15 percent is Medway soils, and the remaining 25 percent is other soils.

Ross and Medway soils are very deep, loamy, and dark colored.

Among the other soils in this association are the well drained Landes and Lanier soils that are moderately deep or shallow over gravel, the somewhat poorly drained Shoals soils, and the very poorly drained Sloan soils.

These soils are subject to periodic stream overflow. Most flooding occurs in winter and early in spring and normally does not interfere with summer crops. Flooding, however, is a serious limitation for most nonfarm uses of these soils.

Detailed Soil Map Units

The map units delineated on the detailed soil maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

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

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

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

The detailed map unit descriptions list management statements for most major uses of the soils: cropland, pasture, woodland, building sites, septic tank absorption fields, and local roads and streets. The management statements listed for a particular map unit address the most limiting features of that soil for a certain use. Some management statements suggest specific measures that may help alleviate the effects of these limiting soil features. The mention of such management measures is not a recommendation, especially where current laws or programs may prohibit an activity, such as installation of drainage. Even the best management practices cannot overcome some limitations of the soil.

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, *Miamian silt loam, 0 to 2 percent slopes* is a phase of the Miamian series.

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

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. *Crosby–Celina silt loams, 2 to 6 percent slopes* is an example.

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

Table 4 (p. 231) 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.

Ag—Algiers silt loam

Setting

Landform: Alluvial fans and flood plains
Size of areas: 2 to 100 acres

Map Unit Composition

Algiers and similar components: 90 percent

Contrasting Components

Sloan soils: 5 percent
Westland soils: 5 percent

Map Unit Interpretive Groups

Land capability classification: 2w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

ALGIERS
Available water capacity: About 10.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 24 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.0 to 1.5 feet
Water table kind: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: Occasional
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Loamy alluvium
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Small grain crops may be damaged by flooding in winter and spring.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Soil wetness may limit the use of this soil by log trucks.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and

damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. This soil is generally unsuited to homesites. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.

Septic Tank Absorption Fields

- This soil is generally unsuited to septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.
- Because of the seasonal high water table, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

ALGIERS
Pasture and hayland suitability group: C-3
Hydric soil: No

Bo—Borrow pits

Setting
Size of areas: 2 to 150 acres

Map Unit Composition
Borrow pits and similar components: 100 percent

Land capability classification: None assigned

Use and Management Considerations
Onsite investigation is needed to determine the suitability for specific uses.

Component Interpretive Groups

BORROW PITS
Hydric soil: Unranked

Bp—Brookston silt loam

Setting
Landform: Flats and depressions on ground moraines
Size of areas: 2 to 300 acres

Map Unit Composition
Brookston and similar components: 93 percent

Similar components
Brookston overwash

Contrasting Components
Crosby soils: 5 percent
Dark surface, somewhat poorly drained soil: 2 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

BROOKSTON
Available water capacity: About 9.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 20 to 24 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: At or near the surface
Water table kind: Apparent
Ponding: Long
Depth of ponding: 0.0 to 0.5 feet

Figure 10. Brookston and Crosby soils are suitable for sludge application from municipal wastewater treatment plants.

Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 5.0 percent
Parent material: Loamy till
Permeability: Moderate; moderately slow in the underlying till
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

BROOKSTON
Pasture and hayland suitability group: C-1
Hydric soil: Yes

Br—Brookston silt loam, overwash

Setting

Landform: Flats and depressions on ground moraines
Size of areas: 2 to 150 acres

Map Unit Composition

Brookston and similar components: 100 percent

Map Unit Interpretive Groups

Land capability classification: 2w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

BROOKSTON
Available water capacity: About 10.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 20 to 24 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 72 inches
Depth to the top of the seasonal high water table: At or near the surface
Water table kind: Apparent
Ponding: Long
Depth of ponding: 0.0 to 0.5 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 5.0 percent
Parent material: Loamy till
Permeability: Moderate; moderately slow in the underlying till
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.

- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

BROOKSTON
Pasture and hayland suitability group: C-1
Hydric soil: Yes

Bs—Brookston silty clay loam

Setting
Landform: Flats and depressions on ground moraines
Size of areas: 2 to over 8,000 acres

Map Unit Composition
Brookston and similar components: 93 percent

Similar components
Brookston overwash

Contrasting Components
Crosby soils: 7 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

BROOKSTON
Available water capacity: About 9.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 27 to 35 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: At or near the surface
Water table kind: Apparent

Ponding: Long
Depth of ponding: 0.0 to 0.5 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 5.0 percent
Parent material: Loamy till
Permeability: Moderate; moderately slow in the underlying till
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

BROOKSTON
Pasture and hayland suitability group: C-1
Hydric soil: Yes

Bu—Brookston-Urban land complex

Setting
Landform: Flats and depressions on ground moraines
Size of areas: 2 to 350 acres

Map Unit Composition
Brookston and similar components: 45 percent
Urban land and similar components: 40 percent

Contrasting Components
Crosby soils: 10 percent
Fincastle soils: 5 percent

Map Unit Interpretive Groups
Prime farmland: Not prime farmland

Soil Properties and Qualities

BROOKSTON
Available water capacity: About 9.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 27 to 35 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: At or near the surface
Water table kind: Apparent
Ponding: Long
Depth of ponding: 0.0 to 0.5 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 5.0 percent
Parent material: Loamy till
Permeability: Moderate; moderately slow in the underlying till
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Building Sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

BROOKSTON
Hydric soil: Yes

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Hydric soil: Unranked

Ca—Carlisle muck

Setting
Landform: Potholes on lakebeds (relict)
Size of areas: 3 to 40 acres

Map Unit Composition
Carlisle and similar components: 95 percent

Similar components
Muck less than 50 inches thick

Contrasting Components
Mineral overwash soil: 5 percent

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Not prime farmland

Soil Properties and Qualities

CARLISLE
Available water capacity: About 13.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 150 to 230 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 90 inches
Depth to the top of the seasonal high water table: At or near the surface
Water table kind: Apparent
Ponding: Very long
Depth of ponding: 0.0 to 0.5 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 70.0 to 99.0 percent
Parent material: Organic material
Permeability: Moderately rapid in the muck; slow in the underlying clay
Potential frost action: High
Shrink-swell potential: High
Surface layer texture: Muck
Potential for surface runoff: Very low
Wind erosion hazard: Severe

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- A combination of surface and subsurface drainage helps to remove excess water.
- Subsidence or shrinkage of the muck causes displacement of subsurface drains.
- Control of the water table helps reduce subsidence, prevent burning, and reduce the hazard of wind erosion.
- The soil may be deficient in micronutrients because of the high content of organic matter.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- When drained, the organic layers in this soil subside. Subsidence leads to differential rates of settlement which may cause foundations to break. Because of the high potential for subsidence, this soil is generally unsuited to building site development.
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Subsidence of the organic material reduces the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and

streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

CARLISLE
Pasture and hayland suitability group: D-1
Hydric soil: Yes

CeA—Celina silt loam, 0 to 2 percent slopes

Setting
Landform: Moraines
Size of areas: 2 to over 1,000 acres

Map Unit Composition
Celina and similar components: 90 percent

Contrasting Components
Brookston soils: 5 percent
Crosby soils: 5 percent

Map Unit Interpretive Groups

Land capability classification: 1
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

CELINA
Available water capacity: About 7.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 9 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper

treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

CELINA
Pasture and hayland suitability group: A-6
Hydric soil: No

CeB—Celina silt loam, 2 to 6 percent slopes

Setting
Landform: Ridges on moraines
Size of areas: 2 to 250 acres

Map Unit Composition
Celina and similar components: 95 percent

Similar components
Miamian

Contrasting Components
Brookston soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

CELINA
Available water capacity: About 7.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 9 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the

soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

CELINA
Pasture and hayland suitability group: A-6
Hydric soil: No

CeB2—Celina silt loam, 2 to 6 percent slopes, moderately eroded

Setting
Landform: Moraines
Size of areas: 2 to 40 acres

Map Unit Composition
Celina and similar components: 95 percent

Similar components
Slightly eroded areas
Miamian

Contrasting Components
Brookston soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

CELINA
Available water capacity: About 7.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 9 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.

- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

CELINA
Pasture and hayland suitability group: A-6
Hydric soil: No

ClB—Celina bouldery silt loam, 2 to 6 percent slopes

Setting
Landform: Ridges on moraines
Size of areas: 2 to 20 acres

Map Unit Composition
Celina and similar components: 96 percent

Similar components
Miamian
Eroded areas

Contrasting Components
Brookston: 4 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

CELINA
Available water capacity: About 7.9 inches to a depth of 60 inches

Cation-exchange capacity of the surface layer: 9 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Large stones restrict the use of most farm machinery.

Pastureland

- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.
- Large stones on the surface may restrict the operation of some farm machinery during pasture renovation.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- Rock fragments obstruct the use of mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and

streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

CELINA
Pasture and hayland suitability group: A-6
Hydric soil: No

CoA—Corwin silt loam, 0 to 2 percent slopes

Setting
Landform: Ground moraines
Size of areas: 2 to 40 acres

Map Unit Composition
Corwin and similar components: 95 percent

Similar components
Celina

Contrasting Components
Brookston: 5 percent

Map Unit Interpretive Groups
Land capability classification: 1
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

CORWIN
Available water capacity: About 8.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 24 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- This soil is well suited to pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Figure 11. This wetland was constructed in Millsdale silty clay loam.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Corwin
Pasture and hayland suitability group: A-1
Hydric soil: No

CoB—Corwin silt loam, 2 to 6 percent slopes

Setting
Landform: Ground moraines
Size of areas: 2 to 200 acres

Map Unit Composition
Corwin and similar components: 95 percent

Similar components
Slopes of 6 to 12 percent
Moderately deep somewhat poorly drained soils
Well drained soils

Contrasting Components
Brookston: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

CORWIN
Available water capacity: About 8.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 24 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Corwin
Pasture and hayland suitability group: A-1
Hydric soil: No

CsA—Crosby silt loam, 0 to 2 percent slopes

Setting
Landform: Knolls on ground moraines
Size of areas: 2 to 450 acres

Map Unit Composition
Crosby and similar components: 90 percent

Contrasting Components
Brookston: 4 percent
Celina soils: 4 percent
Bouldery areas: 2 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

CROSBY
Available water capacity: About 7.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.5 to 1.5 feet
Water table kind: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: High
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Severe shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures generally require special design and construction techniques or intensive maintenance.
- In some areas the dense nature of the subsurface layer increases the difficulty of

digging and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

CROSBY
Pasture and hayland suitability group: C-1
Hydric soil: No

CtB—Crosby-Celina silt loams, 2 to 6 percent slopes

Setting

Landform: Upland slopes on ground moraines
Broad interstream divides on ground moraines
Knolls on ground moraines
Size of areas: 2 to 75 acres

Map Unit Composition

Crosby and similar components: 55 percent
Celina and similar components: 35 percent

Contrasting Components

Brookston: 10 percent

Map Unit Interpretive Groups

Land capability classification: 2w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

CROSBY
Available water capacity: About 7.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.5 to 1.5 feet
Water table kind: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: High
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Severe shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures generally require special design and construction techniques or intensive maintenance.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

CROSBY
Pasture and hayland suitability group: C-1
Hydric soil: No

Soil Properties and Qualities

CELINA
Available water capacity: About 7.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 9 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.

- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

CELINA
Pasture and hayland suitability group: A-6
Hydric soil: No

Cu—Crosby-Urban land complex

Setting
Landform: Ground moraines
Size of areas: 2 to over 1,500 acres

Map Unit Composition
Crosby and similar components: 55 percent
Urban land and similar components: 35 percent

Similar Components
Fincastle

Contrasting Components
Brookston: 5 percent
Xenia soils: 5 percent

Map Unit Interpretive Groups
Prime farmland: Not prime farmland

Soil Properties and Qualities

CROSBY
Available water capacity: About 7.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.5 to 1.5 feet
Water table kind: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: High
Surface layer texture: Silt loam
Potential for surface runoff: Medium

Wind erosion hazard: Slight

Use and Management Considerations

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Severe shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures generally require special design and construction techniques or intensive maintenance.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

CROSBY
Hydric soil: No

Use and Management Considerations
Onsite investigation is needed to determine the suitability for specific uses.

Component Interpretive Groups

Urban land
Hydric soil: Unranked

DaB—Dana silt loam, 2 to 6 percent slopes

Setting
Landform: Hillslopes on ground moraines
Size of areas: 2 to 65 acres

Map Unit Composition
Dana and similar components: 95 percent

Similar Components
Better drained soils
Nearly level soils

Contrasting Components
Brookston: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

DANA
Available water capacity: About 10.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 25 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 5.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.

Pastureland

- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

DANA
Pasture and hayland suitability group: A-6
Hydric soil: No

FaE2—Fairmount silty clay loam, 12 to 25 percent slopes, moderately eroded

Setting
Landform: Narrow ridges and hillsides
Size of areas: 2 to 65 acres

Map Unit Composition
Fairmount and similar components: 100 percent

Similar Components
Slopes of 6 to 12 percent
Milton
Ritchey
Bedrock at 20 to 36 inches
Severely eroded areas

Map Unit Interpretive Groups
Land capability classification: 6e
Prime farmland: Not prime farmland

Soil Properties and Qualities

FAIRMOUNT
Available water capacity: About 2.7 inches to a depth of 16 inches

Cation-exchange capacity of the surface layer: 13 to 30 meq per 100 grams
Depth class: Shallow
Depth to root restrictive feature: Bedrock (lithic): 12 to 20 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Residuum weathered from limestone and shale
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- Because of the content of clay, this soil becomes sticky when wet. The stickiness increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- Rock fragments obstruct the use of mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- Burning may destroy organic matter.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of the limited depth to hard bedrock, excavation is difficult.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

FAIRMOUNT
Pasture and hayland suitability group: E-1
Hydric soil: No

FaF2—Fairmount silty clay loam, 25 to 50 percent slopes, moderately eroded

Setting
Landform: Hillsides
Size of areas: 3 to 100 acres

Map Unit Composition
Fairmount and similar components: 100 percent

Similar Components
Ritchey
Slightly eroded areas; 10-15 percent
Flagstones on surface

Map Unit Interpretive Groups
Land capability classification: 6e
Prime farmland: Not prime farmland

Soil Properties and Qualities

FAIRMOUNT
Available water capacity: About 2.5 inches to a depth of 15 inches
Cation-exchange capacity of the surface layer: 13 to 30 meq per 100 grams
Depth class: Shallow
Depth to root restrictive feature: Bedrock (lithic): 12 to 20 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Residuum weathered from limestone and shale
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- This soil is generally not recommended for pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of the content of clay, this soil becomes sticky when wet. The stickiness increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- Because of the slope, use of equipment to prepare this site for planting and seeding is not practical.
- Because of the slope, the use of mechanical planting equipment is not practical.
- Rock fragments obstruct the use of mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- Burning may destroy organic matter.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of the limited depth to hard bedrock, excavation is difficult.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

FAIRMOUNT
Pasture and hayland suitability group: E-2
Hydric soil: No

FcA—Fincastle silt loam, 0 to 4 percent slopes

Setting
Landform: Large, flat ridges on ground moraines
Size of areas: 2 to 150 acres

Map Unit Composition
Fincastle and similar components: 92 percent

Similar Components
Crosby
Darker colored surface layer

Contrasting Components
Brookston: 4 percent
Ragsdale soils: 4 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

FINCASTLE
Available water capacity: About 8.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.5 to 1.5 feet
Water table kind: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.

- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

FINCASTLE
Pasture and hayland suitability group: C-1
Hydric soil: No

FkA—Fox sandy loam, 0 to 2 percent slopes

Setting
Landform: Terraces
Size of areas: 3 to 300 acres

Map Unit Composition
Fox and similar components: 100 percent

Map Unit Interpretive Groups
Land capability classification: 2s
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

FOX
Available water capacity: About 4.9 inches to a depth of 29 inches
Cation-exchange capacity of the surface layer: 3 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 42 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the subsoil; rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Sandy loam
Potential for surface runoff: Low
Wind erosion hazard: Moderate

Figure 12. Groundwater yields from sand and gravel deposits underlying Fox-Ockley soils are significant. The City of Dayton and other cities in the county rely on ground water for private and commercial uses.

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.

Pastureland

- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

- The restricted permeability in the subsoil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability in the substratum limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

FOX
Pasture and hayland suitability group: B-1
Hydric soil: No

FkB—Fox sandy loam, 2 to 6 percent slopes

Setting
Landform: Terraces
Size of areas: 2 to 55 acres

Map Unit Composition
Fox and similar components: 100 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

FOX
Available water capacity: About 4.9 inches to a depth of 29 inches
Cation-exchange capacity of the surface layer: 3 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 42 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the subsoil; rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Sandy loam
Potential for surface runoff: Low
Wind erosion hazard: Moderate

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

- The restricted permeability in the subsoil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability in the substratum limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

FOX
Pasture and hayland suitability group: B-1
Hydric soil: No

FlA—Fox loam, 0 to 2 percent slopes

Setting
Landform: Terraces
Size of areas: 2 to 150 acres

Map Unit Composition
Fox and similar components: 100 percent

Similar Components
Gravelly areas
Loam till at 5 to 6 feet

Map Unit Interpretive Groups
Land capability classification: 2s
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

FOX
Available water capacity: About 4.9 inches to a depth of 29 inches
Cation-exchange capacity of the surface layer: 4 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 42 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the subsoil; rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.

Pastureland

- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

- The restricted permeability in the subsoil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability in the substratum limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

FOX
Pasture and hayland suitability group: B-1
Hydric soil: No

FlB—Fox loam, 2 to 6 percent slopes

Setting
Landform: along major streams on ridges on terraces
broad, gently rolling ridges on terraces
Size of areas: 2 to 40 acres

Map Unit Composition
Fox and similar components: 100 percent

Similar components
Gravelly areas
Moderately eroded reddish soil

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

FOX
Available water capacity: About 4.9 inches to a depth of 29 inches
Cation-exchange capacity of the surface layer: 4 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 42 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the subsoil; rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.

- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

- The restricted permeability in the subsoil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability in the substratum limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

FOX
Pasture and hayland suitability group: B-1
Hydric soil: No

FlC2—Fox loam, 6 to 12 percent slopes, moderately eroded

Setting
Landform: Terraces
Size of areas: 2 to 15 acres

Map Unit Composition
Fox and similar components: 100 percent

Similar Components
Gravelly surface layer
Sandy loam surface layer

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Not prime farmland

Soil Properties and Qualities

FOX
Available water capacity: About 3.6 inches to a depth of 29 inches
Cation-exchange capacity of the surface layer: 4 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 42 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the subsoil; rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.

- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

FOX
Pasture and hayland suitability group: B-1
Hydric soil: No

FmA—Fox silt loam, 0 to 2 percent slopes

Setting
Landform: Terraces
Size of areas: 2 to 250 acres

Map Unit Composition
Fox and similar components: 100 percent

Similar Components
Darker colored surface layer
Lorenzo
Ockley
Loam till at 5 to 6 feet

Map Unit Interpretive Groups
Land capability classification: 2s
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

FOX
Available water capacity: About 4.9 inches to a depth of 29 inches
Cation-exchange capacity of the surface layer: 4 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 42 inches

Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the subsoil; rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

- The restricted permeability in the subsoil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability in the substratum limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

FOX
Pasture and hayland suitability group: B-1
Hydric soil: No

FmB—Fox silt loam, 2 to 6 percent slopes

Setting
Landform: Terraces
Size of areas: 2 to 150 acres

Map Unit Composition
Fox and similar components: 100 percent

Similar Components
Lorenzo
Thicker soils
Moderately eroded soils that are droughtier and redder

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

FOX
Available water capacity: About 4.9 inches to a depth of 29 inches
Cation-exchange capacity of the surface layer: 4 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 42 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the subsoil; rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

- The restricted permeability in the subsoil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability in the substratum limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

FOX
Pasture and hayland suitability group: B-1
Hydric soil: No

FmC2—Fox silt loam, 6 to 12 percent slopes, moderately eroded

Setting
Landform: broad, rolling terraces and hills
Size of areas: 2 to 100 acres

Map Unit Composition
Fox and similar components: 100 percent

Similar Components
Lorenzo

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Not prime farmland

Soil Properties and Qualities

FOX
Available water capacity: About 3.6 inches to a depth of 29 inches
Cation-exchange capacity of the surface layer: 4 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 42 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the subsoil; rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

- The slope may restrict the use of some mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

FOX
Pasture and hayland suitability group: B-1
Hydric soil: No

FmD2—Fox silt loam, 12 to 18 percent slopes, moderately eroded

Setting
Landform: outer edge of broad, rolling hills and terraces
Size of areas: 2 to 100 acres

Map Unit Composition
Fox and similar components: 95 percent

Similar Components
Loam surface layer

Contrasting Components
Severely eroded areas: 3 percent
Gravelly surface layer: 2 percent

Map Unit Interpretive Groups
Land capability classification: 4e
Prime farmland: Not prime farmland

Soil Properties and Qualities

FOX
Available water capacity: About 3.6 inches to a depth of 29 inches
Cation-exchange capacity of the surface layer: 4 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 42 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the subsoil; rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Sandy layers in this soil increase the maintenance of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.
- Burning may destroy organic matter.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

FOX
Pasture and hayland suitability group: B-1
Hydric soil: No

FsC3—Fox soils, 6 to 12 percent slopes, severely eroded

Setting
Landform: short, steep slopes on hills and terraces
Size of areas: 2 to 20 acres

Map Unit Composition
Fox and similar components: 95 percent

Similar Components
Loam surface layer
Silt loam surface layer

Contrasting Components
Gravelly loam surface layer: 5 percent

Map Unit Interpretive Groups
Land capability classification: 4e
Prime farmland: Not prime farmland

Soil Properties and Qualities

FOX
Available water capacity: About 3.0 inches to a depth of 18 inches
Cation-exchange capacity of the surface layer: 5 to 30 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 18 to 42 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None

Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the subsoil; rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Clay loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

FOX
Pasture and hayland suitability group: B-1
Hydric soil: No

FuB—Fox-Urban land complex, gently sloping

Setting
Landform: Terraces
Size of areas: 5 to over 1,000 acres

Map Unit Composition
Fox and similar components: 50 percent
Urban land and similar components: 50 percent

Similar Components
Thackery
Warsaw
Wea
Ockley

Map Unit Interpretive Groups
Prime farmland: Not prime farmland

Soil Properties and Qualities

FOX
Available water capacity: About 4.9 inches to a depth of 29 inches
Cation-exchange capacity of the surface layer: 4 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 42 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the subsoil; rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

- The restricted permeability in the subsoil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability in the substratum limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

FOX
Hydric soil: No

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Hydric soil: Unranked

FuC—Fox-Urban land complex, rolling

Setting
Landform: Terraces
Size of areas: 2 to 300 acres

Map Unit Composition
Urban land and similar components: 60 percent
Fox and similar components: 40 percent

Similar components
Ockley

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Hydric soil: Unranked

Soil Properties and Qualities

FOX
Available water capacity: About 3.6 inches to a depth of 29 inches
Cation-exchange capacity of the surface layer: 4 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 42 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the subsoil; rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

FOX
Hydric soil: No

FuF—Fox-Urban land complex, steep

Setting
Landform: Kame terraces
Size of areas: 2 to 25 acres

Map Unit Composition
Urban land and similar components: 60 percent
Fox and similar components: 40 percent

Similar Components
Ockley
Rodman

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Hydric soil: Unranked

Soil Properties and Qualities

FOX
Available water capacity: About 3.0 inches to a depth of 18 inches
Cation-exchange capacity of the surface layer: 4 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 18 to 42 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet

Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the subsoil; rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff:
Wind erosion hazard: Slight

Use and Management Considerations

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

FOX
Hydric soil: No

Gp—Gravel pits

Setting
Size of areas: 2 to 300 acres

Map Unit Composition
Gravel pits and similar components: 100 percent

Land capability classification: None assigned

Use and Management Considerations

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

Component Interpretive Groups

GRAVEL PITS
Hydric soil: Unranked

HeE2—Hennepin and Miamian silt loams, 18 to 25 percent slopes, moderately eroded

Setting
Landform: Banks of drainageways and valley sides
Size of areas: 2 to 150 acres

Map Unit Composition
Hennepin and similar components: 60 percent
Miamian and similar components: 40 percent

Similar Components
Soils shallow to limestone
Soils shallow to sand and gravel
Kendallville

Map Unit Interpretive Groups
Land capability classification: 6e
Prime farmland: Not prime farmland

Soil Properties and Qualities

HENNEPIN
Available water capacity: About 5.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 14 to 22 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: Loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Silt loam

Potential for surface runoff: Very high
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- The slope may restrict the use of some mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.
- Burning may destroy organic matter.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

HENNEPIN
Pasture and hayland suitability group: B-1
Hydric soil: No

Soil Properties and Qualities

MIAMIAN
Available water capacity: About 6.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

MIAMIAN
Pasture and hayland suitability group: A-2
Hydric soil: No

HeF2—Hennepin and Miamian silt loams, 25 to 50 percent slopes, moderately eroded

Setting
Landform: banks of drainageways and valley sides
Size of areas: 2 to 400 acres

Map Unit Composition
Hennepin and similar components: 60 percent
Miamian and similar components: 38 percent

Similar Components
Soils shallow to limestone
Soils shallow to sand and gravel

Contrasting Components
Escarpments: 2 percent

Map Unit Interpretive Groups
Land capability classification: 7e
Prime farmland: Not prime farmland

Soil Properties and Qualities

HENNEPIN
Available water capacity: About 5.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 14 to 22 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: Loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Silt loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- This soil is generally not recommended for pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- Because of the slope, use of equipment to prepare this site for planting and seeding is not practical.
- Because of the slope, the use of mechanical planting equipment is not practical.
- Burning may destroy organic matter.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

HENNEPIN
Pasture and hayland suitability group: B-2
Hydric soil: No

Soil Properties and Qualities

MIAMIAN
Available water capacity: About 7.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent

Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- This soil is generally not recommended for pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- Because of the slope, use of equipment to prepare this site for planting and seeding is not practical.
- Because of the slope, the use of mechanical planting equipment is not practical.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

MIAMIAN
Pasture and hayland suitability group: A-3
Hydric soil: No

HmF3—Hennepin and Miamian soils, 18 to 50 percent slopes, severely eroded

Setting
Landform: banks of drainageways and valley sides
Size of areas: 2 to 50 acres

Map Unit Composition
Hennepin and similar components: 60 percent
Miamian and similar components: 40 percent

Similar Components
Soils shallow to limestone
Soils shallow to sand and gravel
Clay loam surface layer

Map Unit Interpretive Groups
Land capability classification: 7e
Prime farmland: Not prime farmland

Soil Properties and Qualities

HENNEPIN
Available water capacity: About 5.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 11 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.0 to 0.5 percent
Parent material: Loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- The slope may restrict the use of some farm equipment.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- Because of the slope, the use of mechanical planting equipment is not practical.
- The slope restricts the use of equipment for preparing this site for planting and seeding.
- Burning may destroy organic matter.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

HENNEPIN
Pasture and hayland suitability group: B-2
Hydric soil: No

Soil Properties and Qualities

MIAMIAN
Available water capacity: About 6.2 inches to a depth of 60 inches

Cation-exchange capacity of the surface layer: 17 to 28 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Clay loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- The slope may restrict the use of some farm equipment.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- Because of the slope, the use of mechanical planting equipment is not practical.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

MIAMIAN
Pasture and hayland suitability group: A-3
Hydric soil: No

KeA—Kendallville silt loam, 0 to 2 percent slopes

Setting
Landform: Terraces
Size of areas: 2 to 50 acres

Map Unit Composition

Kendallville and similar components: 100 percent

Similar Components
Fox
Miamian

Map Unit Interpretive Groups
Land capability classification: 1

Prime farmland: All areas are prime farmland

Soil Properties and Qualities

KENDALLVILLE
Available water capacity: About 8.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 8 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over loamy till
Permeability: Moderate in the subsoil; moderately slow in the underlying till
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- This soil is well suited to pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

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

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

KENDALLVILLE
Pasture and hayland suitability group: A-1
Hydric soil: No

KeB—Kendallville silt loam, 2 to 6 percent slopes

Setting
Landform: Moraines
Size of areas: 2 to 40 acres

Map Unit Composition
Kendallville and similar components: 100 percent

Similar Components
Miamian

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

KENDALLVILLE
Available water capacity: About 8.1 inches to a depth of 60 inches

Cation-exchange capacity of the surface layer: 8 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over loamy till
Permeability: Moderate in the subsoil; moderately slow in the underlying till
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

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

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

KENDALLVILLE
Pasture and hayland suitability group: A-1
Hydric soil: No

KeC2—Kendallville silt loam, 6 to 12 percent slopes, moderately eroded

Setting
Landform: Upland slopes
Size of areas: 2 to 30 acres

Map Unit Composition
Kendallville and similar components: 98 percent

Similar Components
Miamian

Contrasting Components
Severely eroded areas: 2 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Not prime farmland

Soil Properties and Qualities

KENDALLVILLE
Available water capacity: About 7.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 4 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over loamy till
Permeability: Moderate in the subsoil; moderately slow in the underlying till
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines and seepage of poorly treated effluent is a concern.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

KENDALLVILLE
Pasture and hayland suitability group: A-1
Hydric soil: No

Ld—Landes sandy loam

Setting
Landform: Flood plains
Size of areas: 2 to 150 acres

Map Unit Composition
Landes and similar components: 95 percent

Similar Components
Ross
Sandier surface layer

Contrasting Components
Gravelly surface layer: 3 percent
Sloan soils: 2 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

LANDES
Available water capacity: About 4.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 5 to 16 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: Occasional
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: Sandy alluvium over sandy and gravelly alluvium
Permeability: Rapid
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Sandy loam
Potential for surface runoff: Negligible
Wind erosion hazard: Moderate

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Small grain crops may be damaged by flooding in winter and spring.

Pastureland

- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Flooding restricts the safe use of roads by log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. This soil is generally unsuited to homesites. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.

Septic Tank Absorption Fields

- This soil is generally unsuited to septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems.

Rapidly moving floodwaters may damage some components of septic systems.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

LANDES
Pasture and hayland suitability group: B-3
Hydric soil: No

Lg—Lanier sandy loam

Setting
Landform: Flood plains
Size of areas: 2 to 60 acres

Map Unit Composition
Lanier and similar components: 95 percent

Contrasting Components
Ross: 3 percent
Sloan soils: 2 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

LANIER
Available water capacity: About 2.2 inches to a depth of 20 inches
Cation-exchange capacity of the surface layer: 4 to 17 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 16 to 24 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: Occasional
Organic matter content in the surface layer: 1.0 to 4.0 percent
Parent material: Loamy alluvium over sandy and gravelly alluvium
Permeability: Rapid
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Sandy loam
Potential for surface runoff: Negligible
Wind erosion hazard: Moderate

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Small grain crops may be damaged by flooding in winter and spring.

Pastureland

- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Flooding restricts the safe use of roads by log trucks.

Building Sites

- Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. This soil is generally unsuited to homesites. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.

Septic Tank Absorption Fields

- This soil is generally unsuited to septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

LANIER
Pasture and hayland suitability group: B-3
Hydric soil: No

LsB—Lewisburg silt loam, 2 to 6 percent slopes

Setting
Landform: Low, undulating ridges on ground moraines
Size of areas: 2 to 55 acres

Map Unit Composition
Lewisburg and similar components: 95 percent

Similar Components
Eroded areas

Contrasting Components
Brookston: 3 percent
Pyrmont soils: 2 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

LEWISBURG
Available water capacity: About 6.0 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 8 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Component Interpretive Groups

LEWISBURG
Pasture and hayland suitability group: A-1
Hydric soil: No

LxC2—Lorenzo-Rodman complex, 4 to 12 percent slopes, moderately eroded

Setting
Landform: Stream terraces
Size of areas: 2 to 20 acres

Map Unit Composition
Lorenzo and similar components: 55 percent
Rodman and similar components: 45 percent

Similar Components
Deeper, lighter colored soils

Map Unit Interpretive Groups
Land capability classification: 4e
Prime farmland: Not prime farmland

Soil Properties and Qualities

LORENZO
Available water capacity: About 2.4 inches to a depth of 15 inches
Cation-exchange capacity of the surface layer: 11 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 10 to 24 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderately rapid
Potential frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

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

Component Interpretive Groups

LORENZO
Pasture and hayland suitability group: B-1
Hydric soil: No

Soil Properties and Qualities

RODMAN
Available water capacity: About 1.1 inches to a depth of 9 inches
Cation-exchange capacity of the surface layer: 5 to 16 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 8 to 12 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Excessively drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Rapid
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Loam
Potential for surface runoff: Very low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Maintaining or increasing the content of organic matter in the soil helps to prevent

crusting, improves tilth, and increases the rate of water infiltration.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Sandy layers in this soil increase the maintenance of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- Sandy layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The slope may restrict the use of some mechanical planting equipment.
- Rock fragments obstruct the use of mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

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

Component Interpretive Groups

RODMAN
Pasture and hayland suitability group: B-1
Hydric soil: No

LxD2—Lorenzo-Rodman complex, 12 to 18 percent slopes, moderately eroded

Setting
Landform: Terraces
Size of areas: 2 to 25 acres

Map Unit Composition
Lorenzo and similar components: 55 percent
Rodman and similar components: 45 percent

Similar Components
Deeper, lighter colored soils

Map Unit Interpretive Groups
Land capability classification: 6e
Prime farmland: Not prime farmland

Soil Properties and Qualities

LORENZO
Available water capacity: About 2.4 inches to a depth of 15 inches
Cation-exchange capacity of the surface layer: 11 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 10 to 24 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderately rapid
Potential frost action: Low

Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- Sandy layers in this soil increase the maintenance of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

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

Component Interpretive Groups

LORENZO
Pasture and hayland suitability group: B-1
Hydric soil: No

Soil Properties and Qualities

RODMAN
Available water capacity: About 1.2 inches to a depth of 10 inches
Cation-exchange capacity of the surface layer: 5 to 16 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 8 to 12 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet

Ponding: None
Drainage class: Excessively drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Rapid
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Loam
Potential for surface runoff: Very low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Sandy layers in this soil increase the maintenance of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- Sandy layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The slope may restrict the use of some mechanical planting equipment.
- Rock fragments obstruct the use of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.
- Burning may destroy organic matter.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

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

Component Interpretive Groups

RODMAN
Pasture and hayland suitability group: B-1
Hydric soil: No

Mb—Made land

Setting
Size of areas: 2 to 100 acres

Map Unit Composition
Made land and similar components: 100 percent
Land capability classification: None assigned

Use and Management Considerations

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

Component Interpretive Groups

MADE LAND
Hydric soil: Unranked

Md—Medway silt loam

Setting
Landform: Flood plains
Size of areas: 2 to 350 acres

Map Unit Composition
Medway and similar components: 98 percent

Similar Components
Loam surface layer
Gravelly substratum at a depth of as little as 30 inches
Sandy substratum at a depth of as little as 30 inches
Lighter colored surface layer

Contrasting Components
Sloan soils: 2 percent

Map Unit Interpretive Groups

Land capability classification: 2w
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

MEDWAY
Available water capacity: About 7.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 13 to 28 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: Occasional
Organic matter content in the surface layer: 3.0 to 6.0 percent
Parent material: Loamy alluvium over sandy and gravelly alluvium
Permeability: Moderate
Potential frost action: High
Shrink-swell potential: Low
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Small grain crops may be damaged by flooding in winter and spring.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.

- Flooding may result in damage to haul roads and increased maintenance costs.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. This soil is generally unsuited to homesites. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic Tank Absorption Fields

- This soil is generally unsuited to septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

MEDWAY
Pasture and hayland suitability group: A-5
Hydric soil: No

MIA—Miamian silt loam, 0 to 2 percent slopes

Setting
Landform: Moraines
Size of areas: 2 to over 1,000 acres

Map Unit Composition
Miamian and similar components: 98 percent

Similar Components
Celina

Contrasting Components
Brookston: 2 percent

Map Unit Interpretive Groups
Land capability classification: 1
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

MIAMIAN
Available water capacity: About 6.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- This soil is well suited to pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

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

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Component Interpretive Groups

MIAMIAN
Pasture and hayland suitability group: A-1
Hydric soil: No

MlB—Miamian silt loam, 2 to 6 percent slopes

Setting
Landform: low, undulating ridges on moraines
Size of areas: 2 to 600 acres

Map Unit Composition
Miamian and similar components: 97 percent

Similar Components
Celina
Milton

Contrasting Components
Brookston: 3 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

MIAMIAN
Available water capacity: About 6.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Negligible
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.

Figure 13. Miamian soils are generally suitable for animal waste storage ponds.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

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

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Component Interpretive Groups

MIAMIAN
Pasture and hayland suitability group: A-1
Hydric soil: No

MlB2—Miamian silt loam, 2 to 6 percent slopes, moderately eroded

Setting
Landform: Recessional moraines
Ground moraines
Size of areas: 2 to 250 acres

Map Unit Composition
Miamian and similar components: 94 percent

Similar Components
Milton

Contrasting Components
Brookston: 3 percent
Severely eroded areas: 3 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

MIAMIAN
Available water capacity: About 7.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

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

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Component Interpretive Groups

MIAMIAN
Pasture and hayland suitability group: A-1
Hydric soil: No

MlC2—Miamian silt loam, 6 to 12 percent slopes, moderately eroded

Setting
Landform: Drainageway on moraines
Size of areas: 2 to 150 acres

Map Unit Composition
Miamian and similar components: 93 percent

Similar Components
Slightly eroded areas

Contrasting Components
Brookston: 3 percent
Severely eroded areas: 3 percent
Bouldery areas: 1 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Not prime farmland

Soil Properties and Qualities

MIAMIAN
Available water capacity: About 7.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines and seepage of poorly treated effluent is a concern.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

MIAMIAN
Pasture and hayland suitability group: A-1
Hydric soil: No

MlD2—Miamian silt loam, 12 to 18 percent slopes, moderately eroded

Setting
Landform: Drainageways on moraines
Size of areas: 2 to 150 acres

Map Unit Composition
Miamian and similar components: 100 percent

Map Unit Interpretive Groups
Land capability classification: 4e
Prime farmland: Not prime farmland

Soil Properties and Qualities

MIAMIAN
Available water capacity: About 6.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.
- Burning may destroy organic matter.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

MIAMIAN
Pasture and hayland suitability group: A-1
Hydric soil: No

MmB—Miamian bouldery silt loam, 2 to 6 percent slopes

Setting
Landform: Moraines
Size of areas: 2 to 30 acres

Map Unit Composition
Miamian and similar components: 99 percent

Similar Components
Celina

Contrasting Components
Brookston: 1 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: Not prime farmland

Soil Properties and Qualities

MIAMIAN
Available water capacity: About 7.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Large stones restrict the use of most farm machinery.

Pastureland

- Erosion control is needed when pastures are renovated.
- Large stones on the surface may restrict the operation of some farm machinery during pasture renovation.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

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

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Component Interpretive Groups

MIAMIAN
Pasture and hayland suitability group: A-1
Hydric soil: No

MnB3—Miamian clay loam, 2 to 6 percent slopes, severely eroded

Setting
Landform: small knobs on moraines
Size of areas: 2 to 30 acres

Map Unit Composition
Miamian and similar components: 98 percent

Similar Components
Slopes slightly more than 6 percent

Contrasting Components
Brookston: 2 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Not prime farmland

Soil Properties and Qualities

MIAMIAN
Available water capacity: About 6.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 14 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.0 to 1.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Clay loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

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

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Component Interpretive Groups

MIAMIAN
Pasture and hayland suitability group: A-1
Hydric soil: No

MnC3—Miamian clay loam, 6 to 12 percent slopes, severely eroded

Setting
Landform: Drainageways on moraines
Size of areas: 2 to 65 acres

Map Unit Composition
Miamian and similar components: 93 percent

Contrasting Components
Calcareous till at the surface: 5 percent
Brookston: 2 percent

Map Unit Interpretive Groups
Land capability classification: 4e
Prime farmland: Not prime farmland

Soil Properties and Qualities

MIAMIAN
Available water capacity: About 6.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 14 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.0 to 1.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Clay loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines and seepage of poorly treated effluent is a concern.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

MIAMIAN
Pasture and hayland suitability group: A-1
Hydric soil: No

MnD3—Miamian clay loam, 12 to 18 percent slopes, severely eroded

Setting
Landform: Moraines
Size of areas: 2 to 100 acres

Map Unit Composition
Miamian and similar components: 95 percent

Contrasting Components
Gullied areas: 5 percent

Map Unit Interpretive Groups
Land capability classification: 6e
Prime farmland: Not prime farmland

Soil Properties and Qualities

MIAMIAN
Available water capacity: About 6.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 14 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.0 to 1.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Clay loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.
- Burning may destroy organic matter.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

MIAMIAN
Pasture and hayland suitability group: A-1
Hydric soil: No

MoB—Miamian-Urban land complex, undulating

Setting
Landform: Moraines
Size of areas: 2 to over 4,000 acres

Map Unit Composition
Miamian and similar components: 59 percent
Urban land and similar components: 40 percent

Similar Components
Celina
Crosby
Fincastle
Kendallville
Russell
Xenia

Contrasting Components
Brookston: 1 percent

Map Unit Interpretive Groups
Prime farmland: Not prime farmland

Soil Properties and Qualities

MIAMIAN
Available water capacity: About 7.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Building Sites

- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

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

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Component Interpretive Groups
Miamian
Hydric soil: No

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Hydric soil: Unranked

MoC—Miamian-Urban land complex, rolling

Setting
Landform: Moraines
Size of areas: 2 to 400 acres

Map Unit Composition

Miamian and similar components: 63 percent
Urban land and similar components: 35 percent

Similar Components
Kendallville
Russell

Contrasting Components
Brookston: 2 percent

Map Unit Interpretive Groups
Prime farmland: Not prime farmland

Soil Properties and Qualities

MIAMIAN
Available water capacity: About 7.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines and seepage of poorly treated effluent is a concern.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

Miamian
Hydric soil: No

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

Urban land
Hydric soil: Unranked

MoE—Miamian-Urban land complex, steep

Setting
Landform: Upland slopes
Size of areas: 2 to 300 acres

Map Unit Composition
Miamian and similar components: 60 percent
Urban land and similar components: 40 percent

Similar Components
Kendallville
Russell

Map Unit Interpretive Groups
Prime farmland: Not prime farmland

Soil Properties and Qualities

MIAMIAN
Available water capacity: About 7.0 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight

Use and Management Considerations

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

MIAMIAN
Hydric soil: No

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Hydric soil: Unranked

MrA—Millsdale silty clay loam, 0 to 3 percent slopes

Setting
Landform: Depressions
Size of areas: 2 to 55 acres

Map Unit Composition
Millsdale and similar components: 100 percent

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

MILLSDALE
Available water capacity: About 5.6 inches to a depth of 36 inches
Cation-exchange capacity of the surface layer: 20 to 36 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 40 inches
Depth to the top of the seasonal high water table: 0.0 to 0.5 feet
Water table kind: Apparent

Ponding: Long
Depth of ponding: 0.0 to 1.0 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 4.0 to 7.0 percent
Parent material: Till over limestone-shale
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: High
Surface layer texture: Silty clay loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock and a high clay content.
- Plants may suffer from moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.
- The depth to bedrock may restrict the gradient needed to provide adequate drainage from subsurface systems.

Pastureland

- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- The rooting depth of plants may be restricted by bedrock.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

MILLSDALE
Pasture and hayland suitability group: C-2
Hydric soil: Yes

MsA—Milton silt loam, 0 to 2 percent slopes

Setting
Landform: Hills
Size of areas: 2 to 150 acres

Map Unit Composition
Milton and similar components: 100 percent

Similar Components
Limestone and shale substratum
Miamian

Map Unit Interpretive Groups
Land capability classification: 2s
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

MILTON
Available water capacity: About 4.9 inches to a depth of 28 inches
Cation-exchange capacity of the surface layer: 10 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till over limestone
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: High
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock and a high clay content.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.

- Bedrock may interfere with the construction of haul roads and log landing sites.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

MILTON
Pasture and hayland suitability group: F-1
Hydric soil: No

MsB—Milton silt loam, 2 to 6 percent slopes

Setting
Landform: Crest of bedrock-controlled hills
Rim of valley
Size of areas: 2 to 100 acres

Map Unit Composition
Milton and similar components: 100 percent

Similar Components
Limestone and shale substratum
Miamian

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

MILTON
Available water capacity: About 4.9 inches to a depth of 28 inches
Cation-exchange capacity of the surface layer: 10 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till over limestone
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: High
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock and a high clay content.
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.

- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

MILTON
Pasture and hayland suitability group: F-1
Hydric soil: No

MsB2—Milton silt loam, 2 to 6 percent slopes, moderately eroded

Setting
Landform: Crest of bedrock-controlled hills
Rim of valleys
Size of areas: 2 to 200 acres

Map Unit Composition
Milton and similar components: 96 percent

Similar Components
Limestone deeper than 40 inches
Limestone and shale substratum

Contrasting Components
Severely eroded areas: 4 percent

Figure 14. Milton, Millsdale, and Randolph soils may support quarry operations like this one near Phillipsburg.

Map Unit Interpretive Groups

Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

MILTON
Available water capacity: About 4.5 inches to a depth of 25 inches
Cation-exchange capacity of the surface layer: 10 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till over limestone
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: High
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock and a high clay content.
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.

- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Milton
Pasture and hayland suitability group: F-1
Hydric soil: No

MsC2—Milton silt loam, 6 to 12 percent slopes, moderately eroded

Setting
Landform: Valley sides
Size of areas: 2 to 200 acres

Map Unit Composition
Milton and similar components: 100 percent

Similar Components
Ritchey

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Not prime farmland

Soil Properties and Qualities

MILTON
Available water capacity: About 4.4 inches to a depth of 25 inches
Cation-exchange capacity of the surface layer: 10 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 40 inches

Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till over limestone
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: High
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock and a high clay content.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

MILTON
Pasture and hayland suitability group: F-1
Hydric soil: No

MsD2—Milton silt loam, 12 to 18 percent slopes, moderately eroded

Setting
Landform: Valley sides
Size of areas: 2 to 30 acres

Map Unit Composition
Milton and similar components: 100 percent

Similar Components
Ritchey

Map Unit Interpretive Groups
Land capability classification: 4e
Prime farmland: Not prime farmland

Soil Properties and Qualities

MILTON
Available water capacity: About 4.3 inches to a depth of 24 inches
Cation-exchange capacity of the surface layer: 10 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till over limestone
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: High
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock and a high clay content.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.

- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

MILTON
Pasture and hayland suitability group: F-1
Hydric soil: No

MtD3—Milton silty clay loam, 6 to 18 percent slopes, severely eroded

Setting
Landform: Valley sides
Size of areas: 2 to 100 acres

Map Unit Composition
Milton and similar components: 95 percent

Contrasting Components
Bedrock at the surface: 5 percent

Map Unit Interpretive Groups
Land capability classification: 6e
Prime farmland: Not prime farmland

Soil Properties and Qualities

MILTON
Available water capacity: About 3.8 inches to a depth of 23 inches
Cation-exchange capacity of the surface layer: 16 to 24 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.0 to 1.0 percent
Parent material: Till over limestone
Permeability: Moderately slow

Potential frost action: Moderate
Shrink-swell potential: High
Surface layer texture: Silty clay loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock and a high clay content.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

MILTON
Pasture and hayland suitability group: F-1
Hydric soil: No

MuB—Milton-Urban land complex, undulating

Setting
Landform: Moraines
Size of areas: 2 to 450 acres

Map Unit Composition
Milton and similar components: 55 percent
Urban land and similar components: 40 percent

Similar Components
Ritchey

Contrasting Components
Randolph soils: 5 percent

Map Unit Interpretive Groups
Prime farmland: Not prime farmland

Soil Properties and Qualities

MILTON
Available water capacity: About 5.0 inches to a depth of 28 inches
Cation-exchange capacity of the surface layer: 10 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till over limestone
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: High
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

MILTON
Hydric soil: No

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Hydric soil: Unranked

MuC—Milton-Urban land complex, rolling

Setting
Landform: Moraines
Size of areas: 2 to 100 acres

Map Unit Composition
Milton and similar components: 60 percent
Urban land and similar components: 40 percent

Similar Components
Ritchey
Wynn

Map Unit Interpretive Groups
Prime farmland: Not prime farmland

Soil Properties and Qualities

MILTON
Available water capacity: About 5.0 inches to a depth of 28 inches
Cation-exchange capacity of the surface layer: 10 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till over limestone
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: High
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

MILTON
Hydric soil: No

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Hydric soil: Unranked

MuD—Milton-Urban land complex, hilly

Setting
Landform: Moraines
Size of areas: 4 to 30 acres

Map Unit Composition
Milton and similar components: 60 percent
Urban land and similar components: 40 percent

Similar Components
Fairmount
Ritchey

Map Unit Interpretive Groups
Prime farmland: Not prime farmland

Soil Properties and Qualities

MILTON
Available water capacity: About 4.9 inches to a depth of 28 inches
Cation-exchange capacity of the surface layer: 10 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till over limestone
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

MILTON
Hydric soil: No

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Hydric soil: Unranked

Mv—Montgomery silty clay loam

Setting
Landform: Depressions
Size of areas: 3 to 250 acres

Map Unit Composition
Montgomery and similar components: 100 percent

Similar Components
Thin layers of muck in the subsoil
Westland

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

MONTGOMERY
Available water capacity: About 9.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 20 to 36 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.0 to 0.5 feet
Water table kind: Apparent
Ponding: Long
Depth of ponding: 0.0 to 1.0 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 6.0 percent
Parent material: Silty and clayey lacustrine deposits
Permeability: Very slow or slow
Potential frost action: High
Shrink-swell potential: High
Surface layer texture: Silty clay loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Clods may form if the soil is tilled when wet.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.

- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, the use of equipment for site preparation is restricted to the drier periods.
- Burning may destroy organic matter.

Building Sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

MONTGOMERY
Pasture and hayland suitability group: C-2
Hydric soil: Yes

OcA—Ockley silt loam, 0 to 2 percent slopes

Setting
Landform: Terraces
Size of areas: 2 to 150 acres

Map Unit Composition
Ockley and similar components: 100 percent

Similar Components
Fox
Darker colored surface layer
Till at 5 to 6 feet

Map Unit Interpretive Groups
Land capability classification: 1
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

OCKLEY
Available water capacity: About 8.5 inches to a depth of 48 inches
Cation-exchange capacity of the surface layer: 3 to 15 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 40 to 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over loamy outwash
Permeability: Moderate in the subsoil; rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.

- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- This soil is well suited to pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The restricted permeability in the subsoil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability in the substratum limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups
OCKLEY
Pasture and hayland suitability group: A-1
Hydric soil: No

OcB—Ockley silt loam, 2 to 6 percent slopes

Setting
Landform: Terraces
Size of areas: 2 to 60 acres

Map Unit Composition
Ockley and similar components: 100 percent

Similar Components
Fox
Slopes of more than 6 percent
Darker colored surface layer
Eroded areas

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

OCKLEY
Available water capacity: About 8.5 inches to a depth of 48 inches
Cation-exchange capacity of the surface layer: 3 to 15 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 40 to 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over loamy outwash
Permeability: Moderate in the subsoil; rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.

- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The restricted permeability in the subsoil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability in the substratum limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

OCKLEY
Pasture and hayland suitability group: A-1
Hydric soil: No

PlB—Plattville silt loam, 2 to 6 percent slopes

Setting
Landform: Hills
Size of areas: 2 to 35 acres

Map Unit Composition
Plattville and similar components: 97 percent

Similar Components
Corwin
Bedrock at less than 20 inches
Thicker surface layer

Contrasting Components
Millsdale: 3 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

PLATTVILLE
Available water capacity: About 4.9 inches to a depth of 27 inches
Cation-exchange capacity of the surface layer: 18 to 26 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 5.0 percent
Parent material: Till over limestone-shale
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: High
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock.
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

PLATTVILLE
Pasture and hayland suitability group: F-1
Hydric soil: No

PlC—Plattville silt loam, 6 to 12 percent slopes

Setting
Landform: Upland slopes
Size of areas: 2 to 20 acres

Map Unit Composition
Plattville and similar components: 97 percent

Similar Components
Corwin
Shallower to bedrock

Contrasting Components
Millsdale: 3 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Not prime farmland

Soil Properties and Qualities

PLATTVILLE
Available water capacity: About 5.0 inches to a depth of 27 inches
Cation-exchange capacity of the surface layer: 18 to 26 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 40 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Till over limestone-shale
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: High
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

PLATTVILLE
Pasture and hayland suitability group: F-1
Hydric soil: No

PyA—Pyrmont silt loam, 0 to 2 percent slopes

Setting
Landform: Ridges
Size of areas: 2 to 15 acres

Map Unit Composition
Pyrmont and similar components: 96 percent

Similar Components
Soils deeper to till
Moderately eroded areas

Contrasting Components
Brookston: 4 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

PYRMONT
Available water capacity: About 6.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 8 to 22 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.5 to 1.5 feet
Water table kind: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy till
Permeability: Slow or moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the

soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- In some areas the dense nature of the subsurface layer increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Component Interpretive Groups

PYRMONT
Pasture and hayland suitability group: C-1
Hydric soil: No

Qu—Quarries

Setting
Size of areas: 2 to 55 acres

Map Unit Composition
Quarries and similar components: 100 percent
Land capability classification: None assigned

Use and Management Considerations

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

Component Interpretive Groups

QUARRIES
Hydric soil: Unranked

RcA—Randolph silt loam, 0 to 2 percent slopes

Setting
Landform: top of valley sides
top of hills on moraines
Size of areas: 2 to 50 acres

Map Unit Composition
Randolph and similar components: 96 percent

Similar Components
Crosby
Gently sloping areas

Contrasting Components
Millsdale soils: 4 percent

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

RANDOLPH
Available water capacity: About 5.3 inches to a depth of 31 inches
Cation-exchange capacity of the surface layer: 8 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 40 inches
Depth to the top of the seasonal high water table: 0.5 to 1.5 feet
Water table kind: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till over limestone-shale
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: High
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock and a high clay content.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- Subsurface drainage helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.
- The depth to bedrock may restrict the gradient needed to provide adequate drainage from subsurface systems.

Pastureland

- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- The rooting depth of plants may be restricted by bedrock.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- Soil wetness may limit the use of this soil by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Severe shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures generally require special design and construction techniques or intensive maintenance.
- In some areas the high content of clay in the subsurface layer increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Randolph
Pasture and hayland suitability group: C-2
Hydric soil: No

ReB—Ritchey silt loam, 2 to 6 percent slopes

Setting
Landform: Hillslopes
Size of areas: 2 to 100 acres

Map Unit Composition
Ritchey and similar components: 100 percent

Similar Components
Nearly level soils
Bedrock at more than 20 inches

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Not prime farmland

Soil Properties and Qualities

RITCHEY
Available water capacity: About 3.0 inches to a depth of 18 inches
Cation-exchange capacity of the surface layer: 13 to 22 meq per 100 grams
Depth class: Shallow
Depth to root restrictive feature: Bedrock (lithic): 10 to 20 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till over limestone-shale
Permeability: Moderate
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock.
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the

soil may create unsafe conditions for log trucks.
- Rock fragments obstruct the use of mechanical planting equipment.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of the limited depth to hard bedrock, excavation is difficult.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

Ritchey
Pasture and hayland suitability group: E-1
Hydric soil: No

ReB2—Ritchey silt loam, 2 to 6 percent slopes, moderately eroded

Setting
Landform: Hillslopes
Position on the landform: Shoulder
Size of areas: 2 to 35 acres

Map Unit Composition
Ritchey and similar components: 95 percent

Contrasting Components
Severely eroded soils: 4 percent
Bedrock outcrops: 1 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Not prime farmland

Soil Properties and Qualities

RITCHEY
Available water capacity: About 2.3 inches to a depth of 14 inches
Cation-exchange capacity of the surface layer: 13 to 22 meq per 100 grams
Depth class: Shallow
Depth to root restrictive feature: Bedrock (lithic): 10 to 20 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till over limestone-shale
Permeability: Moderate
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock.
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.

- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- Rock fragments obstruct the use of mechanical planting equipment.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of the limited depth to hard bedrock, excavation is difficult.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

RITCHEY
Pasture and hayland suitability group: E-1
Hydric soil: No

ReC2—Ritchey silt loam, 6 to 12 percent slopes, moderately eroded

Setting
Landform: Hillslopes
Size of areas: 2 to 65 acres

Map Unit Composition
Ritchey and similar components: 100 percent

Similar Components
Milton
Slightly eroded areas

Map Unit Interpretive Groups
Land capability classification: 4e
Prime farmland: Not prime farmland

Soil Properties and Qualities

RITCHEY
Available water capacity: About 2.3 inches to a depth of 14 inches
Cation-exchange capacity of the surface layer: 13 to 22 meq per 100 grams
Depth class: Shallow
Depth to root restrictive feature: Bedrock (lithic): 10 to 20 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None

Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till over limestone-shale
Permeability: Moderate
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- Rock fragments obstruct the use of mechanical planting equipment.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of the limited depth to hard bedrock, excavation is difficult.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and

streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

RITCHEY
Pasture and hayland suitability group: E-1
Hydric soil: No

ReE2—Ritchey silt loam, 12 to 25 percent slopes, moderately eroded

Setting
Landform: Valley sides
Size of areas: 2 to 125 acres

Map Unit Composition
Ritchey and similar components: 97 percent
Similar components
Slightly eroded areas

Contrasting Components
Severely eroded areas: 3 percent

Map Unit Interpretive Groups
Land capability classification: 6e
Prime farmland: Not prime farmland

Soil Properties and Qualities

RITCHEY
Available water capacity: About 1.9 inches to a depth of 12 inches
Cation-exchange capacity of the surface layer: 13 to 22 meq per 100 grams
Depth class: Shallow
Depth to root restrictive feature: Bedrock (lithic): 10 to 20 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till over limestone-shale
Permeability: Moderate
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- Rock fragments obstruct the use of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.
- Burning may destroy organic matter.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of the limited depth to hard bedrock, excavation is difficult.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

RITCHEY
Pasture and hayland suitability group: E-1
Hydric soil: No

ReF2—Ritchey silt loam, 25 to 50 percent slopes, moderately eroded

Setting
Landform: Valley sides and hillsides
Size of areas: 2 to 150 acres

Map Unit Composition
Ritchey and similar components: 95 percent

Contrasting Components
Severely eroded soils: 3 percent
Bedrock outcrops: 2 percent

Map Unit Interpretive Groups
Land capability classification: 6e
Prime farmland: Not prime farmland

Soil Properties and Qualities

RITCHEY
Available water capacity: About 1.7 inches to a depth of 11 inches
Cation-exchange capacity of the surface layer: 13 to 22 meq per 100 grams
Depth class: Shallow
Depth to root restrictive feature: Bedrock (lithic): 10 to 20 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Till over limestone-shale
Permeability: Moderate
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- This soil is generally not recommended for pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.

- The depth to hard bedrock restricts the use of equipment during site preparation for planting or seeding and interferes with mechanical planting equipment.
- Because of the slope, use of equipment to prepare this site for planting and seeding is not practical.
- Because of the slope, the use of mechanical planting equipment is not practical.
- Rock fragments obstruct the use of mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of the limited depth to hard bedrock, excavation is difficult.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups
RITCHEY
Pasture and hayland suitability group: E-2
Hydric soil: No

RfD3—Ritchey silt clay loam, 6 to 18 percent slopes, severely eroded

Setting
Landform: Valley sides
Size of areas: 2 to 30 acres

Map Unit Composition
Ritchey and similar components: 98 percent

Contrasting Components
Bedrock outcrops: 2 percent
Gullied areas:

Map Unit Interpretive Groups
Land capability classification: 4e
Prime farmland: Not prime farmland

Soil Properties and Qualities

RITCHEY
Available water capacity: About 1.4 inches to a depth of 9 inches
Cation-exchange capacity of the surface layer: 17 to 23 meq per 100 grams
Depth class: Shallow
Depth to root restrictive feature: Bedrock (lithic): 9 to 20 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 1.0 percent
Parent material: Till over limestone-shale
Permeability: Moderate
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: Very high
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the

capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Clods may form if the soil is tilled when wet.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The depth to hard bedrock restricts the use of equipment during site preparation for planting or seeding and interferes with mechanical planting equipment.
- The slope may restrict the use of some mechanical planting equipment.
- Rock fragments obstruct the use of mechanical planting equipment.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Because of the limited depth to hard bedrock, excavation is difficult.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

RITCHEY
Pasture and hayland suitability group: E-1
Hydric soil: No

Rh—Riverwash

Setting
Landform: Flood plains
Size of areas: 2 to 30 acres

Map Unit Composition
Riverwash and similar components: 100 percent
Land capability classification: None assigned

Use and Management Considerations

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

Component Interpretive Groups

RIVERWASH
Hydric soil: Unranked

RlE2—Rodman and Fox soils, 18 to 25 percent slopes, moderately eroded

Setting
Landform: Hills and stream terraces
Size of areas: 2 to 80 acres

Map Unit Composition
Rodman and similar components: 50 percent
Fox and similar components: 45 percent

Similar Components
Gravelly loam surface layer

Contrasting Components
Severely eroded areas: 5 percent

Map Unit Interpretive Groups
Land capability classification: 7s
Prime farmland: Not prime farmland

Soil Properties and Qualities

RODMAN
Available water capacity: About 1.2 inches to a depth of 10 inches
Cation-exchange capacity of the surface layer: 5 to 16 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 8 to 12 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Excessively drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Rapid
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Loam
Potential for surface runoff: Very low
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Sandy layers in this soil increase the maintenance of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.

- Sandy layers may slough, thus reducing the efficiency of mechanical planting equipment.
- The slope may restrict the use of some mechanical planting equipment.
- Rock fragments obstruct the use of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

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

Component Interpretive Groups

RODMAN
Pasture and hayland suitability group: B-1
Hydric soil: No

Soil Properties and Qualities

FOX
Available water capacity: About 3.6 inches to a depth of 29 inches
Cation-exchange capacity of the surface layer: 4 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 42 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the subsoil; rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Sandy layers in this soil increase the maintenance of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- The slope may restrict the use of some mechanical planting equipment.

- The slope restricts the use of equipment for preparing this site for planting and seeding.
- Burning may destroy organic matter.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

FOX
Pasture and hayland suitability group: B-1
Hydric soil: No

RlF2—Rodman and Fox soils, 25 to 50 percent slopes, moderately eroded

Setting
Landform: Hills and stream terraces
Size of areas: 2 to 45 acres

Map Unit Composition
Rodman and similar components: 50 percent
Fox and similar components: 45 percent

Similar Components
Gravelly loam surface layer

Contrasting Components
Severely eroded areas: 5 percent

Map Unit Interpretive Groups
Land capability classification: 7s
Prime farmland: Not prime farmland

Soil Properties and Qualities

RODMAN
Available water capacity: About 1.1 inches to a depth of 9 inches
Cation-exchange capacity of the surface layer: 5 to 16 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 9 to 20 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Excessively drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Rapid
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- This soil is generally not recommended for pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Sandy layers in this soil increase the maintenance of haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

- The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
- Sandy layers may slough, thus reducing the efficiency of mechanical planting equipment.
- Because of the slope, use of equipment to prepare this site for planting and seeding is not practical.
- Because of the slope, the use of mechanical planting equipment is not practical.
- Rock fragments obstruct the use of mechanical planting equipment.
- Burning may destroy organic matter.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

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

Component Interpretive Groups

RODMAN
Pasture and hayland suitability group: B-2
Hydric soil: No

Soil Properties and Qualities

FOX
Available water capacity: About 3.6 inches to a depth of 29 inches
Cation-exchange capacity of the surface layer: 4 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 42 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the subsoil; rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- The slope may restrict the use of some farm equipment.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of

harvesting and mechanical planting equipment.
- Because of the slope, the use of mechanical planting equipment is not practical.
- The slope restricts the use of equipment for preparing this site for planting and seeding.
- Burning may destroy organic matter.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The excessive permeability limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

FOX
Pasture and hayland suitability group: B-2
Hydric soil: No

Rs—Ross silt loam

Setting
Landform: Flood plains
Size of areas: 3 to 600 acres

Map Unit Composition
Ross and similar components: 97 percent

Similar Components
Lighter colored sandy loam surface layer
Sandy or gravelly substratum as shallow as 36 inches

Contrasting Components
Sloan soils: 3 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

ROSS
Available water capacity: About 10.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 26 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: Occasional
Organic matter content in the surface layer: 3.0 to 5.0 percent
Parent material: Loamy alluvium over sandy and gravelly alluvium
Permeability: Moderate
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Controlling traffic can minimize soil compaction.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Small grain crops may be damaged by flooding in winter and spring.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. This soil is generally unsuited to homesites. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.

Septic Tank Absorption Fields

- This soil is generally unsuited to septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

ROSS
Pasture and hayland suitability group: A-5
Hydric soil: No

Rt—Ross-Urban land complex

Setting
Landform: Flood plains
Size of areas: 5 to 700 acres

Map Unit Composition
Urban land and similar components: 50 percent
Ross and similar components: 48 percent

Similar Components
Landes
Medway

Contrasting Components
Sloan soils: 2 percent

URBAN LAND

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Hydric soil: Unranked

Soil Properties and Qualities

ROSS
Available water capacity: About 10.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 26 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: Occasional
Organic matter content in the surface layer: 3.0 to 5.0 percent
Parent material: Loamy alluvium over sandy and gravelly alluvium
Permeability: Moderate
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Building Sites

- Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. This soil is generally unsuited to homesites. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.

Figure 15. Exposed underlying sand and gravel deposits are typical of alluvial soils, such as Ross and Medway.

Septic Tank Absorption Fields

- This soil is generally unsuited to septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

ROSS
Hydric soil: No

RuB—Russell silt loam, 2 to 6 percent slopes

Setting
Landform: Long hillslopes on moraines
Long, linear crest of ridges on moraines
Size of areas: 2 to 200 acres

Map Unit Composition
Russell and similar components: 98 percent

Similar Components
Miamian
Nearly level areas
Calcareous silty substratum
Moderately eroded areas

Contrasting Components
Ragsdale soils: 2 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

RUSSELL
Available water capacity: About 8.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 5 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

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

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

RUSSELL
Pasture and hayland suitability group: A-6
Hydric soil: No

RvC2—Russell-Miamian silt loams, 6 to 12 percent slopes, moderately eroded

Setting

Landform: Adjacent to waterways and shoulders on moraines
Size of areas: 2 to 25 acres

Map Unit Composition

Russell and similar components: 55 percent
Miamian and similar components: 43 percent

Similar Components

Slightly eroded areas

Contrasting Components

Brookston: 2 percent

Map Unit Interpretive Groups

Land capability classification: 3e
Prime farmland: Not prime farmland

Soil Properties and Qualities

RUSSELL
Available water capacity: About 11.0 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 5 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Figure 16. Alluvial soils, such as this Ross soil along Twin Creek, are subject to flooding.

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines and seepage of poorly treated effluent is a concern.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

RUSSELL
Pasture and hayland suitability group: A-6
Hydric soil: No

Soil Properties and Qualities

MIAMIAN
Available water capacity: About 7.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines and seepage of poorly treated effluent is a concern.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

MIAMIAN
Pasture and hayland suitability group: A-1
Hydric soil: No

RvD2—Russell-Miamian silt loams, 12 to 18 percent slopes, moderately eroded

Setting
Landform: Adjacent to drainageways on hillslopes on moraines
Size of areas: 2 to 35 acres

Map Unit Composition
Russell and similar components: 55 percent
Miamian and similar components: 40 percent

Contrasting Components
Severely eroded areas: 5 percent

Map Unit Interpretive Groups
Land capability classification: 4e
Prime farmland: Not prime farmland

Soil Properties and Qualities

RUSSELL
Available water capacity: About 8.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 5 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.
- A loss of soil productivity may occur following an episode of fire.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require

some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

RUSSELL
Pasture and hayland suitability group: A-6
Hydric soil: No

Soil Properties and Qualities

MIAMIAN
Available water capacity: About 6.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high clay content.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Avoiding overgrazing can reduce the hazard of erosion.
- Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
- Erosion control is needed when pastures are renovated.

Woodland

- If the soil is disturbed, the slope increases the hazard of erosion.
- The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- The slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The slope may restrict the use of some mechanical planting equipment.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- The slope restricts the use of equipment for preparing this site for planting and seeding.

Building Sites

- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- Because of the slope, special design and installation techniques are needed for the effluent distribution lines.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.

Component Interpretive Groups

MIAMIAN
Pasture and hayland suitability group: A-1
Hydric soil: No

Sh—Shoals silt loam

Setting
Landform: Flood plains
Size of areas: 2 to 20 acres

Map Unit Composition
Shoals and similar components: 95 percent

Similar Components
Loam surface layer

Contrasting Components
Sloan soils: 5 percent

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

SHOALS
Available water capacity: About 10.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 27 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 0.5 to 1.5 feet
Water table kind: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: Occasional
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy alluvium
Permeability: Moderate
Potential frost action: High
Shrink-swell potential: Low
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Small grain crops may be damaged by flooding in winter and spring.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Soil wetness may limit the use of this soil by log trucks.
- Flooding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. This soil is generally unsuited to homesites. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.

Septic Tank Absorption Fields

- This soil is generally unsuited to septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.

Local Roads and Streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

SHOALS
Pasture and hayland suitability group: C-3
Hydric soil: No

So—Sloan silt loam

Setting
Landform: Depressions on flood plains
Size of areas: 2 to 125 acres

Map Unit Composition
Sloan and similar components: 100 percent

Similar Components
Calcareous throughout
Sand and gravel at 35 to 40 inches
Developed areas

Map Unit Interpretive Groups
Land capability classification: 3w
Prime farmland: Not prime farmland

Soil Properties and Qualities

SLOAN
Available water capacity: About 8.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 13 to 26 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: At or near the surface
Water table kind: Apparent
Ponding: Long
Depth of ponding: 0.0 to 1.0 feet
Drainage class: Very poorly drained
Flooding: Frequent
Organic matter content in the surface layer: 3.0 to 6.0 percent
Parent material: Loamy alluvium
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Medium
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.

- Controlling traffic can minimize soil compaction.
- Winter grain crops are commonly not grown because of frequent flooding.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood event may reduce palatability and forage intake by the grazing animal.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Flooding may result in damage to haul roads and increased maintenance costs.
- Soil wetness may limit the use of this soil by log trucks.
- Flooding restricts the safe use of roads by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters. Because of the flooding, this soil is generally unsuited to building site development.
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- This soil is generally unsuited to septic tank absorption fields. The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Rapidly moving floodwaters may damage some components of septic systems.
- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

SLOAN
Pasture and hayland suitability group: C-3
Hydric soil: Yes

ThA—Thackery silt loam, till substratum, 0 to 2 percent slopes

Setting
Landform: Terraces
Size of areas: 2 to 40 acres

Map Unit Composition
Thackery and similar components: 97 percent

Similar Components
Slopes of 2 to 4 percent

Contrasting Components
Westland soils: 3 percent

Map Unit Interpretive Groups
Land capability classification: 1
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

THACKERY
Available water capacity: About 8.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 8 to 21 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Loamy outwash over loamy till
Permeability: moderate above the till substratum; moderately slow in the underlying till
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- This soil is well suited to pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

THACKERY
Pasture and hayland suitability group: A-1
Hydric soil: No

TpA—Tippecanoe silt loam, 0 to 2 percent slopes

Setting
Landform: Stream terraces
Size of areas: 2 to 35 acres

Map Unit Composition
Tippecanoe and similar components: 95 percent

Contrasting Components
Westland soils: 3 percent
Sloan soils: 2 percent

Map Unit Interpretive Groups
Land capability classification: 1
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

TIPPECANOE
Available water capacity: About 8.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 11 to 27 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 60 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 5.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.

Pastureland

- This soil is well suited to pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The restricted permeability in the subsoil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability in the substratum limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

TIPPECANOE
Pasture and hayland suitability group: A-1
Hydric soil: No

Ua—Urban land, alluvial

Setting
Landform: Flood plains
Size of areas: 9 to 650 acres

Map Unit Composition
Urban land and similar components: 100 percent

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Hydric soil: Unranked

Ud—Udorthents

Setting
Size of areas: 10 to 650 acres

Map Unit Composition
Udorthents and similar components: 100 percent
Land capability classification: None assigned

Use and Management Considerations

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

Component Interpretive Groups

UDORTHENTS
Hydric soil: Unranked

Ug—Urban land, gravelly material

Setting
Landform: Terraces
Size of areas: 11 to 300 acres

Map Unit Composition
Urban land and similar components: 100 percent

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Hydric soil: Unranked

Um—Urban land, loamy material

Setting
Landform: Moraines
Size of areas: 20 to 125 acres

Map Unit Composition
Urban land and similar components: 100 percent

Use and Management Considerations

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

Component Interpretive Groups

URBAN LAND
Hydric soil: Unranked

WaA—Warsaw silt loam, 0 to 2 percent slopes

Setting
Landform: Terraces
Size of areas: 2 to 50 acres

Map Unit Composition
Warsaw and similar components: 100 percent

Similar Components
Surface layer 20 to 25 inches thick
Wea

Map Unit Interpretive Groups
Land capability classification: 2s

Prime farmland: All areas are prime farmland

Soil Properties and Qualities

WARSAW
Available water capacity: About 4.9 inches to a depth of 32 inches
Cation-exchange capacity of the surface layer: 10 to 25 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 42 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 5.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the solum; rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.

Pastureland

- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

- The restricted permeability in the subsoil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability in the substratum limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

WARSAW
Pasture and hayland suitability group: A-1
Hydric soil: No

WaB—Warsaw silt loam, 2 to 6 percent slopes

Setting
Landform: Terraces
Size of areas: 2 to 15 acres

Map Unit Composition
Warsaw and similar components: 100 percent

Similar Components
Surface layer 20 to 25 inches thick
Wea

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

WARSAW
Available water capacity: About 4.9 inches to a depth of 32 inches
Cation-exchange capacity of the surface layer: 10 to 25 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 42 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 5.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the solum; rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- This soil is well suited to use as building sites.

Septic Tank Absorption Fields

- The restricted permeability in the subsoil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability in the substratum limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

WARSAW
Pasture and hayland suitability group: A-1
Hydric soil: No

WeA—Wea silt loam, 0 to 2 percent slopes

Setting
Landform: Terraces
Size of areas: 2 to 250 acres

Map Unit Composition
Wea and similar components: 100 percent

Similar Components
Warsaw
Surface layer 20 to 25 inches thick

Map Unit Interpretive Groups
Land capability classification: 1
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

WEA
Available water capacity: About 8.7 inches to a depth of 47 inches
Cation-exchange capacity of the surface layer: 8 to 24 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 42 to 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 5.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the solum; rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.

Pastureland

- This soil is well suited to pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The restricted permeability in the subsoil limits the absorption and proper treatment of the effluent from septic systems.
- The excessive permeability in the substratum limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

WEA
Pasture and hayland suitability group: A-1
Hydric soil: No

WeB—Wea silt loam, 2 to 6 percent slopes

Setting
Landform: Terraces
Size of areas: 2 to 35 acres

Map Unit Composition
Wea and similar components: 100 percent

Similar Components
Warsaw
Surface layer 20 to 25 inches thick

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

WEA
Available water capacity: About 8.7 inches to a depth of 47 inches
Cation-exchange capacity of the surface layer: 8 to 24 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 42 to 60 inches
Depth to the top of the seasonal high water table: Greater than 3.0 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 5.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the solum; rapid in the substratum
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.

Pastureland

- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

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

- The excessive permeability in the substratum limits the proper treatment of the effluent from septic systems in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

WEA
Pasture and hayland suitability group: A-1
Hydric soil: No

Ws—Westland silty clay loam

Setting
Landform: Depressions
Size of areas: 2 to 175 acres

Map Unit Composition
Westland and similar components: 100 percent

Similar Components
Loam till substratum at 70 to 80 inches
Clay or silty clay subsoil

Map Unit Interpretive Groups
Land capability classification: 2w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

WESTLAND
Available water capacity: About 6.3 inches to a depth of 45 inches
Cation-exchange capacity of the surface layer: 15 to 31 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 42 to 72 inches
Depth to the top of the seasonal high water table: 0.0 to 0.5 feet
Water table kind: Apparent
Ponding: Long
Depth of ponding: 0.0 to 0.5 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 6.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the upper part of the solum; moderately rapid in the lower part of the solum; rapid in the substratum
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.
- A combination of surface and subsurface drainage helps to remove excess water.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root systems of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- Standing water can inhibit the growth of some species of seedlings by restricting root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by log trucks.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- Burning may destroy organic matter.

Building Sites

- Because water tends to pond on this soil, the period when excavations can be made may be restricted and intensive construction site development and building maintenance may be needed. The soil is generally unsuited to building site development.

Septic Tank Absorption Fields

- Because of ponding, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

WESTLAND
Pasture and hayland suitability group: C-1
Hydric soil: Yes

WyB2—Wynn silt loam, 2 to 6 percent slopes, moderately eroded

Setting
Landform: Crest of hills on moraines
Size of areas: 3 to 125 acres

Map Unit Composition
Wynn and similar components: 100 percent

Similar Components
Slightly eroded areas
Milton

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

WYNN
Available water capacity: About 5.2 inches to a depth of 29 inches
Cation-exchange capacity of the surface layer: 9 to 22 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 24 to 40 inches
Depth to the top of the seasonal high water table: >3.0
Water table kind: Apparent
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over till over limestone
Permeability: Moderately slow
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock.
- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.

- Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Using a system of conservation tillage when pastures are renovated conserves soil moisture.
- This soil provides poor summer pasture.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Bedrock may interfere with the construction of haul roads and log landing sites.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.

Building Sites

- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent damage caused by wetness.

Septic Tank Absorption Fields

- Because of the limited depth to bedrock, this soil is generally unsuited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

WYNN
Pasture and hayland suitability group: F-1
Hydric soil: No

XeA—Xenia silt loam, 0 to 2 percent slopes

Setting
Landform: Rises on moraines
Size of areas: 2 to 165 acres

Map Unit Composition
Xenia and similar components: 97 percent

Similar Components
Celina
Fincastle
Calcareous silty substratum

Contrasting Components
Brookston: 3 percent

Map Unit Interpretive Groups
Land capability classification: 1
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

XENIA
Available water capacity: About 9.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 78 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems. Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups
XENIA
Pasture and hayland suitability group: A-6
Hydric soil: No

XeB—Xenia silt loam, 2 to 6 percent slopes

Setting
Landform: slight rises on moraines
Size of areas: 2 to 100 acres

Map Unit Composition
Xenia and similar components: 97 percent

Similar Components
Celina
Fincastle

Contrasting Components
Brookston: 3 percent

Map Unit Interpretive Groups
Land capability classification: 2e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

XENIA
Available water capacity: About 9.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 78 inches
Depth to the top of the seasonal high water table: 1.5 to 3.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Silty loess over loamy till
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Low
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce erosion.
- Using a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improves tilth, and increases the rate of water infiltration.

Pastureland

- Erosion control is needed when pastures are renovated.
- The root systems of plants may be damaged by frost action.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for log trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building Sites

- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. It is poorly suited to building site development and structures may need special design to avoid damage from wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic Tank Absorption Fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic systems.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic systems.

Costly measures may be needed to lower the water table in the area of the absorption field.

Local Roads and Streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Component Interpretive Groups

XENIA
Pasture and hayland suitability group: A-6
Hydric soil: No

Important Farmland

Prime Farmland

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

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, woodland, 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.

Most of the prime farmland in the county is used as cropland. Urbanization in and around cities and along interstate corridors account for the majority of prime farmland lost to agricultural uses.

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

The map units in the survey area that are considered prime farmland are listed in table 5 (p. 233). These lists do not constitute a recommendation for a particular land use. On some soils included in the lists, 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 (p. 231). 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."

Unique Farmland

Unique farmland is land other than prime farmland that is used for the production of specific high–value food and fiber crops. It has the special combination of soil qualities, location, growing season, and moisture supply needed for the economic production of sustained high yields of a specific high–quality crop when treated and managed by acceptable farming methods. Examples of such crops are tree fruits, berries, and vegetables.

Unique farmland has an adequate supply of available moisture for the specific crops for which it is used because of stored moisture, precipitation, or irrigation and has a combination of soil qualities, growing season, temperature, humidity, air drainage, elevation, aspect, and other factors, such as nearness to markets, that favors the production of a specific food or fiber crop.

Lists of unique farmland are developed as needed in cooperation with conservation districts and others.

Additional Farmland of Statewide Importance

Some areas other than areas of prime farmland and unique farmland are of statewide importance in the production of food, feed, fiber, forage, and oilseed crops. The criteria used in defining and delineating these areas are determined by the appropriate state agency or agencies. Generally, additional farmland of statewide importance includes areas that nearly meet the criteria for prime farmland and that economically produce high yields of crops when treated and managed by acceptable farming methods. Some areas can produce as high a yield as areas of prime farmland if conditions are favorable. In some states additional farmland of statewide importance may include tracts of land that have been designated for agriculture by state law.

Additional Farmland of Local Importance

This land consists of areas that are of local importance in the production of food, feed, fiber, forage, and oilseed crops and are not identified as having national or statewide importance. Where appropriate, this land is identified by local agencies. It may include tracts of land that have been designated for agriculture by local ordinance.

Lists of this land are developed as needed in cooperation with conservation districts and others.

Figure 17. Farmstead Brookston, Crosby, and Celina soils.

Hydric Soils

In this section, hydric soils are defined and described and the hydric soils in the survey area are listed in table 6 (p. 234).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for each of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 1995). These criteria are used to identify a phase of a soil series that normally is associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 1998) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils in this survey area are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and others, 1998).

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

Figure 18. Undrained hydric soils, such as this Brookston soil, provide great habitat for wetland plants and animals.

The map units in table 6 (p. 234) meet the definition of hydric soils and, in addition, have at least one of the hydric soil indicators. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 1998).

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

The map units, in table 7 (p. 235), in general, do not meet the definition of hydric soils because they do not have one of the hydric soil indicators. A portion of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

Soil Quality

Prepared by Natural Resources Conservation Service, Soil Quality Institute, Ames, Iowa.

SOIL QUALITY is how well soil does what we want it to do. More specifically, soil quality is the capacity of a specific kind of soil to function, within natural or managed ecosystem boundaries, to sustain plant and animal productivity, maintain or enhance water and air quality, and support human health and habitation.

Figure 19. Example of a quality soil.

People have different ideas of what a quality soil is. For example: for people active in production agriculture, it may mean highly productive land, sustaining or enhancing productivity, maximizing profits, or maintaining the soil resource for future generations; for consumers, it may mean plentiful, healthful, and inexpensive food for present and future generations; for naturalists, it may mean soil in harmony with the landscape and its surroundings; for the environmentalist, it may mean soil functioning at its potential in an ecosystem with respect to maintenance or enhancement of biodiversity, water quality, nutrient cycling, and biomass production.

What Does Soil Do?

Healthy soil gives us clean air and water, bountiful crops and forests, productive rangeland, diverse wildlife, and beautiful landscapes. Soil does all this by performing five essential functions:

- Regulating water. Soil helps control where rain, snowmelt, and irrigation water goes. Water and dissolved solutes flow over the land or into and through the soil.
- Sustaining plant and animal life. The diversity and productivity of living things depends on soil.
- Filtering potential pollutants. The minerals and microbes in soil are responsible for filtering, buffering, degrading, immobilizing, and detoxifying organic and inorganic materials, including industrial and municipal by-products and atmospheric deposits.
- Cycling nutrients. Carbon, nitrogen, phosphorus, and many other nutrients are stored, transformed, and cycled through soil.
- Supporting structures. Buildings need stable soil for support, and archeological treasures associated with human habitation are protected in soils.

Here are some examples of indicators of soil quality:

Indicator	Relationship to Soil Health
Soil organic matter (SOM)	Soil fertility, structure, stability, nutrient retention; soil erosion.
PHYSICAL: Soil structure, depth of soil, Infiltration and bulk density; water holding capacity	Retention and transport of water and nutrients; habitat for microbes; estimate of crop productivity potential; compaction, plow pan, water movement; porosity; workability.
CHEMICAL: pH; electrical conductivity; extractable N-P-K	Biological and chemical activity thresholds; plant and microbial activity thresholds; plant available nutrients and potential for N and P loss.
BIOLOGICAL: Microbial biomass C and N; potentially mineralizable N; soil respiration.	Microbial catalytic potential and repository for C and N; soil productivity and N supplying potential; microbial activity measure

Soil Has Both Inherent and Dynamic Quality.

Inherent soil quality is a soil’s natural ability to function. For example, sandy soils drain faster than clayey soils. Deep soils will have more room for roots than soils with bedrock near the surface. These characteristics do not change easily.

Dynamic soil quality is how soil changes depending on how it is managed. Management choices affect the amount of soil organic matter, soil structure, soil depth, water and nutrient holding capacity. One goal of soil quality research is to learn how to manage soil in a way that improves soil function. Soils respond differently to management depending on the inherent properties of the soil and the surrounding landscape.

Soil Quality is Linked to Sustainability.

Understanding soil quality means assessing and managing soil so that it functions optimally now and is not degraded for future use. By monitoring changes in soil quality, a land manager can determine if a set of practices are sustainable.

Assessing Soil Quality

Soil quality is an assessment of how well soil performs all of its functions. It cannot be determined by measuring only crop yield, water quality, or any other single outcome. The quality of a soil is an assessment of how it performs all of its functions now and how those functions are being preserved for future use.

Soil quality cannot be measured directly, so we evaluate indicators. Indicators are measurable properties of soil or plants that provide clues about how well the soil can function. Indicators can be physical, chemical, and biological characteristics.

Useful indicators :

- are easy to measure
- measure changes in soil functions
- encompass chemical, biological, and physical properties
- are accessible to many users and applicable to field conditions
- are sensitive to variations in climate and management.

Indicators can be assessed by qualitative or quantitative techniques. After measurements are collected, they can be evaluated by looking for patterns and comparing results to measurements taken at a different time or field.

Soil Quality is Not an End in Itself.

The ultimate purpose of researching and assessing soil quality is not to achieve high aggregate stability, biological activity, or some other soil property. The purpose is to protect and improve long-term agricultural productivity, water quality, and habitats of all organisms including people. We use soil characteristics as indicators of soil quality, but in the end, soil quality must be identified by how it performs its functions.

Managing for Soil Quality

Each combination of soil type and land use calls for a different set of practices to enhance soil quality. Yet, several principles apply in most situations.

1. Add organic matter. Regular additions of organic matter are linked to many aspects of soil quality. Organic matter may come from crop residues at the surface, roots of cover crops, animal manure, green manure, compost, and others. Organic matter, and the organisms that eat it, can improve water holding capacity, nutrient availability, and can help protect against erosion.

2. Avoid excessive tillage. Tillage has positive effects, but it also triggers excessive organic matter degradation, disrupts soil structure, and can cause compaction. For more information about conservation tillage, visit the Conservation Tillage Information Center site.

3. Carefully manage fertilizer and pesticide use. In this century, pesticides and chemical fertilizers have revolutionized U.S. agriculture. In addition to their desired effects, they can harm non-target organisms and pollute water and air if they are mismanaged. Nutrients from organic sources also can become pollutants when misapplied or over-applied. On the positive side, fertilizer can increase plant growth and the amount of organic matter returned to the soil.

4. Increase ground cover. Bare soil is susceptible to wind and water erosion, and to

drying and crusting. Ground cover protects soil, provides habitats for larger soil organisms, such as insects and earthworms, and can improve water availability. Cover crops, perennials, and surface residue increase the amount of time that the soil surface is covered each year.

5. Increase plant diversity. Diversity is beneficial for several reasons. Each crop contributes a unique root structure and type of residue to the soil. A diversity of soil organisms can help control pest populations, and a diversity of cultural practices can reduce weed and disease pressures. Diversity across the landscape and over time can be increased by using buffer strips, small fields, contour strip cropping, crop rotations, and by varying tillage practices. Changing vegetation across the landscape or over time increases plant diversity, and the types of insects, microorganisms, and wildlife that live on your farm.

Use and Management of the Soils

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

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

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

Interpretative ratings help engineers, planners, and others understand how soil properties influence important nonagricultural uses, such as building site development and construction materials. The ratings indicate the most restrictive soil features affecting the suitability of the soils for these uses.

Soils are rated in their natural state. No unusual modification of the soil site or material is made other than that which is considered normal practice for the rated use. Even though soils may have limitations, it is important to remember that engineers and others can modify soil features or can design or adjust the plans for a structure to compensate for most of the limitations. Most of these practices, however, are costly. The final decision in selecting a site for a particular use generally involves weighing the costs of site preparation and maintenance.

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.

The classification of the soils in this survey area are shown in table 33 (p. 496). The extent of the soils are shown in table 4 (p. 231).

Interpretive Ratings

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

Rating Class Terms

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

Numerical Ratings

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

Cropland Limitations and Hazards

The management concerns affecting the use of the detailed map units in the survey area for crops are shown in table 8 (p. 239). The main concerns in managing nonirrigated cropland are

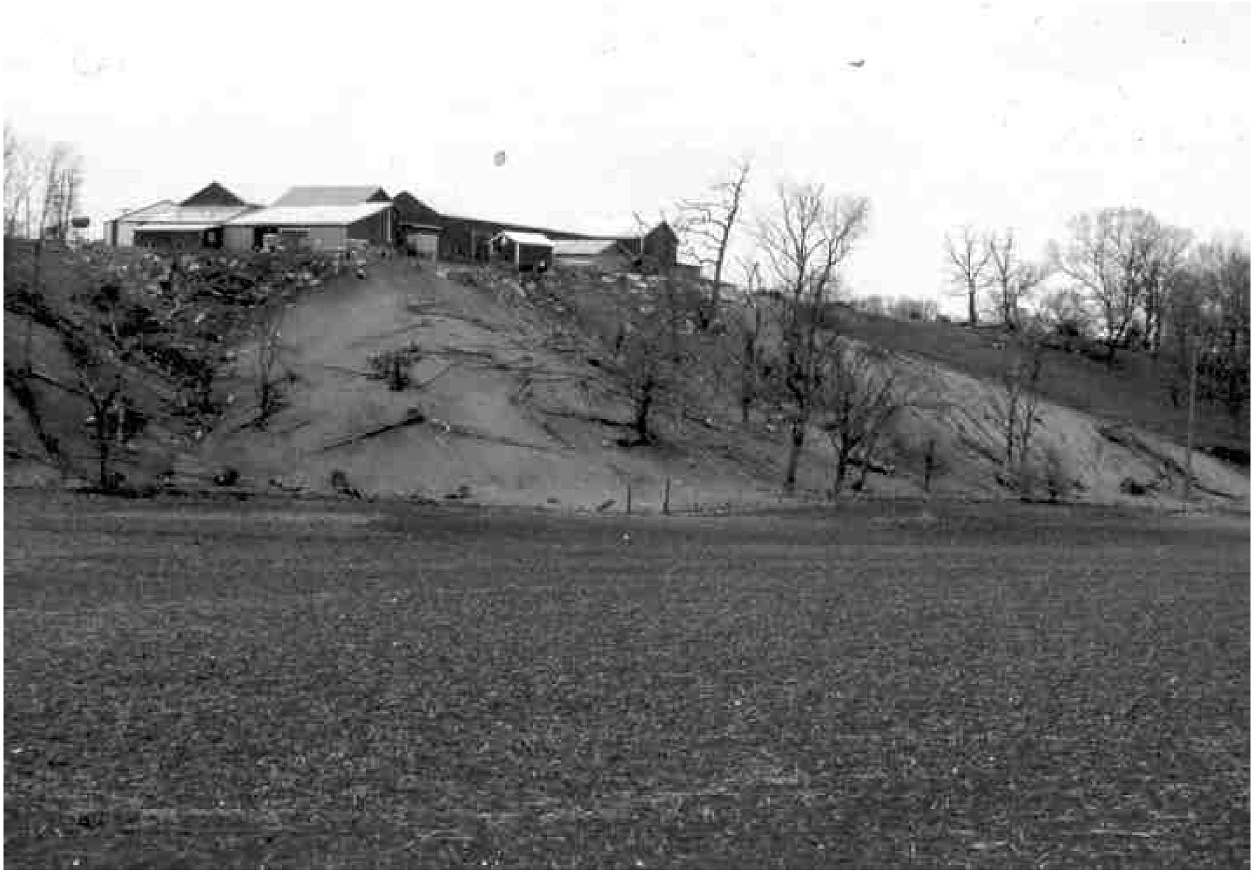

Figure 20. Steep to very steep Hennepin soils can be severely eroded if not managed properly.

controlling flooding and water erosion, preventing groundwater pollution, removing excess water, reducing surface crusting, reducing compaction, and maintaining soil tilth, organic matter, and fertility.

Generally, a combination of several practices is needed to control water erosion. Conservation tillage, stripcropping, contour farming, conservation cropping systems, crop residue management, diversions, and grassed waterways help to prevent excessive soil loss.

Surface and/or subsurface drainage is used to remove excess water, lower seasonal high water tables, and to reduce ponding.

A surface crust forms in tilled areas after hard rains and may inhibit seedling emergence. Regular additions of crop residue, manure, or other organic materials help to improve soil structure and minimize crusting.

Tilling within the proper range in moisture content minimizes compaction.

Measures that are effective in maintaining soil tilth, organic matter, and fertility include applying fertilizer, both organic and inorganic, including manure; incorporating crop residue or green manure crops into the soil; and using proper crop rotations. Controlling erosion helps to prevent the loss of organic matter and plant nutrients and thus helps to maintain productivity, although the level of fertility can be reduced even in areas where erosion is controlled. All soils used for nonirrigated crops respond well to applications of fertilizer.

Some of the limitations and hazards shown in the table cannot be easily overcome. These are flooding, ponding, slope, limited organic matter content, and depth to bedrock.

Flooding.—Flooding can damage winter grain and forage crops. A tillage method that partly covers crop residue and leaves a rough or ridged surface helps to prevent removal of crop residue by floodwater. Tilling and planting should be delayed in the spring until flooding is no longer a hazard.

Ponding.—Surface drains helps to remove excess surface water and reduce damage from ponding.

Slope.—Where the slope is more than 25 percent, water erosion is excessive. The selection of crops and use of equipment is limited. Cultivation may be restricted.

Limited organic matter content.—Many soils that have a light colored surface layer have a low or moderately low organic matter content and weak or moderate structure. Regularly adding crop residue, manure, and other organic matter materials to the soil maintains or improves the organic matter content and the soil structure.

Depth to bedrock.—Rooting depth and available moisture may be limited by bedrock within a depth of 40 inches.

Additional limitations and hazards are as follows:

Potential for groundwater pollution.—This is a hazard in soils with excessive permeability, moderately deep or shallow bedrock, or a water table within the profile.

Limited available water capacity, poor tilth, restricted permeability, and surface crusting.—These limitations can be overcome by incorporating green manure crops, manure, or crop residue into the soil; applying a system of conservation tillage; and using conservation cropping systems.

Frost action.—Frost action can damage deep rooted legumes and some small grains.

Sandy layers.—Deep leaching of nutrients and pesticides may result from sandy layers. Crops generally respond better to smaller, more frequent applications of fertilizer and lime than to one large application.

Clodding. —Clods may inhibit germination, reduce water infiltration and increase runoff.

Subsidence of the muck. —Subsidence or shrinking occurs as a result of oxidation in the muck after the soil is drained. Control of the water table by subirrigation through subsurface drain lines reduces the hazards of subsidence, burning, and soil blowing.

High clay content.—The high clay content in the soil reduces rooting depth and water movement.

Root restrictive layers.—Root restrictive layers limit root growth and water movement.

Excessive alkalinity.—High pH in the upper part of the soil may inhibit plant growth and reduce availability of potassium and micronutrients.

Excessive acidity.—Low pH in the upper part of the soil may increase concentrations of aluminum and manganese and may injure plants.

Gravelly surface.—This limitation causes rapid wear of tillage equipment. It cannot be easily overcome.

Stony surface.—Stones or boulders on the surface can hinder normal tillage unless they are removed.

Following is an explanation of the criteria used to determine the limitations or hazards for cropland.

Easily eroded.—The surface K factor multiplied by the relative value of the slope is more than 2 (same as prime farmland criteria). (See table 29 for K factors.)

Erosion hazard.—The relative value of the slope is greater than 2.

Frequent flooding.—The component of the map unit is frequently flooded.

Occasional flooding.—The component of the map unit is occasionally flooded.

Limited available water capacity.—The available water capacity calculated to a depth of 60 inches or to a root-limiting layer is 6 inches or less.

Ponding.—Ponding duration is assigned to the component of the map unit.

Ponded for extended periods.—Very long ponding duration is assigned to the component of the map unit.

Gravelly surface. —The surface texture has flaggy, very flaggy, extremely flaggy, very gravelly, extremely gravelly, or very channery modifier.

Stony surface.—The surface texture has bouldery, very bouldery, extremely bouldery, stony, very stony, extremely stony, cobbly, very cobbly, or extremely cobbly modifier.

Sandy layers.—The family particle size is sandy, sandy or sandy-skeletal, sandy over loamy, sandy over clayey, sandy-skeletal, sandy-skeletal over clayey, or sandy-skeletal over loamy; or the subgroup is Arenic or Psammentic; or the suborder is Psamments.

Depth to bedrock.—Bedrock is at a depth of less than 40 inches.

High potential for groundwater pollution.—Hard bedrock is within a depth of 40 inches, or permeability is more than 6 inches per hour in some layer within a depth of 80 inches and is not 0.2 inch per hour or less in some layer within that depth.

Moderate potential for groundwater pollution.—An apparent water table is within a depth of 4 feet, or permeability is moderately rapid in some layer between depths of 24 and 60 inches and is not 0.2 inch per hour or less in some layer within a depth of 80 inches.

Poor tilth. —The component of the map unit is severely eroded, has less than 1 percent organic matter in the surface layer, or 35 percent or more clay in the surface layer.

Fair tilth.—The component of the map unit has a silty clay loam or clay loam surface layer and less than 35 percent clay or moderately eroded and a silt loam or loam surface texture.

Excessive acidity.—The upper range of the soil pH is less than 4.5 within 40 inches.

Excessive alkalinity.—The lower range of the soil pH is more than 7.9 within 40 inches.

Restricted permeability.—Permeability is 0.06 inches per hour or less within 40 inches and a seasonal high water table is within 18 inches.

Seasonal high water table.—The seasonal high water table is within a depth of 18 inches.

Excessive slope.—The upper slope range of the component of the map unit is more than 25 percent.

Surface crusting.—The organic matter content of the surface layer is less than or equal to 3 percent and the texture is silt loam or silty clay loam.

Surface compaction. —The component of the map unit has a silt loam, silty clay loam, clay loam, clay, or silty clay surface layer.

Frost action.—The component of the map unit has a high potential frost action.

Part of surface removed.—The surface layer of the component of the map unit is moderately eroded.

Most of surface removed.—The surface layer of the component of the map unit is severely eroded.

Subsidence of the muck. —The organic matter content of the surface layer of the component of the map unit is greater than or equal to 20 percent.

Wind erosion.—The upper range of the slope is less than or equal to 25 percent and the wind erodibility group is 1, 2, or 3. (See table 29 for wind erodibility group values.)

Clodding. —The relative value of the total clay in the surface layer is greater than 32 percent.

Root restrictive layer.—Fragipan or dense material within 40 inches.

High clay content.—A layer within 40 inches of the surface has clay content that averages between 40 and 60 percent.

Very high clay content. —A layer within 40 inches of the surface has clay content that averages more than 60 percent.

Crops and Pasture

General management needed for crops and pasture is suggested in this section. The system of land capability classification used by the Natural Resources Conservation Service is explained below.

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.

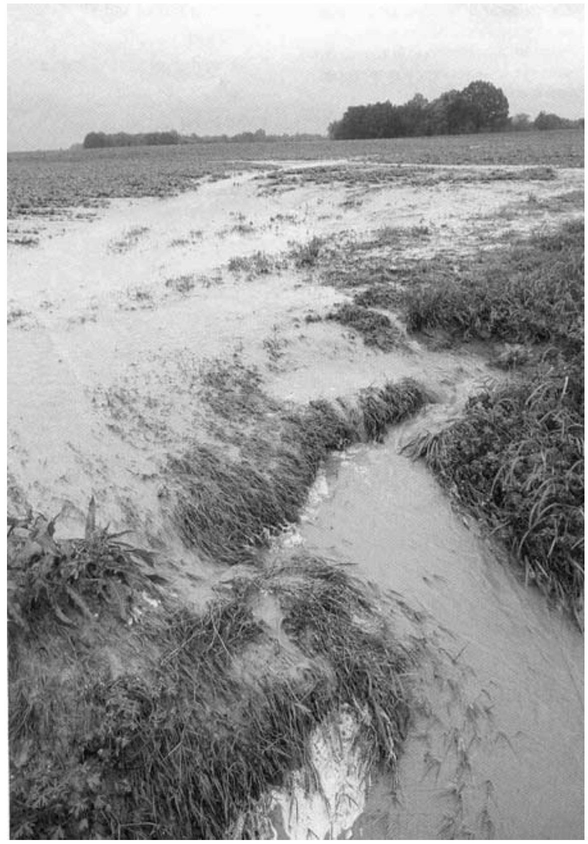

Figure 11. Erosion is a concern even on gently sloping topography such as this Celina soil.

Crop Yield Index

Table 9 (p. 245) is the crop yield index for Montgomery County. The yield index reflects the yield potential of a soil in relation to other soils in the county. It is based on the most productive soil, Bs—Brookston silty clay loam, receiving a rating of 100, and other soils are ranked against this standard.

The yields used to calculate the index values are based on using good management practices.

To calculate estimated yields, use the yield index number as a percentage, and multiply it by the crop yield in the table header. For example, to calculate estimated corn yield for Bp, multiply 0.92 by the corn yield in the table header, which is 125. 0.92 x 125 = 115 bushels of corn estimated for Bp.

To use this yield index in the future to calculate estimated yields, use current yield data. Additional information on calculating estimated yields can be obtained from the local office of the

Natural Resources Conservation Service or the Cooperative Extension Service.

Land Capability Classification

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

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

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

Class 1 soils have slight limitations that restrict their use.
Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.
Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.
Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.
Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, woodland, or wildlife habitat.
Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, woodland, or wildlife habitat.
Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, woodland, 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 aesthetic purposes.

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

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

The acreage of soils in each capability class or subclass is shown in table 10 (p. 249). The capability classification of map units in this survey area is given in the section "Detailed Soil Map Units" and in the yields table.

Pasture and Hayland Suitability Groups

The pasture and hayland suitability group symbol for each soil is listed in each map unit description under the "Component interpretative groups" heading and in table 34 (p. 497). Soils assigned the same suitability group symbol require the same general management and have about the same potential productivity. The pasture and hayland suitability groups are organized by soil characteristics and limitations. The groups are defined as follows:

Group A soils have few limitations affecting the management and growth of climatically adapted plants.
Group A-1 consists of deep and very deep, well and moderately well drained soils. The available water capacity ranges from moderate to very high. Slopes range from 0 to 18 percent. Plants on these soils respond well to additions of lime. Frequent applications may be needed to maintain an adequate pH level. A low pH level in the subsoil shortens the life of some deep-rooted legumes.
Group A-2 consists of deep and very deep, well and moderately well drained soils. Available water capacity ranges from moderate to very high. Plants on these soils respond well to additions of lime. Frequent applications may be needed to maintain an adequate pH level.

A low pH level in the subsoil shortens the life of some deep-rooted legumes. Slopes range from 18 to 25 percent. They may interfere with clipping, mowing, and spraying for weed control. The slopes increase the risk of erosion if the pasture is overgrazed or cultivated for reseeding. These soils are suited to no-till reseeding and interseeding.

Group A-3 consists of deep and very deep, well and moderately well drained soils. Available water capacity ranges from moderate to very high. Slopes range from 25 to 40 percent. These soils are not suited to pasture or hay, but some grass pasture is produced.

Group A-4 consists of deep and very deep, well and moderately well drained soils that have stones or boulders on the surface that are extensive enough to preclude the use of hay making equipment. Slopes range from 0 to 40 percent.

Group A-5 consists of well and moderately well drained soils that are subject to flooding. Grazing is limited during periods of stream overflow. The floodwater deposits sediments that lower the quality of the forage. The available water capacity ranges from moderate to very high. Slopes range from 0 to 18 percent.

Group A-6 consists of deep and very deep, well and moderately well drained soils that are subject to frost action, which can damage legumes. Mixing fibrous-rooted grasses with the legumes and applying good grazing management minimize the damage caused by frost action. The available water capacity ranges from moderate to very high. Slopes range from 0 to 18 percent.

Group B soils are limited because of droughtiness.

Group B-1 consists of deep and very deep, well and moderately well drained soils. The available water capacity is low or very low and limits forage growth and production. Slopes range from 0 to 25 percent.

Group B-2 consists of deep and very deep, well and moderately well drained soils. The available water capacity is low or very low and limits forage growth and production. Slopes range from 25 to 40 percent.

Group B-3 consists of somewhat poorly drained to well drained soils that are subject to flooding. Slopes range from 0 to 6 percent.

Group B-4 consists of deep and very deep, well and moderately well drained reclaimed mine soils. The available water capacity is low or very low. Slopes range from 0 to 25 percent. The substratum contains a high percentage of rock fragments. The rooting zone is 20 to 30 inches deep.

Group C soils are wet because of a seasonal high water.

Group C-1 consists of deep and very deep somewhat poorly drained, poorly drained, and very poorly drained soils. These soils normally respond well to subsurface drainage. Slopes range from 0 to 12 percent.

Group C-2 consists of deep and very deep somewhat poorly drained, poorly drained, and very poorly drained soils. The seasonal high water table limits the rooting depth of deep-rooted forage plants. Shallow-rooted species grow best on these soils. Subsurface drains are used to lower the seasonal high water table. The effectiveness of subsurface drainage is usually limited by permeability of the subsoil, high amounts of clay in the subsoil, or a fragipan. Because of the limited root zone, these soils are better suited to forage species that do not have a taproot than to other species. Slopes range from 0 to 12 percent.

Group C-3 consists of somewhat poorly drained, poorly drained, and very poorly drained soils that are subject to flooding. Grazing is limited during periods of stream overflow. The available water capacity ranges from moderate to very high. Slopes range from 0 to 6 percent. The seasonal high water table limits the rooting depth of forage plants. Shallow-rooted species grow best on these soils.

Group D soils have a high organic matter content.

Group D-1 consists of soils formed entirely or partially in organic material. Slope is 0 to 2 percent.

Group E consists of shallow soils in which the root zone is less than 20 inches deep.

Group E-1 consists of soils that are shallow or very shallow. The available water capacity is low or very low. It restricts forage production. These soils are well suited to native warm-season grasses. Slopes range from 0 to 25 percent.

Group E-2 consists of soils that have are shallow and very shallow or have a high bulk density and cobbles and stones in the upper part. The available water capacity is low or very low. Slopes range from 25 to 40 percent. Shallow-rooted species should be selected for planting.

Group E-3 soils have a high bulk density and cobbles and stones in the upper part. The available water capacity is low or very low. Slopes range from 0 to 25 percent.

Group F consists of soils that have a root zone that extends to a depth of 20 to 40 inches. These soils are better suited to forage species that do not have a taproot than to other species.
Group F-1 consists of moderately deep, well and moderately well drained soils. Slopes range from 0 to 25 percent.
Group F-2 consists of moderately deep, well and moderately well drained soils. Slopes range from 25 to 40 percent. This group generally is not suited to hay.Group F-3 consists of well and moderately well drained soils that are moderately deep to a fragipan. Slopes range from 0 to 25 percent.
Group F-4 consists of well and moderately well drained soils that are moderately deep to a fragipan. Slopes range from 25 to 40 percent.
Group F-5 consists of well and moderately well drained soils with high bulk density, a high clay content, slow permeability or a combination of these factors in the subsoil that restrict rooting depth. Slopes range from 0 to 25 percent.
Group F-6 consists of well and moderately well drained soils with high bulk density, a high clay content, slow permeability or a combination of these factors in the subsoil that restrict rooting depth. Slopes range from 25 to 40 percent.
Group F-7 consists of somewhat poorly drained, poorly drained, and very poorly drained soils with a high clay content and very slow permeability in the subsoil that restrict rooting depth. Slopes range from 0 to 12 percent.

Group G soils have chemical properties that are unfavorable for many climatically adapted plants.
Group G-1 consists of well and moderately well drained soils that are shallow or moderately deep to toxic spoil from surface mine operations. Available water capacity is low or very low in the root zone. Slopes range from 0 to 25 percent.
Group G-2 consists of well and moderately well drained soils that are shallow or moderately deep to toxic spoil from surface mine operations. Slopes range from 25 to 40 percent.

Group H soils are toxic or too steep for forage production.
Group H-1 consists of soils toxic materials from surface mining operation or on slopes greater than or equal to 40 percent. These soils generally are unsuited to pasture and hay.

Woodland Management and Productivity

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

Woodland Management

In table 11 (p. 250), table 12 (p. 258), and table 13 (p. 268), interpretive ratings are given for various aspects of woodland management. The ratings are both verbal and numerical.

Some rating class terms indicate the degree to which the soils are suited to a specified woodland 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 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 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified woodland 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 woodland 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 .

Ratings in the column *erosion hazard* 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 *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.

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 woodland 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.

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.

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

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

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

Ratings in the column *suitability for site preparation* 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 *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.

Woodland Productivity

In table 14 (p. 279), the *potential productivity* of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. 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.

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.

Windbreaks and Environmental Plantings

Farm and homestead windbreaks are rows of trees or shrubs established adjacent to farm buildings, feedlots, and homes. These windbreaks are usually planted perpendicular to the prevailing winter wind. Planting multiple rows of various species provides the best protection from winds and results in more varied wildlife habitat. Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Table 15 (p. 295) shows the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates in table 15 (p. 295) are based on measurements and observation of established plantings that have been given adequate care. They can be used as a guide in planning windbreaks and screens. Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from the local office of the Natural Resources Conservation Service, the Ohio Department of Natural Resources, Division of Forestry, or of the Cooperative Extension Service or from a commercial nursery.

Recreational Development

The soils of the survey area are rated in table 16 (p. 304) and table 17 (p. 316) 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 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

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

The information in table 16 (p. 304) and table 17 (p. 316) 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 or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

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

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

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

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

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

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 appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 18 (p. 325), the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

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

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

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

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

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

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

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

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

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

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

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

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

Figure 22. Hydric soils, such as this Brookston soil, are highly productive with drainage improvements.

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

Engineering

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

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design. Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations.

Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses. This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earth fill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils. The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations. Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Construction Materials

Table 19 (p. 332) and table 20 (p. 342) 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.

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 19 (p. 332), only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand or gravel, the soil is considered a likely source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

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

The soils are rated *good, fair,* or *poor* as potential sources of reclamation material, roadfill, and topsoil. The features that limit the soils as sources of these materials are specified in the tables. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of reclamation material, roadfill, or topsoil. The lower the number, the greater the limitation.

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

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

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

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

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 21 (p. 358) and table 22 (p. 369) show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

The ratings in the tables are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected. *Numerical ratings* in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet.

The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification.

The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

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

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

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

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

Sanitary Facilities

Table 23 (p. 383) and table 24 (p. 396) show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. Not limited indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. Somewhat limited indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. Very limited indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

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

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in down slope areas.

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

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

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

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

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

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

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

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

In an *area sanitary landfill*, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

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

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

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

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

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

Agricultural Waste Management

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

Table 25 (p. 407) shows the degree and kind of soil limitations affecting the treatment of agricultural waste, including municipal and food-processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food-processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. In the context of these tables, the effluent in lagoons and storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30 milligrams per liter. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter. When wastewater is applied, checks should be made to ensure that nitrogen, heavy metals, and salts are not added in excessive amounts.

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

Figure 23. Manure application on Brookston-Crosby-Celina soils.

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

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

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

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

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

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

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

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

Water Management

Table 26 (p. 427) and table 27 (p. 437) give 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; aquifer-fed excavated ponds; grassed waterways; terraces and diversions; and drainage. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

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

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

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

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

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

Aquifer–fed excavated ponds are pits or dugouts that extend to a groundwater 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.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or a cemented pan affect the construction of grassed waterways. A hazard of water erosion, low available water capacity, restricted rooting depth, toxic substances such as salts and sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind erosion or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Figure 24. This area of Ross silt loam along Twin Creek is susceptible to stream bank erosion.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, a cemented pan, or other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

Soil Properties

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

Soil properties are ascertained by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine particle-size distribution, plasticity, and compaction characteristics. These results are at the Ohio State University, School of Natural Resources, Columbus, Ohio; the Ohio Department of Natural Resources, Division of Soil and Water Conservation, Columbus, Ohio; and the USDA–Natural Resources Conservation Service, state office, Columbus, Ohio.

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 28 (p. 452) gives the engineering classifications and the range of index properties for the layers of each soil in the survey area.

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

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter (figure 25). "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 (ASTM, 2001) and the system adopted

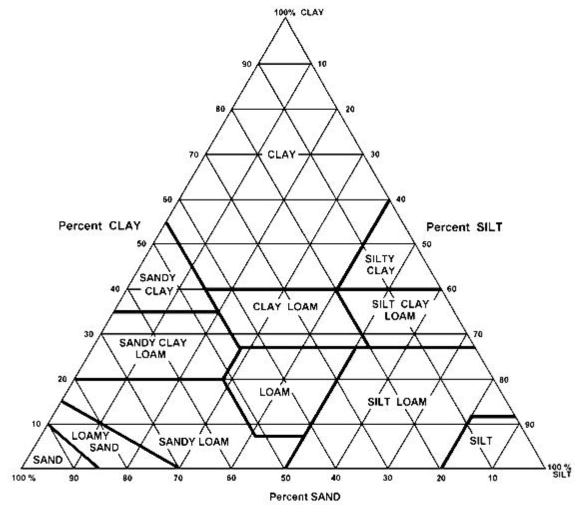

Figure 25. Textural Triangle

by the American Association of State Highway and Transportation Officials (AASHTO, 2000).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in table 28 (p. 452).

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

Table 29 (p. 464) shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

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

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In table 29 (p. 464), the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink–swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute 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 refers to the ability of a soil to transmit water or air. The estimates in the table indicate the rate of water movement, in inches per hour (in/hr), 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.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on the basis of measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air–dry to field capacity. The classes are low, a change of 3 percent; moderate, 3 to 6 percent; high, more than 6 percent; and very high, greater than 9 percent.

Erosion factors are shown in table 29 (p. 464) as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

1.—Coarse sands, sands, fine sands, and very fine sands.

2.—Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.

3.—Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.

4L.—Calcareous loams, silt loams, clay loams, and silty clay loams.

4.—Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.

5.—Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.

6.—Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.

7.—Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.

8.—Soils that are not subject to wind erosion because of rock fragments on the surface or because of surface wetness.

Chemical Properties

Table 30 (p. 474) shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

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

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.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 30 (p. 474), 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.

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 groundwater pollution.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium–N volatilization.

Water Features

Table 31 (p. 484) 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.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

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 K1 indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. Table 32 indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood–prone areas at specific flood frequency levels.

Soil Features

Table 32 (p. 490) gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness 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.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

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 (Soil Survey Staff, 1998 and 1999). 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 33 (p. 496) 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 class, mineralogy class, cation–exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, active, mesic Typic 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. Pedon descriptions published in this survey come from Montgomery County or adjacent counties. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (Soil Survey Division Staff, 1993). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (Soil Survey Staff, 1999) and in "Keys to Soil Taxonomy" (Soil Survey Staff, 1998). 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.

Algiers Series

The Algiers series consists of nearly level, somewhat poorly drained soils that occur on flood plains along small streams and on alluvial fans along the valley walls of larger streams. These soils consist of light colored recent alluvium over a buried soil, which is dark colored, very poorly drained alluvium.

A representative profile of an Algiers soil has a plow layer that is dark grayish brown silt loam about 8 inches thick. Between depths of 8 and 15 inches is a layer of brown silt loam. Both layers lack mottles or other evidence of wetness. Between depths of 15 and 42 inches are layers of very dark gray silt loam and silty clay loam that are mottled with gray and grayish brown. The mottles and the gray colors indicate seasonal wetness. Below a depth of 42 inches is dark gray silty clay loam that is faintly mottled with yellowish brown.

Representative profile of Algiers silt loam, SE¼SW¼ sec. 32, T. 5 N., R. 5 E.; Randolph Township:

Ap-0 to 8 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; slightly acid; abrupt smooth boundary.

C-8 to 15 inches; brown (10YR 4/3) silt loam; weak medium subangular blocky structure; friable; dark grayish brown (10YR 4/2) organic stains on ped surfaces; neutral; gradual smooth boundary.

IIA11b-15 to 20 inches; very dark gray (10YR 3/1) and dark grayish brown (10YR 4/2) silt loam; moderate medium subangular blocky structure; friable; neutral; abrupt smooth boundary.

IIA12bg-20 to 32 inches; very dark gray (10YR 3/1) silt loam; few fine faint gray (10YR 5/1) and grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; friable; slightly calcareous; clear smooth boundary.

IIB2bg-32 to 42 inches; very dark gray (10YR 3/1) silty clay loam; few fine faint gray (10YR 5/1) mottles; weak medium subangular blocky structure; firm; mildly alkaline, calcareous; clear smooth boundary.

IICbg-42 to 60 inches; dark gray (10YR 4/1) silty clay loam; few fine faint yellowish brown (10YR 5/4 and 5/6) mottles; massive; firm; mildly alkaline and calcareous.

The A and C horizons are 14 to 30 inches thick and are dark grayish brown, brown, very dark gray, and dark grayish brown silt loam. The Ap horizon is most commonly dark grayish brown (10YR 4/2). The C horizon is brown (10YR 4/3) or dark grayish brown (10YR 4/2).

The Ap and C horizons are slightly acid to neutral. Deeper layers are neutral to mildly alkaline and become calcareous with increasing depth. The buried soil horizons vary in thickness and texture, but their texture is mostly silty clay loam or silt loam.

Algiers soils are adjacent to Sloan, Westland, Ross, and Medway soils. They have a lighter colored surface layer than any of these soils. They are more poorly drained than Medway and Ross soils and are better drained than Sloan and Westland soils. They have thicker layers of recent deposition than Brookston silt loam, overwash, which is on uplands.

Brookston Series

The Brookston series consists of dark, very poorly drained soils that formed in calcareous loam glacial till. Brookston soils are nearly level to depressional and occupy areas on uplands. They are the dominant soils in the northwestern part of the county, and they are common in all townships of the county.

A representative profile has a very dark grayish brown silty clay loam plow layer 8 inches thick. Very dark gray silty clay loam is between depths of 8 and 12 inches. The subsoil extends to a depth of 36 inches. It is silty clay loam and is mostly dark gray and gray mottled with yellowish brown. Below a depth of about 36 inches is calcareous, mottled gray and yellowish brown loam glacial till.

Representative profile of Brookston silty clay loam, NE¼NE¼ sec. 11**,** T. 6 N., R. 4 E., 830 feet west of Pansing Road and 1,080 feet south of Phillipsburg Road; Clay Township:

Ap-0 to 8 inches; very dark grayish brown (10YR 3/2) silty clay loam; moderate fine subangular blocky structure; firm; neutral; abrupt smooth boundary.

A1-8 to 12 inches; very dark gray (10YR 3/1) silty clay loam; few fine faint dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/4) mottles; strong fine angular and subangular blocky structure; firm; neutral; clear smooth boundary.

B1tg-12 to 17 inches; dark gray (10YR 4/1) silty clay loam; common fine faint yellowish brown (10YR 5/6) mottles and few fine faint dark yellowish brown (10YR 4/4) mottles; strong fine and medium subangular blocky structure; firm; thin patchy very dark gray (10YR 3/1) clay films on ped faces; neutral; clear smooth boundary.

B21tg-17 to 22 inches; dark gray (10YR 4/1) silty clay loam; common fine faint yellowish brown (10YR 5/4 and 5/6) mottles and few fine faint dark yellowish brown (10YR 4/4) mottles; weak fine prismatic structure parting to moderate medium subangular blocky structure; firm; thin patchy very dark gray (10YR 3/1) clay films on ped surfaces; many black oxide concretions; neutral; clear smooth boundary.

B22tg-22 to 27 inches; dark gray (10YR 4/1) silty clay loam; common medium faint yellowish brown (10YR 5/4, 5/6, and 5/8) mottles and few medium faint dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; firm; thin patchy clay films on ped surfaces; many black oxide concretions; neutral; gradual smooth boundary.

B23g-27 to 32 inches; mottled dark gray (10YR 4/1), yellowish brown (10YR 5/4, 5/6, and 5/8), and olive (5Y 5/3) silty clay loam; massive parting along a few weak cleavage planes; firm; mildly alkaline, mildly calcareous; gradual smooth boundary.

B3g-32 to 36 inches; mottled gray (10YR 5/1), yellowish brown (10YR 5/4, 5/6, and 5/8), and yellowish red (5YR 4/6) silty clay loam; massive; firm; moderately alkaline; mildly calcareous; clear wavy boundary.

Cg-36 to 60 inches; mottled gray (10YR5/1) and yellowish brown (10YR 5/4, 5/6, and 5/8) loam till; massive; firm; common till pebbles; moderately alkaline, calcareous.

The A horizon is dominantly silty clay loam but is silt loam in some places. Depth to the mottled A1 horizon ranges from 6 to 12 inches. The A horizon ranges from 12 to 22 inches in thickness and is medium acid to neutral.

Depth to carbonates is 24 to 40 inches. Depth to calcareous glacial till ranges from 34 to 50 inches. The B2 horizon is slightly acid to mildly alkaline. The B2 horizon ranges from about 32 to 44 percent in clay content. The silt capping is up to 18 inches thick where Brookston soils are adjacent to Celina and Lewisburg soils, but it is 18 to 36 inches thick where Brookston soils are adjacent to Xenia and Fincastle soils. The Brookston soils in Montgomery County tend to have a little more clay in the subsoil than Brookston soils mapped elsewhere.

Brookston soils are adjacent to Fincastle and Xenia soils in the southeastern part of the county, to Pyrmont and Lewisburg soils near the town of Pyrmont, and to Crosby and Celina soils in the rest of the county. Brookston soils are nearly level and depressional where they are intermingled with these slightly higher adjacent soils and are more poorly drained and darker colored. Brookston soils are more poorly drained than the dark colored Dana soils. The Brookston soils formed in silt-capped glacial till and have relatively little gravel in the underlying layers, but the very poorly drained dark colored Westland soils formed in loamy glacial outwash and have a considerable amount of gravel in the deep layers. The subsoil of Brookston soils is silty clay loam, but the very poorly drained Montgomery soils, which formed in sediments on old lake bottoms, have more clay in the subsoil. Brookston soils are underlain by thick glacial till, whereas the very poorly drained Millsdale soils have limestone and clay shale bedrock at a depth of 20 to 40 inches.

Carlisle Series

The Carlisle series consists of deep, very poorly drained soils that formed in thick deposits of organic material. These soils are nearly level to depressional and are naturally swampy. Most areas are in the beds of old lakes that existed after the glacial age.

A representative profile of a Carlisle soil has a black muck surface layer that is very high in organic matter content. It is about 11 inches thick. Next are layers of black muck that are 15 to 30 percent dark reddish brown, fibrous, undecomposed organic material. Beneath the organic material, at a depth of about 82 inches, is dark gray clay.

Representative profile of Carlisle muck, SE¼NE¼ sec. 20, R. 7, T. 2, 1,780 foot west of Woodman Drive and 3,230 feet north of Patterson Road; city of Kettering:

Oap-0 to 5 inches; black (10YR 2/1) muck; strong very fine and fine granular structure; firm; many roots; neutral; clear smooth boundary.

Oal-5 to 11 inches; black (10YR 2/1) muck, black (5YR 2/1) when rubbed; strong medium subangular blocky structure that parts to strong fine subangular blocky structure; firm; many fine specks of dark reddish brown (2.5YR 3/4) undecomposed organic matter; many roots; many wormcasts; neutral; clear wavy boundary.

Oa2-11 to 21 inches; black (5YR 2/1) muck; massive except for random horizontal and vertical cleavages; firm and compact; 15 percent dark reddish brown (5YR 3/4), fibrous, undecomposed organic matter; common roots; neutral; gradual smooth boundary.

Oa3-21 to 82 inches; black (5YR 2/1) peaty muck; massive; loose; 30 percent dark reddish brown (5YR 3/4), undecomposed organic matter; few roots; common, black (10YR 2/1), slick, horizontal ped surfaces; neutral.

IICg-82 to 90 inches; dark gray (5YR 4/1) clay; massive; firm; calcareous.

The surface horizon is black (10YR 2/1) or very dark brown (10YR 2/2). The underlying organic material is black (5YR 2/1 to 10YR 2/1) and contains dark reddish brown (5YR 3/4) peaty material that increases in volume as depth increases. Depth to clayey mineral material is more than 50 inches.

Carlisle soils differ from all other very poorly drained soils in the county by having formed in organic material in contrast to mineral material.

Celina Series

The Celina series consists of moderately well drained soils formed in calcareous loam glacial till. In some places Celina soils have up to 18 inches of wind–deposited silty material (loess) capping the glacial till material. These soils are nearly level to gently sloping, and they occupy areas of till plains and moraines. They are common in all parts of the county except the southeastern part.

A representative profile has a dark brown and brown silt loam plow layer about 8 inches thick. Below the plow layer is a thin, yellowish brown silty clay loam layer. Beneath a depth of 10 inches, the subsoil is dark yellowish brown silty clay loam, silty clay, and loam. Yellowish brown mottles are present in the subsoil. Beneath the subsoil, between depths of 30 and 60 inches, is calcareous, olive brown and dark yellowish brown loam till. The content of pebbles and coarse fragments in the till varies, but it is generally less than 15 percent.

Representative profile of Celina silt loam, 2 to 6 percent slopes, SW¼NW¼ sec. 27, T. 6 N., R. 4 E., 1,655 feet south of Pleasant Plain Road and 615 feet east of State Route 311; Clay Township (Sample MT-4 in laboratory data):

Ap1-0 to 6 inches; dark brown (10YR 4/3) silt loam; dark grayish brown (10YR 4/2) when crushed; weak medium granular structure; very friable; neutral; clear smooth boundary.

Ap2-6 to 8 inches; brown (10YR 4/3) silt loam; weak thick platy structure parting to weak fine subangular blocky structure; very friable; neutral; abrupt smooth boundary.

IIB&A-8 to 10 inches; yellowish brown (10YR 5/4) silty clay loam; weak medium and coarse subangular blocky structure; friable; vertical faces of peds have thin very patchy brown (10YR 4/3) clay films and grayish brown (10YR 5/2) and light brownish gray (10YR 6/2) silt coatings; few till pebbles; slightly acid; clear smooth boundary.

IIB21t-10 to 14 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak medium and coarse subangular blocky structure parting to moderate fine subangular blocky structure; firm; both horizontal and vertical faces of peds have moderately thick patchy dark gray (10YR 4/1) and dark grayish brown (10YR 4/2) clay films and patchy gray (10YR 5/1) silt coatings; few medium faint black (10YR 2/1) oxide stains; medium acid; clear wavy boundary.

IIB22t-14 to 19 inches; dark yellowish brown (10YR 4/4) silty clay; few fine distinct yellowish brown (10YR 5/8) and grayish brown (10YR 5/2) mottles; weak medium prismatic structure parting to moderate medium subangular blocky structure; firm; moderately thick patchy dark gray (10YR 4/1) and very dark gray (10YR 3/1) clay films on both horizontal and vertical faces of the peds; few medium faint black (10YR 2/1) oxide stains and concretions; strongly acid; gradual smooth boundary.

IIB23t-19 to 24 inches; dark yellowish brown (10YR 4/4)

silty clay loam; common fine faint grayish brown (10YR 5/2) mottles and few medium distinct yellowish brown (10YR 5/8) mottles; weak medium prismatic structure parting to moderate medium subangular blocky structure; firm; very dark gray (10YR 3/1) clay films that are thick and patchy on vertical surfaces of peds and moderately thick and patchy on horizontal surfaces; few fine faint black (10YR 2/1) oxide concretions; few shale fragments; clear wavy boundary.

IIB3-24 to 30 inches; dark yellowish brown (10YR 4/4) loam that has few fine faint grayish brown (10YR 5/2) mottles and common medium distinct yellowish brown (10YR 5/8) mottles; massive parting to weak very coarse prismatic structure along clay flows; firm; compact; thick patchy very dark gray (10YR 3/1) clay films on the vertical surfaces of peds; neutral; calcareous ped interiors; 13 percent pebbles, mostly limestone; clear wavy boundary.

IIC1-30 to 41 inches; olive brown (2.5Y 4/4) loam; massive; firm; mildly alkaline; strongly calcareous; clear wavy boundary.

IIC2-41 to 60 inches; dark yellowish brown (10YR 4/4) and olive brown (2.5Y 4/4) loam; massive; firm and compact; moderately alkaline, strongly calcareous.

The loess ranges from 0 to 18 inches in thickness. Depth to carbonates ranges from 18 to 36 inches. The A horizon is dark grayish brown (10YR 4/2), brown or dark brown (10YR 4/3), or dark gray (10YR 4/1). The B horizon is brown (10YR 4/3), dark yellowish brown (10YR 4/4), or yellowish brown (10YR 5/4). The B2 horizon is clay loam, silty clay loam, and silty clay. Depth to the mottled horizon ranges from 14 to 28 inches. The minimum reaction of the solum is in the B1 horizon, where present, or in the upper part of the B2 horizon. Reaction ranges from strongly acid to slightly acid.

The Celina soils are adjacent to Miamian, Crosby, and Brookston soils. Drainage is not so good in the Celina soils as it is in the Miamian soils but it is better than the drainage of the Crosby or Brookston soils. Celina soils have a silt capping 0 to 18 inches thick, but the Xenia soils have a silt capping more than 18 inches thick. The Celina soils are 18 to 36 inches deep to carbonates, but the Lewisburg soils are less than 18 inches. The Celina, soils are similar to Corwin soils, but they have a lighter colored surface layer.

Corwin Series

The Corwin series consists of dark colored, moderately well drained soils that formed in calcareous loam glacial till. In places these soils have a silt cap of loess as much as 18 inches thick. They are nearly level to gently sloping and occupy upland areas. These soils occur in all parts of the county except the southeastern part.

A representative profile has a very dark grayish brown silt loam plow layer about 6 inches thick. The next layer is very dark brown silt loam 3 inches thick. Several layers make up the subsoil. The topmost layer of the subsoil is dark brown silty clay loam. Deeper layers are dark yellowish brown silty clay loam and clay loam and brown loam. The subsoil is underlain by calcareous loam glacial till at a depth of about 43 inches.

Representative profile of a Corwin silt loam, SW¼NW¼, sec. 27, T. 6 N., R. 4 E., Clay Township;
(Sample MT-6 in laboratory data):

Ap-0 to 6 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine granular structure; very friable; neutral; clear smooth boundary.

A1-6 to 9 inches; very dark brown (10YR 2/2) silt loam; weak fine granular structure; very friable; neutral; clear smooth boundary.

B21t-9 to 13 inches; dark brown (10YR 3/3) silty clay loam; moderate fine subangular blocky structure; friable; thin continuous very dark brown (10YR 2/2) clay films on ped surfaces; neutral; clear smooth boundary.

IIB22t-13 to 17 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate coarse subangular blocky structure parting to moderate fine and medium subangular blocky structure; firm; medium continuous very dark brown (10YR 2/2) and very dark grayish brown (10YR 3/2) clay films on the vertical faces of the peds and medium patchy coatings of very dark brown and very dark grayish brown (10YR 2/2, 3/2) on the horizontal faces; neutral; clear smooth boundary.

IIB23t-17 to 24 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak medium prismatic structure parting to moderate medium and coarse subangular blocky structure; firm; very dark brown (10YR 2/2) and very dark grayish brown (10YR 3/2) patchy clay films on the vertical faces of the peds and thin patchy clay films on the horizontal faces; neutral; gradual smooth boundary.

IIB24t-24 to 30 inches; dark yellowish brown (10YR 4/4) silty clay; few medium faint gray (10YR 5/1) mottles and many medium faint yellowish brown (10YR 5/6) mottles; very weak coarse prismatic structure parting to weak coarse subangular blocky structure; firm; medium very dark grayish brown (10YR 3/2) clay films that are continuous on the vertical faces of the peds and patchy on the horizontal faces; few shale fragments; mildly alkaline; gradual smooth boundary.

IIB25t-30 to 36 inches; yellowish brown (10YR 5/6) and dark yellowish brown (10YR 4/4) clay loam; few medium faint gray (10YR 5/1) mottles and many medium faint yellowish brown (10YR 5/8) mottles; very weak coarse prismatic structure; firm; thin patchy very dark gray (10YR 3/1) clay films on vertical and horizontal faces of peds; mildly alkaline; abrupt irregular boundary.

IIB3-36 to 43 inches; brown (10YR 4/3) loam; few medium faint gray (10YR 5/1) mottles and many medium faint yellowish brown (10YR 5/8) mottles; very weak coarse prismatic structure; firm; very dark grayish brown (10YR 3/2) clay coatings on vertical ped faces; many till pebbles and highly weathered limestone remnants; calcareous ped interiors; clear wavy boundary.

IIC-43 to 60 inches; brown (10YR 4/3) loam till; massive; firm; gray (10YR 5/1) streaks; moderately alkaline, strongly calcareous.

The depth to calcareous material ranges from about 25 to 40 inches. The A horizon is very dark brown (10YR 2/2), black (10YR 2/1), and very dark grayish brown (10YR 3/2). The matrix of the B2 horizon is brown (10YR 4/3), dark brown (10YR 3/3), dark yellowish brown (10YR 4/4), or yellowish brown (10YR 5/6). Films of very dark grayish brown (10YR 3/1) are common on ped surfaces in the B2 horizon. The B2 horizon is clay loam or silty clay loam. The A horizon ranges from strongly acid to neutral. Horizons deeper in the profile are progressively less acid.

Corwin soils are adjacent to Miamian, Celina, and Brookston soils. They have a dark colored surface layer, but Miamian and Celina soils have a light colored surface layer. Corwin soils are moderately well drained, but Brookston soils are very poorly drained. The silt capping of the Corwin soils is 18 inches thick or less, but it is 18 to 40 inches in the Dana soils. Corwin soils have no bedrock at a depth of less than 40 inches, whereas the dark colored Plattville soils have limestone bedrock at a depth of 20 to 40 inches.

Crosby Series

The Crosby series consists of somewhat poorly drained soils that formed in calcareous loam glacial till. In places the till is capped with up to 18 inches of silty loess. Crosby soils are on uplands and are nearly level to gently sloping. They are common throughout the county except in the southeastern part.

A representative profile of a Crosby soil has a dark grayish brown silt loam plow layer about 8 inches thick. The subsoil is dark grayish brown or brown silty clay loam, clay loam, and loam mottled with yellowish brown. Grayish coatings are on the structural faces. Below this, at a depth of about 31 inches, is calcareous loam glacial till. This till is firm and compact, and it restricts movement of water and penetration of roots.

Representative profile of Crosby silt loam, 0 to 2 percent slopes, NW¼SW¼ sec. 5, T. 5 N., R. 4 E.; Perry Township:

Ap-0 to 8 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; slightly acid; abrupt smooth boundary.

B21tg-8 to 14 inches; dark grayish brown (10YR 4/2) silty clay loam that has common medium distinct gray (10YR 5/1) mottles and common fine distinct yellowish brown (10YR 5/6) mottles; moderate fine subangular blocky structure; firm; thin patchy clay films on ped faces; few oxide concretions; medium acid; clear smooth boundary.

IIB22tg-14 to 20 inches; dark grayish brown (10YR 4/2) clay loam; common medium faint brown (10YR 5/3) mottles and few fine distinct yellowish brown (10YR 5/6) mottles; moderate fine subangular blocky structure; firm; many fine oxide concretions; thin continuous dark grayish brown (10YR 4/2) clay films on vertical faces of peds and thin patchy dark grayish brown (10YR 4/2) clay films on horizontal faces of peds; slightly acid; gradual smooth boundary.

IIB23tg-20 to 26 inches; brown (10YR 5/3) clay loam; common fine faint yellowish brown (10YR 5/6) mottles and common medium faint yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; firm; thick patchy gray (10YR 5/1) clay films on horizontal faces of peds; few oxide concretions; neutral; clear smooth boundary.

IIB3-26 to 31 inches; brown (10YR 5/3) loam; many coarse faint yellowish brown (10YR 5/4) mottles and few fine faint yellowish brown (10YR 5/6) mottles; weak coarse subangular blocky structure; firm; thin patchy gray (10YR 5/1) clay films on vertical faces of peds; few weathered limestone remnants; very few dark brown or black oxide concretions; mildly alkaline; slightly calcareous; clear smooth boundary.

IIC-31 to 60 inches; brown (10YR 5/3) loam; common medium faint yellowish brown (10YR 5/4 and 5/6) mottles; massive; firm; thin light brownish gray (10YR 6/2) streaks; moderately alkaline (strongly calcareous).

The A horizon is dark grayish brown (10YR 4/2), grayish brown (10YR 5/2), or brown (10YR 4/3). In the B horizon, the matrix colors are dark gray (10YR 4/1), dark grayish brown (10YR 4/2), grayish brown (10YR 5/2), or brown (10YR 4/3 and 10YR 5/3). A grayish matrix is not dominant in the B horizon in all places. Mottles in the B horizon have a hue of 10YR, values of 4 and 5, and chromas of 1 to 6. Clay films in the B horizon are dark grayish brown (10YR 4/2) or gray (10YR 5/1).

The B2 horizon dominantly is clay loam or silty clay loam, but some part of the B horizon is generally clay. Depth from the surface to mottled horizons ranges from 6 to 9 inches. Depth to calcareous material is at a minimum where Crosby soils are adjacent to Lewisburg and Pyrmont soils. Minimum reaction of the solum is in the B1 horizon where present, or in the upper part of the B2 horizon, and is strongly acid to slightly acid. The solum is less acid as depth increases.

Crosby soils are adjacent to Miamian, Celina, and Brookston soils. Crosby soils are less well drained than Miamian and Celina soils and are lighter colored and better drained than the very poorly drained Brookston soils. The silt capping is less than 18 inches thick on the Crosby soils, but it is more than 18 inches thick on the Fincastle soils. Crosby soils are deeper to calcareous till than Pyrmont soils. Bedrock is not within 40 inches of the surface of the Crosby soils, but the somewhat poorly drained Randolph soils have limestone bedrock within 40 inches of the surface.

Dana Series

The Dana series consists of dark colored, moderately well drained soils that formed in 18 to 40 inches of loess and underlying calcareous loam glacial till. These soils are gently sloping and are on uplands in the southeastern part of the county.

In a representative profile, the surface layer is black silt loam and silty clay loam 12 inches thick. The upper part of the subsoil is dark yellowish brown silty clay loam. The lower part is dark yellowish brown silty clay loam and clay loam. The underlying material is at a depth of about 36 inches and consists of calcareous loam glacial till.

Representative profile of Dana silt loam, 2 to 6 percent slopes, NW¼SE¼ sec. 11, R. 5, T. 2; Miami Township:

Ap-0 to 7 inches; black (10YR 2/1) silt loam; moderate medium granular structure; friable; slightly acid; abrupt smooth boundary.

A1-7 to 12 inches; black (10YR 2/1) silty clay loam; strong fine and medium subangular blocky structure; firm; slightly acid; clear smooth boundary.

B21t-12 to 18 inches; dark yellowish brown (10YR 4/4) silty clay loam; strong medium and coarse subangular blocky structure; firm; medium continuous very dark gray (10YR 3/1) clay films on ped faces; neutral; clear smooth boundary.

B22t-18 to 28 inches; dark yellowish brown (10YR 4/4) silty clay loam; few fine faint yellowish brown (10YR 5/8) mottles; moderate medium and coarse subangular blocky structure; firm; medium continuous very dark gray (10YR 3/1) clay films on ped surfaces; neutral; clear smooth boundary.

IIB3-28 to 36 inches; dark yellowish brown (10YR 4/4) clay loam; few fine faint yellowish brown (10YR 5/8) mottles; very weak coarse subangular blocky structure; friable; neutral; clear wavy boundary.

IIC-36 to 60 inches, grayish brown (10YR 5/2) and yellowish brown (10YR 5/4) loam till; massive; firm; moderately alkaline (calcareous).

The wind-deposited silt ranges from 18 to 40 inches in thickness. Depth to calcareous material ranges from about 34 inches to 56 inches. The dark A horizon is black (10YR 2/1), very dark brown (10YR 2/2), very dark gray (10YR 3/1), or very dark grayish brown (10YR 3/2). The B2t horizon is brown (10YR 4/3) or dark yellowish brown (10YR 4/4). Ped coatings in the B2t horizon are very dark gray (10YR 3/1) and very dark grayish brown (10YR 3/2). The B2t horizon is silty clay loam or clay loam. Depth to mottling ranges from 14 to 24 inches. The A horizon is medium acid to neutral, and the reaction increases as depth in the solum increases.

Dana soils are adjacent to Xenia, Russell, and Brookston soils. They have a darker colored surface layer than Xenia and Russell soils. Dana soils are moderately well drained, whereas Brookston soils are very poorly drained. The mantle of silt in Dana soils is 18 to 40 inches thick, but that of Corwin soils is less than 18 inches thick.

Fairmount Series

The Fairmount series consists of well drained, dark colored soils that formed in residuum weathered from thin-bedded limestone and clay shale bedrock. These soils are moderately steep and very steep.

In a representative profile, the surface layer is very dark grayish brown silty clay loam about 7 inches thick. The subsoil is olive brown and olive silty clay. It overlies interbedded limestone and clay shale bedrock at a depth of 19 inches.

Representative profile of a Fairmount silty clay loam, NE¼NE¼SW¼ sec. 31, T. 4 N., R. 4 E.; Jackson Township:

A1-0 to 7 inches; very dark grayish brown (10YR 3/2) silty clay loam; moderate fine subangular blocky structure; friable; neutral; abrupt smooth boundary.

B21-7 to 12 inches; olive brown (2.5Y 4/4) silty clay; moderate coarse prismatic structure parting to strong medium subangular blocky structure; firm; dark grayish brown (2.5Y 4/2) stains on ped surfaces; mildly alkaline; clear smooth boundary.

B22-12 to 19 inches; olive (5Y 5/3) silty clay; moderate coarse prismatic structure breaking to weak medium subangular blocky structure; firm; thin discontinuous grayish brown (2.5Y 5/2) coatings on ped surfaces; thin line of stone fragments along upper boundary; moderately alkaline (calcareous); abrupt smooth boundary.

C-19 inches; interbedded limestone and calcareous clay shale bedrock.

The A horizon is black (10YR 2/1), very dark brown (10YR 2/2), or very dark grayish brown (10YR 3/2 to 2.5Y 3/2). Except in eroded areas, it ranges from 6 to 8 inches in thickness. The B horizon is olive (5Y 5/3, 5/6, 4/3, or 4/4) olive gray (5Y 4/2), light olive brown (2.5Y 5/4), or olive brown (2.5Y 4/4). Stains slightly darker than the matrix are fairly common on the ped surfaces. Where a B1 horizon occurs, it is silty clay loam or silty clay. The B2 horizon is silty clay or clay. Depth to the underlying C horizon, which is limestone or calcareous clay shale, ranges from about 12 inches to 20 inches. Limestone fragments occur throughout the profile in amounts estimated at 1 to 5 percent, by volume.

Fairmount soils are adjacent to Ritchey and Milton soils. They occupy positions similar to those of Lorenzo-Rodman complexes and of undifferentiated Rodman and Fox soils and Hennepin and Miamian soils. Fairmount soils formed entirely in residual materials and have a dark colored surface layer, whereas Ritchey and Milton soils formed in glacial till over limestone and clay shale bedrock and have a light colored surface layer. Unlike Fairmount soils, Lorenzo-Rodman complexes and the undifferentiated Rodman and Fox soils and Hennepin and Miamian soils formed in glacial till and outwash materials. The Fairmount soils are more shallow to limestone and shale than the dark colored Plattville soils.

Fincastle Series

The Fincastle series consists of somewhat poorly drained soils that formed partly in loess and partly in weathered loam glacial till. Fincastle soils are nearly level to gently sloping, and they occupy upland areas in the southeastern part of the county.

A representative profile has a dark grayish brown silt loam plow layer about 8 inches thick. Beneath the plow layer is grayish brown silt loam that is 5 inches thick and is distinctly mottled with brown. At depths between 13 and 19 inches is mottled pale brown silt loam. The subsoil is between depths of 19 and 38 inches. It consists of brown and dark yellowish brown silty clay loam and clay loam mottled with grayish brown and yellowish brown. Underlying the subsoil is calcareous, yellowish brown loam glacial till.

Representative profile of Fincastle silt loam, 0 to 4 percent slopes, NE¼NE¼ sec. 34, R. 5, T. 3; Washington Township:

Ap-0 to 8 inches; dark grayish brown (10YR 4/2) silt loam; weak very fine granular structure; friable; medium acid; abrupt smooth boundary.

A2-8 to 13 inches; grayish brown (10YR 5/2) silt loam; few fine distinct brown (10YR 4/3) mottles; weak medium granular structure; friable; medium acid; abrupt smooth boundary.

A&B-13 to 19 inches; pale brown (10YR 6/3) silt loam; few medium faint yellowish brown (10YR 5/8) mottles and common fine faint yellowish brown (10YR 5/4, 5/6) mottles; weak medium subangular blocky structure; friable; medium acid; clear smooth boundary.

B21t-19 to 25 inches; brown (10YR 4/3) silty clay loam; common medium faint grayish brown (10YR 5/2) mottles and common fine faint yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; firm; thin continuous dark grayish brown (10YR 4/2) clay films on ped surfaces; dark oxide stains; medium acid; clear smooth boundary.

IIB22t-25 to 31 inches; brown (10YR 4/3) clay loam; common medium faint grayish brown (10YR 5/2)

mottles and few fine faint yellowish brown (10YR 5/8) mottles; moderate medium prismatic structure breaking to moderate medium subangular blocky structure; very firm; continuous medium dark grayish brown (10YR 4/2) clay films on horizontal and vertical faces of peds; oxide concretions; neutral; clear wavy boundary.

IIB3t-31 to 38 inches; dark yellowish brown (10YR 4/4) silty clay loam; few fine faint yellowish brown (10YR 5/6) mottles; weak fine and medium subangular blocky structure; firm; continuous; medium dark gray (10YR 4/1) clay films on vertical ped faces; moderately alkaline; clear wavy boundary.

IIC-38 to 60 inches; yellowish brown (10YR 5/4) loam till; massive; friable; moderately alkaline (calcareous).

The loess ranges from 18 to about 40 inches in thickness. Depth to the calcareous C horizon ranges from 34 inches to about 42 inches. The Ap horizon ranges from dark grayish brown (10YR 4/2) to brown (10YR 4/3). The matrix of the B2t horizon ranges from dark yellowish brown (10YR 4/4) to brown (10YR 4/3) and yellowish brown (10YR 5/4). Mottles and ped coatings that have a chroma of 2 or 1 are present in the Bt horizon. The B2t horizon is silty clay loam and clay loam. The upper part of the B2t horizon is strongly acid to slightly acid.

Fincastle soils are somewhat poorly drained members of a drainage sequence that includes the well drained Russell soils, the moderately well drained Xenia soils, and the very poorly drained Brookston soils. Fincastle soils are commonly adjacent to the Xenia and Brookston soils. They are similar to the Crosby soils but have a thicker loess capping.

Fox Series

The Fox series consists of well drained soils that formed in loamy glacial outwash material. These soils have a substratum of sand and gravel at a depth of 24 to 42 inches. Fox soils are nearly level to very steep, and they occupy areas on terraces along the major streams in the county.

A representative profile has a dark yellowish brown silt loam plow layer about 8 inches thick. The subsoil consists of layers of mainly brown loam, dark brown clay loam, and reddish brown and brown sandy clay loam. It extends to a depth of 29 inches, where calcareous sand and gravel occur.

Representative profile of Fox silt loam, 0 to 2 percent slopes, NE¼SE¼NE¼ sec. 19, T. 3 N., R. 4 E.; German Township; (Sample MT-17 in laboratory data):

Ap-0 to 8 inches; dark yellowish brown (10YR 3/4) silt loam; weak very fine and fine granular structure; friable; medium acid; abrupt smooth boundary.

B1-8 to 11 inches; brown (7.5YR 4/4) loam; weak medium subangular blocky structure parting to moderate fine subangular blocky structure; friable; strongly acid; clear smooth boundary.

B21t-11 to 14 inches; dark brown (7.5YR 4/4) clay loam; moderate fine subangular blocky structure; firm; medium patchy dark reddish brown (5YR 3/4) clay films on ped faces; some pebbles; very strongly acid; clear smooth boundary.

B22t-14 to 20 inches; reddish brown (5YR 4/4) sandy clay loam; weak medium subangular blocky structure; firm; medium patchy dark reddish brown (5YR 3/4) clay films on horizontal ped faces and thick patchy dark reddish brown (5YR 3/4) clay films on vertical ped faces; some pebbles; very strongly acid; clear smooth boundary.

B23t-20 to 26 inches; brown (7.5YR 4/4) sandy clay loam; very weak medium subangular blocky structure; firm; fine dark reddish brown (5YR 3/4) clay films; strongly acid; clear wavy boundary.

IIB3t-26 to 29 inches; brown (7.5YR 4/4) gravelly sandy loam; massive; friable; medium dark brown (7 .5YR 3/2) clay that bridges sand grains; neutral; clear wavy boundary.

IIC-29 to 60 inches; brown (10YR 5/3) mixed sand and gravel; single grain; loose; 75 percent coarse material; 10 to 15 percent cobblestones; calcareous.

The A horizon is silt loam, loam, and sandy loam. The B2t horizon is sandy clay loam, sandy clay, gravelly clay loam, clay loam, or clay. The A horizon is dark yellowish brown (10YR 3/4 and 4/4) and brown (10YR 4/3). The B horizon is dark brown (7.5YR 3/4 and 4/4), brown (7.5YR 4/4), reddish brown (5YR 4/4), or dark reddish brown (5YR 3/3 and 3/4). Depth to calcareous sand and gravel ranges from 24 to 42 inches. Reaction of the B1 horizon or the upper part of the B2 horizon ranges from very strongly acid to slightly acid.

Included in all Fox mapping units in this county are areas in which the uppermost part of the B2 horizon contains slightly more clay than is typical of Fox soils elsewhere. These inclusions, though outside the range of the Fox series, are similar to Fox soils in use and management.

Fox soils are adjacent to Ockley, Thackery, Warsaw, Wea, and Lorenzo soils. They are not so deep to sand and gravel as Ockley, Thackery, and Wea soils, but they are deeper to sand and gravel than Lorenzo soils. The Fox soils have a lighter colored surface layer than Warsaw, Wea, and Lorenzo soils. Fox soils differ from Kendallville soils in that Kendallville soils are underlain by calcareous glacial till at a depth of less than 42 inches.

Hennepin Series

The Hennepin series consists of well drained soils that are shallow to calcareous loam glacial till. These soils are steep to very steep, and they are in all townships of the county. In Montgomery County the Hennepin soils are mapped only in undifferentiated mapping units with Miamian soils.

A representative profile has a thin, dark grayish brown silt loam surface layer about 4 inches thick. This is underlain by a thin, brown clay loam and loam subsoil. Brown, calcareous loam till is at a depth of about 12 inches.

Representative profile of a Hennepin silt loam, SW¼SE¼ sec. 8, T. 3 N., R. 4 E.; German Township:

A1-0 to 4 inches; dark grayish brown (10YR 4/2) silt loam, dark grayish brown (10YR 4/2) when rubbed; moderate coarse granular structure parting to moderate fine and medium granular structure; friable; neutral; clear smooth boundary.

B2-4 to 8 inches; brown (10YR 4/3) clay loam; weak medium subangular blocky structure; firm; thin very patchy dark yellowish brown (10YR 3/4) clay films on horizontal and vertical ped faces; mildly alkaline; slightly calcareous; clear wavy boundary.

B3-8 to 12 inches; brown (10YR 4/3) loam; weak fine

subangular blocky structure; firm; mildly alkaline (moderately calcareous); clear smooth boundary.

C-12 to 60 inches; brown (10YR 5/3) loam till; massive; friable; moderately alkaline; strongly calcareous.

The A horizon is very dark grayish brown (10YR 3/2), dark grayish brown (10YR 4/2), brown (10YR 4/3 and 10YR 5/3), and dark yellowish brown (10YR 4/4). Very dark grayish brown (10YR 3/2) is most common in wooded areas. The B horizon is brown (7.5YR 4/4), yellowish brown (10YR 5/4), or brown (10YR 4/3). It ranges from clay loam to loam. Some clay films occur in the B horizon in most places. The depth to calcareous soil material is 8 to 15 inches. Reaction is mostly neutral to moderately alkaline throughout the profile.

Hennepin soils are much shallower to calcareous till than Miamian soils and have a thinner subsoil. Structure is weaker and content of clay is less in the B horizon of Hennepin soils than in corresponding layers in Lewisburg soils. Hennepin soils are brighter colored throughout the profile and are better drained than Lewisburg soils.

Kendallville Series

The Kendallville series consists of well drained soils that formed partly in loamy glacial outwash and partly in the underlying, calcareous loam glacial till. These soils are nearly level to sloping and occur in upland areas of till plains and moraines.

A representative profile has a dark brown silt loam plow layer about 9 inches thick. The subsoil extends to a depth of 36 inches and is brown silty clay loam, reddish brown clay loam, and reddish brown sandy clay loam. Underlying the subsoil is yellowish brown, calcareous loam till.

Representative profile of a Kendallville silt loam, SW¼NE¼ sec. 28, T. 3 N., R. 5 E., 1,850 feet west of Union Road and 1,300 feet north of the Warren County line in Jefferson Township:

Ap-0 to 9 inches; dark brown (10YR 4/3) silt loam; weak fine granular structure; friable; medium acid; abrupt smooth boundary.

B1t-9 to 15 inches; brown (7.5YR 4/4) silty clay loam; moderate fine subangular blocky structure; firm; thin continuous dark brown (7.5YR 3/4) clay films on ped surfaces; slightly acid; clear smooth boundary.

IIB2t-15 to 26 inches; reddish brown (5YR 4/4) clay loam; moderate fine and medium subangular blocky structure; firm; medium continuous dark reddish brown (5YR 3/4) clay films on ped surfaces; 30 to 35 percent sand and common rounded pebbles; slightly acid; clear smooth boundary.

IIB3t-26 to 36 inches; reddish brown (5YR 4/4) sandy clay loam; weak coarse subangular blocky structure; firm; thick dark brown (7.5YR 3/4) clay films on vertical faces of peds; small lenses of sand present; neutral; clear smooth boundary.

IIIC-36 to 60 inches; yellowish brown (10YR 5/4) loam; massive; firm; mildly alkaline to moderately alkaline (calcareous).

The A horizon is brown (10YR 4/3), dark grayish brown (10YR 4/2), and dark brown (10YR 4/3). The B horizon ranges from 5YR to 10YR in hue, is 3 or 4 in value, and is 4 in chroma. It is clay loam, sandy clay loam, or gravelly clay loam. The depth to carbonates is 24 to 38 inches. The IIB3 horizon formed in weathered outwash. The greatest acidity of the solum is in the B1 horizon or upper part of the B2 horizon and ranges from strongly acid to slightly acid. In about 20 percent of the acreage of Kendallville soils, thin layers of calcareous gravel occur between the part of these soils formed in outwash and the part formed in till.

Kendallville soils are adjacent to Miamian, Hennepin, and Fox soils. The uppermost 20 to 40 inches of Kendallville soils formed in loamy outwash material, but the corresponding part of Miamian soils did not. Kendallville soils are much thicker and more developed than Hennepin soils, which are shallow to till. They lack the substratum of calcareous sand and gravel that is characteristic of Fox soils.

Landes Series

The Landes series consists of deep, well drained soils that formed in sandy sediments on flood plains. They are nearly level and occupy flood plains scattered along most of the streams in the county.

In a representative profile, the surface layer is very dark grayish brown sandy loam, very dark brown fine sandy loam, and black silt loam that combined are 19 inches thick. This layer is neutral or mildly alkaline. The layer between depths of 19 and 42 inches is fine sandy loam, loamy sand, and sandy loam, and it contains fine gravel. It is dark yellowish brown or dark brown. The material below a depth of 42 inches is mostly sand, but some gravel is present.

Representative profile of Landes sandy loam, NW¼SW¼ sec. 29, T. 2 N., R. 5 E.; German Township:

Ap-0 to 6 inches; very dark grayish brown (10YR 3/2) sandy loam, mostly from recent depositions; massive; friable; mildly alkaline; calcareous; abrupt smooth boundary.

A11-6 to 13 inches; very dark brown (10YR 2/2) fine sandy loam that appears to be an old surface layer; weak fine granular structure; friable; mildly alkaline; slightly calcareous; clear wavy boundary.

A12-13 to 19 inches; black (10YR 2/1) silt loam; weak very fine subangular blocky structure; friable; mildly alkaline; slightly calcareous; clear wavy boundary.

C1-19 to 26 inches; dark yellowish brown (10YR 3/4) fine sandy loam; massive; friable; common very dark brown (10YR 2/2) worm casts; thin line of fine gravel along upper boundary; mildly alkaline; slightly calcareous; clear wavy boundary.

C2-26 to 32 inches; dark brown (10YR 3/3) sandy loam; massive; friable; mildly alkaline; slightly calcareous; clear wavy boundary.

C3-32 to 42 inches; dark yellowish brown (10YR 3/4) loamy sand; few fine faint yellowish brown (10YR 5/6) mottles; massive; friable; mildly alkaline and calcareous; abrupt wavy boundary.

IIC4-42 to 60 inches; sand; single grain; loose; 10 to 20 percent gravel; mildly alkaline; strongly calcareous.

The Ap horizon is generally sandy loam. The A12 horizon is sandy loam, fine sandy loam, or silt loam. The texture between depths of 10 and 40 inches is dominantly sandy loam and fine sandy loam, and there are a few strata of silt loam and loam. The weighted average clay content between these depths is 12 to 15 percent.

The A horizon is very dark grayish brown (10YR 3/2), black (10YR 2/1), very dark brown (10YR 2/2), or dark brown (10YR 3/3). The C horizon is dark yellowish brown (10YR 4/4 and 3/4), brown (10YR 4/3), and dark grayish brown (10YR 4/2). Where Landes soils are adjacent to Medway soils, faint, grayish mottles occur below a depth of 30 inches.

Landes soils are neutral to mildly alkaline in the uppermost 18 inches. They are calcareous to the surface in some places, but they are generally calcareous at a depth of more than 18 inches. Depth to calcareous sand or sand and gravel ranges from about 40 to 60 inches.

Landes soils generally are adjacent to well drained Ross soils. They are sandier than the Ross and Medway soils. Landes soils are better drained than Medway soils, which are mottled at a depth of 18 to 24 inches. They are less gravelly than the Lanier soils.

Lanier Series

The Lanier series consists of dark colored, well drained soils that formed in recent alluvium that is shallow over mixed sand and gravel. These soils are nearly level and occupy flood plains of streams throughout the county.

A representative profile has a very dark grayish brown sandy loam and silt loam surface layer about 15 inches thick. Under this is a dark brown sandy loam layer that extends to a depth of 20 inches. Strata of sand and gravel are between depths of 20 and 50 inches.

Representative profile of Lanier sandy loam, NW¼ SW¼ sec. 7, T. 4 N., R. 5 E.; Madison Township:

A11-0 to 10 inches; very dark grayish brown (10YR 3/2) sandy loam; weak fine granular structure; friable; mildly alkaline; calcareous; clear smooth boundary.

A12-10 to 15 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine subangular blocky structure; friable; mildly alkaline; calcareous; clear smooth boundary.

IIC1-15 to 20 inches; dark brown (10YR 4/2) sandy loam; massive; friable; thin streaks of pale brown (10YR 6/3); mildly alkaline (calcareous); abrupt smooth boundary.

IIIC2-20 to 50 inches, sand and gravel; single grain; loose; mildly alkaline; calcareous.

The soil material from a depth of 10 inches to about 20 inches is dominantly sandy loam, coarse loam, or silt loam. Depth to sand and gravel ranges from 16 to 24 inches. The A horizon is very dark grayish brown (10YR 3/2), dark brown (10YR 3/3), and very dark brown (10YR 2/2). The C horizon is dark grayish brown (10YR 4/2), brown (10YR 4/3), very dark grayish brown (10YR 3/2), dark brown (10YR 4/2), and dark yellowish brown (10YR 4/4). The surface layer is neutral to mildly alkaline and is slightly calcareous. The underlying layers are mildly alkaline and more strongly calcareous as depth increases.

These soils are adjacent to well drained Ross and Landes soils. They are sandier than Ross and Medway soils and have a gravelly substratum that is absent in Landes soils. Lanier soils are better drained than Medway soils, which are mottled at a depth of 18 to 24 inches.

Lewisburg Series

The Lewisburg series consists of moderately well drained soils that formed in calcareous loam glacial till. These soils are shallow to calcareous till. They are gently sloping and occupy uplands in the northwestern part of Perry Township.

A representative profile has a dark brown silt loam plow layer about 7 inches thick. The uppermost 5 inches of the subsoil is brown clay, and the next 3 inches is brown clay loam. Firm, calcareous loam glacial till underlies the subsoil at a depth of 15 inches.

Representative profile of Lewisburg silt loam, 2 to 6 percent slopes, NW¼SE¼ sec. 7, T. 5 N., R. 4 E.; Perry Township:

Ap-0 to 7 inches; dark brown (10YR 4/3) silt loam; weak fine and medium granular structure; friable; many roots; neutral; abrupt smooth boundary.

B2t-7 to 12 inches; brown (10YR 4/3) clay; moderate medium subangular blocky structure; firm; medium continuous dark grayish brown (10YR 4/2) clay films on ped faces; neutral; clear smooth boundary.

B3t-12 to 15 inches; brown (10YR 4/3) clay loam; weak medium subangular blocky structure; firm; thin patchy dark brown (10YR 4/3) clay films on ped surfaces; mildly alkaline (calcareous); abrupt smooth boundary.

C-15 to 60 inches; yellowish brown (10YR 5/4 and 5/8) loam; massive; firm; grayish brown (10YR 5/2) vertical seams or streaks; moderately alkaline; strongly calcareous in till.

The A horizon ranges from brown (10YR 4/3) to dark grayish brown (10YR 4/2). A thin, dark brown (10YR 3/3) horizon occurs in some wooded areas. Where the solum is of maximum thickness, a thin B1 horizon is commonly present. In many places the B1 horizon has been incorporated into the plow layer. The B2t horizon ranges from dark yellowish brown (10YR 4/4) to brown (10YR 4/3) or dark brown (10YR 3/3). It is clay or clay loam. The A and B2t horizons are slightly acid to neutral, and the B3t horizon is neutral to mildly alkaline. The B2t horizon ranges from 2 to 8 inches in thickness. Depth to carbonates ranges from 7 to 18 inches.

The Lewisburg soils are adjacent to Pyrmont and Brookston soils and have better natural drainage than those soils. Lewisburg soils have little or no silt capping, and they have thinner subsoil layers and a shallower depth to underlying glacial till than the moderately well drained Celina soils. They are slightly less well drained than Hennepin soils and have more clay in the subsoil.

Lorenzo Series

The Lorenzo series consists of dark colored, well drained soils that formed in loamy glacial outwash. These soils are shallow to calcareous sand and gravel. They are nearly level to moderately steep.

In a representative profile, the surface layer is very dark grayish brown loam about 6 inches thick. The subsoil is dark brown clay loam and gravelly clay loam about 11 inches thick. Both the surface layer and subsoil contain some pebbles. Brown, calcareous sand and gravel is at a depth of about 17 inches.

Representative profile of a Lorenzo loam, SW¼NE¼ sec. 32, T. 4 N., R. 4 E.; Jackson Township:

A1-0 to 6 inches; very dark grayish brown (10YR 3/2) loam; moderate fine granular structure; friable; many roots; neutral; clear smooth boundary.
B1-6 to 11 inches; dark brown (7.5YR 3/2) clay loam; moderate fine granular structure; firm; clay bridging between sand grains in lower part; many roots; some pebbles; neutral; abrupt smooth boundary.
B2t-11 to 17 inches; dark brown (7.5YR 3/4) gravelly clay loam; weak fine subangular blocky structure; firm; thin continuous brown (7.5YR 4/4) clay films on ped surfaces; neutral; weakly calcareous in places; clear smooth boundary.
C-17 to 60 inches; brown (7.5YR 4/4) sand and gravel; single grain; loose; moderately alkaline; strongly calcareous.

The A horizon is dark brown (7.5YR 3/2, 7.5YR 3/3, and 10YR 3/3) and very dark grayish brown (10YR 3/2). These colors lighten very little when the material is rubbed. The B horizon is dark reddish brown (5YR 3/3 and 3/4), reddish brown (5YR 4/4), dark brown (7.5YR 3/2 or 3/4), and brown (7.5YR 4/4). It is clay loam, gravelly clay loam, or sandy clay loam. The B horizon is medium acid to neutral. Depth to calcareous sand and gravel ranges from 10 to 24 inches.

The profile described as representative for the series is an uneroded inclusion in an area of Rodman and Fox soils. In Montgomery County, Lorenzo soils are only mapped in complexes with Rodman soils. The Rodman soil is described under the heading "Rodman Series."

The Lorenzo soils are adjacent to Fox, Rodman, and Kendallville soils. Lorenzo soils are darker colored than Fox and Kendallville soils and are not weathered so deeply. They have a clay loam subsoil in contrast to Rodman soils in which the A horizon is underlain by calcareous sand and gravel.

Medway Series

The Medway series consists of dark colored, moderately well drained soils that formed in recent alluvium. Medway soils are nearly level and lie on bottom lands along streams. They are the major soils on flood plains along the smaller streams in the county.

A representative profile has a very dark grayish brown silt loam plow layer about 9 inches thick. Between depths of 9 and 16 inches, there are layers of very dark grayish brown silt loam and dark brown loam. The subsurface layer is dark brown loam about 4 inches thick. The subsoil is dark grayish brown loam and dark grayish brown sandy loam. It is between depths of 20 and 33 inches and is mottled with grayish brown and yellowish brown. The underlying material consists of strata of strong brown and dark gray sandy loam that extend to a depth of 45 inches. Gravelly sand is below a depth of 45 inches.

Representative profile of Medway silt loam, NW¼NE¼ sec. 18, T. 4 N., R. 5 E., 790 feet east of Nolan Road and 2,000 feet north of Wolf Creek Pike in the field just north of Wolf Creek; Madison Township:

Ap-0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, very dark grayish brown (10YR 3/2) when rubbed; weak fine granular structure; friable; mildly alkaline; weakly calcareous; abrupt smooth boundary.
A11-9 to 13 inches; very dark grayish brown (10YR 3/2) silt loam, very dark grayish brown (10YR 3/2) when rubbed; weak fine granular structure; friable; mildly alkaline; weakly calcareous; clear smooth boundary.
A12-13 to 16 inches; dark brown (10YR 3/3) loam, dark brown (10YR 3/3) when rubbed; weak fine subangular blocky structure; friable; mildly alkaline; weakly calcareous; clear smooth boundary.
A3-16 to 20 inches; dark brown (10YR 3/3) loam, dark brown (10YR 3/3) when rubbed; few fine faint yellowish brown (10YR 5/4) mottles; massive; friable; mildly alkaline; weakly calcareous; clear smooth boundary.
B1-20 to 29 inches; dark grayish brown (10YR 4/2) loam; common fine faint grayish brown (10YR 5/2) and yellowish brown (10YR 5/4) mottles; massive; friable; mildly alkaline; moderately calcareous; abrupt smooth boundary.
B2-29 to 33 inches; dark grayish brown (10YR 4/2) sandy loam; common medium distinct grayish brown (10YR 5/2) and yellowish brown (10YR 5/6) mottles; massive; friable; mildly alkaline; moderately calcareous; clear smooth boundary.
C1-33 to 36 inches; strong brown (7.5YR 5/6) sandy loam; many medium distinct grayish brown (10YR 5/2) mottles and few fine distinct brown (10YR 5/3) mottles; massive; friable; moderately alkaline; weakly calcareous; clear smooth boundary.
C2-36 to 45 inches; dark gray (10YR 4/1) sandy loam; very dark gray (10YR 3/1) streaks; massive; friable; moderately alkaline; weakly calcareous; clear smooth boundary.
IIC3-45 to 60 inches; gravelly sand; single grain; loose; moderately alkaline (calcareous).

When the A horizon is moist, it ranges from black (10YR 2/1) to dark brown (10YR 3/3) when broken and from very dark grayish brown (10YR 3/2) to dark brown (10YR 3/3) when rubbed. When this horizon is dry, it is grayish brown (10YR 5/2) and brown (10YR 5/3) when broken or rubbed. The A horizon ranges from 20 inches to about 30 inches in thickness. The upper part of the A horizon is silt loam, but the lower part is silt loam or loam. Depth to mottling ranges from 16 inches to about 28 inches. The reaction is neutral to mildly alkaline. In many places free carbonates are present in the A horizon. The B horizon is sandy loam, loam, silt loam, or silty clay loam that occurs in layers of variable thickness or in discontinuous lenses. The profile described as representative for the series is on the coarse side of the range of the series.

Medway soils are adjacent to Ross and Shoals soils. They are less well drained than Ross soils but are better drained and darker colored than Shoals soils. Medway soils contain less sand and gravel than Landes or Lanier soils. They are better drained than Algiers soils and have a dark colored surface layer.

Miamian Series

The Miamian series consists of well drained soils that formed either wholly or partly in calcareous glacial till. The upper part of most Miamian soils is a capping of silt or loess that ranges from 0 to 18 inches in thickness. These soils are nearly level to very steep. They occupy upland areas of till plains and moraines in all parts of the county.

A representative profile has a brown silt loam plow layer about 7 inches thick. The upper part of the subsoil is 3 inches of dark yellowish brown silty clay loam. In descending order, the subsoil from a depth of 10 to 30 inches is dark yellowish brown clay, dark yellowish brown clay loam, and yellowish brown loam. Below the subsoil, at a depth of about 30 inches, is calcareous loam glacial till that is dense and compact.

Representative profile of Miamian silt loam, 0 to 2 percent slopes, SW¼SW¼ sec. 13, T. 6 N., R. 5 E., 725 feet west and 480 feet north of the intersection of Meeker Road and Frederick Pike; Butler Township:

Ap-0 to 7 inches; brown (10YR 4/3) silt loam; weak medium and coarse granular structure; friable; many roots; slightly acid; abrupt smooth boundary.
B1t-7 to 10 inches; dark yellowish brown (10YR 4/4) silty clay loam; strong medium subangular blocky structure; firm; thin patchy dark brown (10YR 4/3) clay films; common roots; slightly acid; clear wavy boundary.
IIB21t-10 to 17 inches, dark yellowish brown (10YR 4/4) clay; strong medium and coarse subangular blocky structure; firm; thin continuous brown (7.5YR 4/4) clay films; common roots; strongly acid; clear smooth boundary.
IIB22t-17 to 24 inches; dark yellowish brown (10YR 4/4) clay loam; strong coarse subangular blocky structure; very firm; thin continuous dark brown (7.5YR 3/2) clay films; common roots; medium acid; clear irregular boundary.
IIB3-24 to 30 inches; yellowish brown (10YR 5/4) loam; weak coarse subangular blocky structure; firm; thick continuous vertical dark brown (10YR 3/3) clay flows; common till pebbles; common roots in clay flows; few roots in matrix; clay flows neutral; mildly alkaline and calcareous in matrix; diffuse wavy boundary.
IIC1-30 to 36 inches; yellowish brown (10YR 5/4) loam; massive; firm; common unweathered till pebbles; few medium continuous vertical dark brown (10YR 3/3) clay flows; few roots along clay flows; moderately alkaline; calcareous; diffuse smooth boundary.
HC2-36 to 60 inches, yellowish brown (10YR 5/4) loam till; massive; firm; moderately alkaline; strongly calcareous.

The A horizon is dark grayish brown (10YR 4/2), brown (10YR 4/3), or dark yellowish brown (10YR 4/4). The B horizon has a hue of 7.5YR or 10YR, values of 3 to 5, and chromas of 3 to 5. The weighted average clay content of the upper 20 inches of the B2t horizon ranges from 35 percent to about 45 percent; the most common range is 36 to 42 percent. The depth to calcareous material ranges from 18 to 40 inches, and the most common range is 24 to 37 inches. Reaction of the B1 horizon or the upper part of the B2 horizon ranges from strongly acid to slightly acid.

The nearly level to strongly sloping Miamian soils are adjacent to Celina and Crosby soils, and the steep and very steep Miamian soils are adjacent to Hennepin soils. Miamian soils have a brighter overall color than Celina or Crosby soils, and they have a more clayey, thicker subsoil than Hennepin soils. The upper horizons of Miamian soils formed in loess or till, whereas the upper horizons of Kendallville soils formed in outwash material.

Millsdale Series

The Millsdale series consists of dark colored, very poorly drained soils that are moderately deep to limestone. These soils formed in 20 to 40 inches of calcareous glacial till over limestone and limestone interbedded with clay shale bedrock. Millsdale soils occupy uplands and are nearly level to gently sloping.

A representative profile has a silty clay loam surface layer about 14 inches thick. The upper 7 inches is very dark brown, and the lower part is very dark grayish brown. The subsoil is 22 inches thick. The upper part is 6 inches thick and consists of black silty clay loam. The lower part is mottled dark gray or gray clay and silty clay. Limestone bedrock is at a depth of 36 inches.

Representative profile of Millsdale silty clay loam, 0 to 3 percent slopes, NW¼SW¼ sec. 6, T. 2 N., R. 5 E.; German Township:

Ap-0 to 7 inches; very dark brown (10YR 2/2) silty clay loam; strong fine and medium granular structure; friable; neutral; abrupt smooth boundary.
A3-7 to 14 inches; very dark grayish brown (10YR 3/2) silty clay loam; few fine faint yellowish brown (10YR 5/4) mottles; moderate medium blocky structure; firm; common dark brown or black oxide concretions; slightly acid; clear smooth boundary.
B21tg-14 to 20 inches; black (10YR 2/1) silty clay loam; few medium distinct yellowish brown (10YR 5/4) mottles and few very fine distinct yellowish brown (10YR 5/8) mottles; weak medium prismatic structure; firm; thin patchy very dark gray (10YR 3/1) clay films on ped surfaces; neutral; clear smooth boundary.
B22tg-20 to 30 inches; dark gray (10YR 4/1) and dark grayish brown (10YR 4/2) clay; common medium distinct yellowish brown (10YR 5/4, 5/6) mottles and few fine prominent yellowish brown (10YR 5/8) mottles; very weak coarse subangular blocky structure; firm; thin continuous dark grayish brown (10YR 4/2) clay films on ped surfaces; mildly alkaline; abrupt smooth boundary.
IIB3-30 to 36 inches; gray (5Y 5/1) silty clay; common fine distinct olive (5Y 5/6) mottles and few fine prominent yellowish brown (10YR 5/8) mottles; massive; firm; many limestone fragments; mildly alkaline; strongly calcareous; abrupt wavy boundary.
R-36 to 40 inches; limestone bedrock.

The A horizon is very dark brown (10YR 2/2) to very dark grayish brown (10YR 3/2), very dark gray (10YR 3/1), and black (10YR 2/1). The B horizon is dark grayish brown (10YR 4/2) to dark gray (10YR 4/1), grayish brown (10YR 5/2), black (10YR 2/1), and very dark gray (10YR 3/1). The uppermost part of the B horizon is black (10YR 2/1) in most places. The B horizon is clay, silty clay, or silty clay loam. Depth to bedrock ranges from 20 to 40 inches. The surface layer is medium acid to neutral. The horizons deeper in the profile are less acid as depth increases, and the lower part of the B2 horizon and the B3 horizon are neutral to mildly alkaline and calcareous.

Millsdale soils are adjacent to Milton and Randolph soils and are darker and more poorly drained than those soils. The Millsdale soils have limestone or calcareous clay shale bedrock at a depth of less than 40 inches, but the Brookston soils are underlain by calcareous loam till and have no bedrock within 40 inches of the soil surface.

Milton Series

The Milton series consists of well drained soils that formed in 20 to 40 inches of glacial till over limestone bedrock. These soils occupy uplands and are nearly level to moderately steep slopes.

A representative profile has a dark brown silt loam plow layer about 5 inches thick. The subsurface layer is brown silt loam and is similar to the plow layer. These two layers combined are 9 inches thick. To a depth of 25 inches, the subsoil is brown silty clay loam. Below this is dark yellowish brown clay that weathered from limestone. Limestone bedrock is at a depth of 28 inches.

Representative profile of Milton silt loam, 2 to 6 percent slopes, NE¼NE¼ sec. 13, R. 8, T. 2; Mad River Township:

Ap-0 to 5 inches; dark brown (10YR 4/3) silt loam; moderate fine and medium granular structure; friable; neutral; abrupt smooth boundary.

A3-5 to 9 inches; brown (7.5YR 4/4) silt loam; weak medium platy structure parting to moderate very fine subangular blocky structure; friable; dark brown (10YR 4/3) worm and root channels; medium acid; clear smooth boundary.

B21t-9 to 14 inches; brown (7.5YR 4/4) silty clay loam; strong very fine subangular blocky structure; firm; thin very patchy dark yellowish brown (10YR 4/4) clay films on ped surfaces; slightly acid; clear smooth boundary.

B22t-14 to 19 inches; brown (10YR 4/3) silty clay loam; strong fine and medium subangular blocky structure; firm; thin continuous dark brown (10YR 3/3) clay films on ped surfaces; slightly acid; gradual smooth boundary.

B23t-19 to 25 inches; brown (7.5YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; firm; moderately thick continuous dark brown (7.5YR 3/4) clay films on ped surfaces; slightly acid; clear smooth boundary.

IIB24t-25 to 28 inches; dark yellowish brown (10YR 4/4) clay; moderate medium subangular blocky structure; firm; thick continuous dark yellowish brown (10YR 3/4) clay films on ped surfaces; 3 or 4 percent of horizon is limestone fragments; neutral; abrupt smooth boundary.

R-28 to 35 inches; limestone bedrock.

Depth to limestone bedrock ranges from 20 to 40 inches. When the A horizon is moist, it is dark brown or brown (10YR 4/3), dark grayish brown (10YR 4/2), or dark brown (10YR 3/3); when the material is rubbed, the A horizon is brown (10YR 4/3), dark grayish brown (10YR 4/2), or dark yellowish brown (10YR 4/4). The matrix of the B horizon is 5YR to 10YR in hue, 4 in value, and 3 or 4 in chroma. Where the B horizon formed in till, it is clay loam, silty clay loam, and silty clay. In some places the B horizon was derived from glacial drift and is directly above the limestone, and there is no intervening IIB horizon. In some areas there is a thin C horizon of glacial drift that has been influenced by limestone.

Milton soils are adjacent to Randolph, Ritchey, Plattville, Millsdale and Miamian soils. The Milton soils are better drained than Randolph and Millsdale soils. They are underlain by limestone at a depth of 20 to 40 inches, but limestone is at a depth of less than 20 inches under the Ritchey soils. Milton soils formed in thinner glacial till than Miamian soils. The surface layer of Milton soils is lighter colored than that of Plattville soils. The B horizon of Milton soils is not influenced by shale, as it is in the Wynn soils.

Montgomery Series

The Montgomery series consists of dark colored, very poorly drained soils that formed in sediments of old lakes. These soils occupy depressional areas on outwash terraces and till plains.

A representative profile has a black silty clay loam plow layer about 8 inches thick. The upper part of the subsoil is about 9 inches thick and consists of black silty clay mottled with yellowish brown and light brownish gray. The lower part of the subsoil is between depths of 17 and 33 inches and is gray silty clay mottled with yellowish brown. Underlying the subsoil is greenish gray and dark gray clay mottled with yellowish brown.

Representative profile of Montgomery silty clay loam, N¼SW¼ sec. 14, R. 7, T. 2, 925 feet east of Woodman Drive and 2,100 feet north of Patterson Road in the City of Kettering:

Ap-0 to 8 inches; black (10YR 2/1) silty clay loam; moderate medium granular structure; friable; neutral; abrupt smooth boundary.

B21tg-8 to 17 inches; black (10YR 2/1) silty clay; common fine distinct yellowish brown (10YR 5/4) mottles and common fine distinct light brownish gray (10YR 6/2) mottles; strong medium angular blocky structure; firm; medium continuous very dark gray (N 3/0) clay films on ped surfaces; neutral; clear irregular boundary.

B22tg-17 to 33 inches; gray (5Y 5/1) silty clay; many fine distinct yellowish brown (10YR 5/6 and 10YR 5/8) mottles; moderate medium and coarse angular blocky structure; firm; medium patchy very dark gray (5Y 3/1) clay films; black (10YR 2/1) krotovinas; neutral; diffuse wavy boundary.

Cg-33 to 60 inches; greenish-gray (5GY 5/1) and dark gray (5Y 4/1) clay; few fine distinct yellowish brown (10YR 5/6) mottles; massive; firm; mildly alkaline (calcareous).

The A horizon is black (10YR 2/1), very dark brown (10YR 2/2), very dark gray (10YR 3/1), or very dark grayish brown (10YR 3/2). These dark colors extend from the surface to a depth of 11 to 20 inches, and in some profiles they are in the upper part of the B horizon. The B22 horizon is gray (5Y 5/1 or 5Y 6/1 and 10YR 5/1) and dark gray (10YR 4/1). The B horizon is silty clay or clay. Depth to the underlying calcareous clay material is 30 to 60 inches. The B horizon is slightly acid or neutral, and the C horizon is neutral to mildly alkaline.

The B horizon of Montgomery soils in this county contain illuvial clay, but this is not a characteristic of Montgomery soils in other survey areas. This feature does not alter use and management of these soils.

Montgomery soils are adjacent to Brookston soils on uplands and to Westland soils on stream terraces. They formed in clayey lake sediments and have a finer textured subsoil that contains less sand than the subsoil of Brookston or Westland soils. Montgomery soils lack glacial till or sand and gravel to a depth of 5 feet or more. They are more clayey in the subsoil than Sloan soils.

Ockley Series

The Ockley series consists of well drained soils that formed in loess and loamy glacial outwash that is underlain with sand and gravel at a depth of 40 to 60 inches. These soils are nearly level and gently sloping. They occur on terraces in valleys of major streams.

A representative profile has a dark brown silt loam plow layer about 9 inches thick. The subsurface layer is a brown silt loam 4 inches thick. The subsoil is between depths of 13 and 48 inches and consists of dark yellowish brown silty clay loam, brown clay loam, and dark brown sandy clay. The substratum is calcareous brown sand and gravel.

Representative profile of Ockley silt loam, 2 to 6 percent slopes, SW¼NW¼ sec. 20, T. 2 N., R. 5 E., German Township:

Ap-0 to 9 inches; dark brown (10YR 3/3) silt loam that is brown (10YR 4/3) when rubbed; moderate fine and medium granular structure; friable; medium acid; abrupt smooth boundary.

A3-9 to 13 inches; brown (10YR 4/3) silt loam; moderate fine subangular blocky structure; friable; many dark brown (10YR 3/3) coatings on ped surfaces; medium acid; clear wavy boundary.

B21t-13 to 20 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; thin patchy brown (10YR 4/3) clay films on ped surfaces; medium acid; clear wavy boundary.

IIB22t-20 to 29 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; thin patchy brown (10YR 4/3) clay films on ped surfaces; slightly acid; clear smooth boundary.

IIB23t-29 to 40 inches; brown (7.5YR 4/4) clay loam; moderate medium and coarse subangular blocky structure; firm; medium continuous dark brown (10YR 4/3) clay films on ped surfaces; few black (10YR 2/1) oxide concretions; slightly acid.

IIB3t-40 to 48 inches; dark brown (7.5YR 4/4) sandy clay; moderate medium subangular blocky structure; very firm; thick continuous dark brown (7.5YR 3/4) clay films on ped surfaces; 5 percent gravel; slightly acid; clear smooth boundary.

IIC1-48 to 54 inches; dark brown (7.5YR 3/4) sand; single grain; loose; neutral; clear smooth boundary.

IIC2-54 to 60 inches; brown (10YR 5/3) sand and gravel; single grain; loose; calcareous.

The Ap horizon is dark brown (10YR 3/3) or dark yellowish brown (10YR 3/4) if the soil material is not rubbed. If the material is rubbed, the value is one unit higher. The B horizon is brown (10YR 4/3), brown and dark brown (7.5YR 4/4), or dark yellowish brown (10YR 4/4). The B21t horizon is silt loam or silty clay loam. The B22t and B23t horizons are silty clay loam, clay loam, sandy clay, and sandy clay loam. Depth to calcareous sand and gravel ranges from 40 to 60 inches. The A3 and B21t horizons range from strongly acid to slightly acid. The B22t and B23t horizons range from slightly acid to neutral.

Ockley soils are adjacent to Fox and Thackery soils. The Ockley soils are deeper to sand and gravel than the Fox soils and are better drained than the Thackery soils. They are similar to Wea soils but have a lighter colored surface layer. Ockley soils are lighter colored and better drained than the moderately well drained Tippecanoe soils.

Plattville Series

The Plattville series consists of dark colored, well drained soils. These soils formed in calcareous glacial till that is 20 to 40 inches thick over limestone or limestone interbedded with calcareous clay shale. The soils are on uplands and are gently sloping to sloping.

A representative profile has a very dark brown silt loam surface layer about 10 inches thick. The upper part of the subsoil is 7 inches thick and is very dark grayish brown silty clay loam. The lower part of the subsoil is brown and yellowish brown clay loam about 6 inches thick. Above the limestone bedrock, between depths of 23 and 27 inches, is olive gray silty clay loam.

Representative profile of Plattville silt loam, 2 to 6 percent slopes, SW¼SW¼ sec. 6, T. 2 N., R. 5 E., German Township:

Ap-0 to 7 inches; very dark brown (10YR 2/2) silt loam; weak fine granular structure; friable; neutral; abrupt smooth boundary.

A1-7 to 10 inches; very dark brown (10YR 2/2) silt loam; moderate medium granular structure; friable; neutral; abrupt smooth boundary.

B1-10 to 17 inches; very dark grayish brown (10YR 3/2) silty clay loam; moderate medium and fine subangular blocky structure; firm; neutral; clear smooth boundary.

B2t-17 to 20 inches; brown (10YR 4/3) clay loam; weak medium subangular blocky structure; firm; thin continuous dark brown (10YR 3/3) clay films on ped surfaces; neutral; clear wavy boundary.

B3t-20 to 23 inches, yellowish brown (10YR 5/4) clay loam; weak, coarse, subangular blocky structure; firm; thin, patchy, dark brown (10YR 3/3) clay films; many angular till pebbles; mildly alkaline; slightly calcareous; clear, smooth boundary.

IIC-23 to 27 inches; olive gray (5Y 5/2) silty clay loam; massive; firm; few thin streaks of light olive brown (2.5Y 5/6); mildly alkaline to moderately alkaline; strongly calcareous; abrupt smooth boundary.

IIR-27 to 30 inches +, fractured limestone bedrock.

In some areas Plattville soils have a thin loess mantle. The A horizon is very dark brown (10YR 2/2), dark brown (10YR 3/3), or black (10YR 2/1). The upper part of the B horizon is brown (10YR 4/3) or very dark grayish brown (10YR 3/2). The lower part of the B2 horizon and the B3 horizon are brown (10YR 4/3), dark yellowish brown (10YR 4/4), or yellowish brown (10YR 5/4). The B horizon is clay loam and silty clay loam and has less than 35 percent clay and more than 15 percent sand coarser than very fine sand. Depth to limestone or limestone and shale bedrock ranges from 20 to 40 inches. The B1 horizon and the upper part of the B2 horizon range from strongly acid to neutral.

The Plattville soils in this county are slightly better drained than Plattville soils elsewhere. They lack mottles that have a chroma of 2 in the B horizon. This slight difference has little effect on use and management of these soils.

Plattville soils are adjacent to Milton soils. They have a darker colored surface layer than Milton soils. Plattville soils have bedrock at a depth of 20 to 40 inches, whereas the moderately well drained Corwin soils have no underlying bedrock within 40 inches of the surface.

Pyrmont Series

The Pyrmont series consists of somewhat poorly drained soils that formed in calcareous loam glacial till. These soils are shallow to calcareous till material. They are nearly level and occupy upland areas in the northwestern part of Perry Township.

A representative profile has a dark grayish brown silt loam plow layer about 7 inches thick. It has a thin, grayish brown silt loam subsurface layer. The subsoil consists of about 7 inches of brown clay and clay loam mottled with yellowish brown and dark yellowish brown. Underlying the subsoil, at a depth of 16 inches, is very firm loam glacial till that is calcareous.

Representative profile of Pyrmont silt loam, 0 to 2 percent slopes, NW¼NW¼ sec. 7, T. 5 N., R. 4 E.; Perry Township:

Ap-0 to 7 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; slightly acid; abrupt smooth boundary.

A2g-7 to 9 inches; grayish brown (10YR 5/2) silt loam; common fine faint dark yellowish brown (10YR l 4/4) mottles; weak fine and medium subangular blocky structure; friable; slightly acid; abrupt smooth boundary.

B21t-9 to 13 inches; brown (10YR 5/3 and 10YR 4/3) clay; few fine faint yellowish brown (10YR 5/6) mottles and common fine faint dark yellowish brown (10YR 4/4) mottles; moderate fine and medium angular blocky structure; firm; thin patchy dark grayish brown (10YR 4/2) clay films on peds; neutral; clear wavy boundary.

B22t-13 to 16 inches, brown (10YR 4/3) clay loam that has common fine faint grayish brown (10YR 5/2) and dark yellowish brown (10YR 4/4) mottles; moderate fine and medium angular and subangular blocky structure; firm; very dark grayish brown (10YR 3/2) clay flows; thin patchy dark grayish brown (10YR 4/2) films on peds; till pebbles and weathered limestone pebble remnants present; neutral to mildly alkaline; weakly calcareous; clear wavy boundary.

C1-16 to 22 inches; brown (10YR 4/3) loam; common medium faint dark yellowish brown (10YR l 4/4) and dark grayish brown (10YR 4/2) mottles; massive; very firm; few vertical very dark grayish brown (10YR 3/2) clay flows in the upper 3 inches; moderately alkaline; strongly calcareous; gradual smooth boundary.

C2-22 to 60 inches; brown (10YR 4/3) loam; few fine faint yellowish brown (10YR 5/6) mottles; massive; very firm; light gray (10YR 7/2) and grayish brown (10YR 5/2) vertical seams of high carbonate content; moderately alkaline; strongly calcareous.

The A horizon is dark grayish brown (10YR 4/2), grayish brown (10YR 5/2), or dark grayish brown (2.5Y 4/2). The color of the B horizon is in a hue of 2.5Y or 10YR, a value of 3 to 5, and a chroma of 3 or 4. The B2 horizon is clay or clay loam. The A horizon is medium acid to neutral. The B2 horizon is slightly acid to mildly alkaline. The B2 horizon ranges from 2 to 7 inches in thickness. The depth to carbonates ranges from 7 to 18 inches. Thickness of horizons within the solum varies in direct relationship to the thickness of the solum. Where the solum is of minimum thickness, the B1 and B3 horizons are less than 1 inch thick or are absent. In some areas the grayish brown A2 horizon is incorporated into the plow layer.

Pyrmont soils are adjacent to the moderately well drained Lewisburg soils and the dark colored, very poorly drained Brookston soils. Pyrmont soils are shallower to calcareous till than are the Crosby soils.

Randolph Series

The Randolph series consists of somewhat poorly drained soils that are mostly moderately deep to bedrock. These soils formed in glacial till over limestone or limestone imbedded with bedrock of calcareous clay shale. Randolph soils are nearly level and are in upland areas of till plains and moraines where the till is 20 to 40 inches thick over bedrock.

A representative profile has a dark grayish brown silt loam plow layer about 10 inches thick. It has a thin, grayish brown silt loam subsurface layer and a thin, yellowish brown silt loam layer that is transitional to the subsoil. The subsoil extends to a depth of about 27 inches. It consists of yellowish brown clay, brown clay, and dark yellowish brown silty clay loam. Below the subsoil is calcareous silty clay loam glacial till. At a depth of 31 inches, limestone or clay shale bedrock occurs.

Representative profile of Randolph silt loam, 0 to 2 percent slopes, SW¼NW¼ sec. 14, T. 6 N., R. 4 E., 500 feet east of Brookville-Phillipsburg Road and 1,600 feet south of Sweet Potato Ridge Road; Clay Township:

Ap-0 to 10 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; medium acid; abrupt smooth boundary.

A2g-10 to 12 inches; grayish brown (10YR 5/2) silt loam; common fine distinct yellowish brown (10YR 5/6) mottles; weak thin platy structure parting to weak granular structure; friable; few fine black (10YR 2/1) oxide concretions; medium acid; clear smooth boundary.

B&A-12 to 14 inches; yellowish brown (10YR 5/4) silt loam; few fine faint yellowish brown (10YR 5/6 and 10YR 5/8) mottles; weak fine subangular blocky structure; friable; grayish brown (10YR 5/2) silt coatings on 80 percent of surface of peds; common fine black (10YR 2/1) oxide concretions; slightly acid; clear smooth boundary.

IIB21tg-14 to 20 inches; yellowish brown (10YR 5/4) clay that has few fine faint grayish brown (10YR 5/2) and yellowish brown (10YR 5/6 and 10YR 5/8) mottles; moderate medium subangular blocky structure; firm; thin continuous grayish brown (10YR 5/2) clay films; many fine and medium black (10YR 2/1) oxide concretions; slightly acid; clear smooth boundary.

IIB22tg-20 to 23 inches; brown (10YR 4/3) clay that has common fine distinct yellowish brown (10YR 5/6) mottles; moderate medium and coarse subangular blocky structure; firm; thick continuous dark grayish brown (10YR 4/2) clay films; medium very patchy very dark grayish brown (10YR 3/2) clay films; few fine black (10YR 2/1) oxide concretions; neutral; clear smooth boundary.

IIB3tg-23 to 27 inches; dark yellowish brown (10YR 4/4) silty clay loam that has common fine distinct dark gray (10YR 4/1) mottles; weak medium subangular blocky structure; firm; thick continuous dark gray (10YR 4/1) clay films; medium very patchy very dark grayish brown (10YR 3/2) clay films; few fine black (10YR 2/1) oxide concretions; mildly alkaline; weakly calcareous; clear smooth boundary.

IIC-27 to 31 inches; yellowish brown (10YR 5/4) silty clay loam; massive; firm; medium very patchy very dark grayish brown (10YR 3/2) and dark grayish brown (10YR 4/2) clay flows from B3 horizon; medium continuous grayish brown (2.5Y 5/2) calcium coatings on vertical cleavage planes; mildly alkaline; strongly calcareous.

IIIR-31 inches; limestone bedrock.

The B horizon is yellowish brown (10YR 5/4), dark yellowish brown (10YR 4/4), or brown (10YR 4/3). Depth to yellowish brown (10YR 5/6 and 10YR 5/8) and grayish brown (10YR 5/2) mottles is 8 to 12 inches. The B horizon is clay, silty clay, clay loam, and silty clay loam. Depth to limestone bedrock ranges from 20 to 40 inches, and depth to the C horizon is 18 to 36 inches. The B3 horizon is directly on the bedrock in some areas, and no intervening till is present. In some places Randolph soils have up to 18 inches of loess capping.

Randolph soils are adjacent to Milton and Millsdale soils. They have better natural drainage and a lighter colored surface layer than the Millsdale soils. Randolph soils are not so well drained as the Milton soils. Limestone or clay shale bedrock is at a depth of less than 40 inches in Randolph soils, but Crosby soils have no bedrock within 40 inches of the surface.

Ritchey Series

The Ritchey series consists of well drained soils that are shallow to bedrock. These soils formed in calcareous glacial till and residuum from limestone and limestone interbedded with clay shale bedrock. Ritchey soils are on uplands and are gently sloping to very steep. Bedrock is at a depth of 10 to 20 inches.

A representative profile has a thin, dark grayish brown silt loam surface layer over a thin, brown silt loam subsurface layer. These layers combined are 6 inches thick. The upper part of the subsoil is 6 inches thick and consists of dark yellowish brown silty clay loam. Dark yellowish brown silty clay is at depths between 12 and 15 inches. The lower part of the subsoil is 3 inches thick and is typically brown silty clay containing many limestone fragments. Below this layer, at a depth of about 18 inches, is limestone or clay shale bedrock.

Representative profile of Ritchey silt loam, 25 to 50 percent slopes, moderately eroded, NE¼SW¼ sec. 21, R. 6, T.1, near West Carrollton; Miami Township:

A1-0 to 3 inches; dark grayish brown (10YR 4/2) silt loam; strong medium and fine granular structure; friable; many root; neutral; clear smooth boundary.

A3-3 to 6 inches; brown (10YR 4/3) silt loam; moderate medium subangular blocky structure; firm; very dark grayish brown (10YR 3/2) wormcasts and root channels; many roots; medium acid; clear smooth boundary.

B21t-6 to 12 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure parting to moderate fine subangular blocky structure; firm; thin discontinuous dark grayish brown (10YR 4/2) clay films; slightly acid; clear smooth boundary.

B22t-12 to 15 inches; dark yellowish brown (10YR 4/4) silty clay; strong medium and coarse subangular blocky structure parting to strong fine subangular blocky structure; firm; thin continuous dark yellowish brown (10YR 3/4) clay films; neutral; clear smooth boundary.

IIB23t-15 to 18 inches; brown (10YR 5/3) silty clay; moderate medium subangular blocky structure; firm; thin continuous dark yellowish brown (10YR 3/4) clay films; common limestone fragment; moderately alkaline; calcareous; clear smooth boundary.

IIR-18 inches +; limestone bedrock.

The A1 or Ap horizon is brown (10YR 4/3), dark grayish brown (10YR 4/2), or brown (10YR 5/3). In some undisturbed areas the uppermost 1 to 3 inches is very dark grayish brown (10YR 3/2) or very dark brown (10YR 2/2). The B horizon formed from glacial till and is 7.5YR or 10YR in hue, 3 to 5 in value, and 3 or 4 in chroma. The lower part of the B horizon formed from weathered limestone bedrock and has a hue of 7.5YR or 10YR, values of 3 to 5, and chromas of 2 to 4. The B horizon is silty clay loam, clay loam, clay, or silty clay. Thickness of the solum and depth to bedrock range from 10 to 20 inches. The upper part of the solum ranges from slightly acid to medium acid. The lower part of the solum is normally neutral or mildly alkaline.

The Ritchey soils in this county have a B horizon that is more clayey than that of Ritchey soils elsewhere. This is partly because the B horizon formed in calcareous clay shale or was influenced by the clay shale. The B horizon reflects the colors of the parent material and has a hue of 10YR, 2.5Y, or 5Y, a value of 4 or 5, and chromas of 3 to 6.

Ritchey soils are similar to the Milton, Fairmount, and Plattville soils. Ritchey soils have limestone bedrock at a depth of less than 20 inches, but limestone is more than 20 inches from the surface in the Milton and Plattville soils. The surface layer of Ritchey soils is lighter colored than that of the Fairmount or Plattville soils.

Rodman Series

The Rodman series consists of dark colored, well drained soils that formed in loamy glacial outwash material. These soils are less than 12 inches thick over calcareous sand and gravel. They are gently sloping to very steep and are on terraces along streams. In Montgomery County the Rodman soils are mapped only in complexes with Lorenzo soils and in undifferentiated mapping units with Fox soils.

A representative profile has a surface layer of black loam over very dark grayish brown gravelly loam that combined are about 10 inches thick.

The next layer is calcareous, brown sand and gravel.

Representative profile of a Rodman soil that has a loam surface layer, SW¼NE¼ sec. 4, R. 6, T. 1, city of Kettering:

A11-0 to 4 inches; black (10YR 2/1) loam; moderate fine granular structure; friable; 5 percent gravel by volume; mildly alkaline; slightly calcareous; clear smooth boundary.

A12-4 to 10 inches; very dark grayish brown (10YR 3/2) gravelly loam; moderate very fine granular structure; friable; 40 percent gravel by volume; mildly alkaline; slightly calcareous; clear smooth boundary.

C-10 to 60 inches; brown (10YR 4/3) sand and gravel; single grain; loose; moderately alkaline; strongly calcareous.

The A horizon is black (10YR 2/1), very dark grayish brown (10YR 3/2), and very dark brown (10YR 2/2). Depth to calcareous sand and gravel is 8 to 12 inches, and the thickness of the dark surface layer coincides with this depth.

Rodman soils in Montgomery County have a higher content of carbonates than Rodman soils elsewhere. This difference does not greatly affect the use and management of the soils.

Rodman soils are adjacent to Lorenzo and Fox soils. They are thinner to sand and gravel than these adjacent soils, and they lack a B horizon enriched with illuvial clay. Rodman soils are darker colored than the Fox soils.

Ross Series

The Ross series consists of dark colored, well drained soils that formed in recent alluvium on flood plains. The soils are nearly level and occupy bottom lands. They are the dominant soils along the larger streams of the county and are common along the smaller streams.

A representative profile has a very dark grayish brown plow layer about 8 inches thick. At depths between 8 and 22 inches is very dark grayish brown and very dark brown silt loam that differs only slightly from the plow layer. Between depths of 22 and 56 inches, there are brownish layers of fine sandy loam, silt loam, and loam. Gravelly loamy sand is below a depth of 56 inches.

Representative profile of Ross silt loam, SE¼SW¼ sec. 11, T. 3 N., R. 4 E., 1,150 feet west of Creek Road and 2,000 feet north of State Route 725; German Township:

Ap-0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam; very weak fine granular structure; friable; many roots; mildly alkaline; slightly calcareous; abrupt smooth boundary.

A11-8 to 13 inches; very dark grayish brown (10YR 3/2) silt loam; weak medium subangular blocky structure; friable; many roots; abundant very dark brown (10YR 2/2) wormcasts; mildly alkaline; slightly calcareous; abrupt smooth boundary.

A12-13 to 22 inches; very dark brown (10YR 2/2) silt loam; weak medium and coarse granular structure; friable; common roots; abundant wormcasts; mildly alkaline; slightly calcareous; clear smooth boundary.

C1-22 to 34 inches; dark yellowish brown (10YR 3/4) fine sandy loam; massive; friable; many very dark brown (10YR 2/2) wormcasts that are fewer with depth; mildly alkaline; mildly calcareous; clear smooth boundary.

C2-34 to 45 inches; dark brown (10YR 3/3) silt loam; massive; friable; mildly alkaline; calcareous; clear smooth boundary.

C3-45 to 56 inches; very dark grayish brown (10YR 3/2) loam that has few medium faint gray (10YR 5/1) mottles and few fine faint dark yellowish brown (10YR 4/4) mottles; massive; friable; common snail shells; moderately alkaline; strongly calcareous; clear smooth boundary.

IIC4-56 to 60 inches; gravelly loamy sand; single grain; loose; calcareous.

The A horizon, when moist, ranges from black (10YR 2/1) to very dark grayish brown (10YR 3/2) or dark brown (10YR 3/3) if broken. It is very dark grayish brown (10YR 3/2) and dark brown (10YR 3/3) when rubbed. When the A horizon is dry, it is grayish brown (10YR 5/2) and brown (10YR 5/3); both when broken and when rubbed. The A horizon ranges from 20 inches to about 34 inches in thickness. Reaction is neutral to moderately alkaline throughout the profile and, in many places, free carbonates are present in the A horizon. The C horizon is loamy sand, sandy loam, loam, silt loam, clay loam, or silty clay loam. This material is in layers of variable thickness or in discontinuous lenses.

Some of the Ross soils in this county have less than the 24 inches of dark colored material in the surface layer, which is outside the range as defined for the series. This difference does not alter the usefulness of the soils.

Ross soils are adjacent to Algiers, Medway, Landes, Lanier, and Shoals soils. Drainage is better for Ross soils than for Algiers, Medway, and Shoals soils, which are mottled at shallower depths. The Ross soils have a thicker dark colored surface layer than Landes or Lanier soils and are finer textured throughout.

Russell Series

The Russell series consists of well drained soils that formed in loess-capped loam glacial till. These soils are gently sloping to moderately steep and are in upland areas in the southeastern part of the county.

A representative profile has a dark grayish brown silt loam plow layer 8 inches thick. The subsurface layer is brown silt loam 4 inches thick. The subsoil, between depths of 12 and 24 inches, is dark yellowish brown silty clay loam. The lower part of the subsoil is brown clay loam that extends to a depth of 39 inches. It is underlain by calcareous yellowish brown loam glacial till.

Representative profile of Russell silt loam, 2 to 6 percent slopes, NW¼SW¼ sec. 14, R. 6, T. 2, 660 feet east of Bigger Road and 2,500 feet north of Alexandersville-Bellbrook Road; Washington Township:

Ap-0 to 8 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; slightly acid; abrupt smooth boundary.

A3-8 to 12 inches; brown (10YR 4/3) silt loam; weak fine subangular blocky structure; friable; dark grayish brown (10YR 4/2) wormcasts and silt coatings on ped

surfaces; medium acid; clear smooth boundary.

B21t-12 to 18 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; thin continuous brown (10YR 4/3) clay films on ped surfaces; slightly acid; clear smooth boundary.

B22t-18 to 24 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; firm; thin continuous brown (10YR 4/3) clay films on ped surfaces; neutral; clear wavy boundary.

IIB23t-24 to 29 inches; brown (10YR 4/3) clay loam; weak fine and medium subangular blocky structure; firm; thin continuous dark brown (10YR 3/3) clay films on ped faces; black (10YR 2/1) oxide concretions; many angular till pebbles; neutral; clear smooth boundary.

IIB3t-29 to 39 inches; brown (10YR 4/3) clay loam; weak coarse subangular blocky structure; firm; black (10YR 2/1) oxide concretions; very patchy medium dark brown (10YR 3/3) clay films on vertical ped surfaces; neutral; clear wavy boundary.

IIC-39 to 60 inches; yellowish brown (10YR 5/4) loam; massive; friable; calcareous.

The loess ranges from 18 to 40 inches in thickness. The A horizon is dark grayish brown (10YR 4/2) and brown (10YR 4/3 and 10YR 5/3). The upper part of the Bt horizon is dark yellowish brown (10YR 4/4), and the lower part is brown (10YR 4/3 and 7.5YR 4/4). The upper part of the B horizon is silty clay loam, and the IIB horizon is clay loam. Depth to calcareous material ranges from 34 to 60 inches. The upper part of the B horizon and the lower part of the A horizon are strongly acid to slightly acid.

Russell soils are adjacent to Xenia, Fincastle, and Brookston soils and are better drained than any of these soils. Russell soils are capped with 18 to 40 inches of loess or silt, whereas Miamian soils are capped with less than 18 inches. They are deeper to bedrock than Wynn soils, which have limestone bedrock at a depth of less than 40 inches. The Russell soils are better drained and lighter colored than Dana soils.

Shoals Series

The Shoals series consists of somewhat poorly drained soils that formed in recent alluvium on flood plains. Shoals soils are nearly level and occupy areas of flood plains that are scattered throughout the county.

A representative profile of a Shoals soil has a dark grayish brown silt loam surface layer about 8 inches thick. The subsoil is a dark grayish brown silt loam that is about 5 inches thick and that has yellowish brown and dark reddish brown mottles. The underlying material, between depths of 13 and 60 inches or more, is dark gray and dark grayish brown sandy loam and sandy clay loam that have very dark gray, yellowish brown, and reddish brown mottles.

Representative profile of Shoals silt loam, NW¼SE¼ sec. 33, T. 4 N., R. 4 E., 1,700 feet west of Farmersville Road and 1,850 feet north of Manning Road; Jackson Township:

Ap-0 to 8 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; mildly alkaline (calcareous); abrupt smooth boundary.

Bg-8 to 13 inches; dark grayish brown (10YR 4/2) silt loam with few fine distinct dark reddish brown (5YR 3/4) and yellowish brown (10YR 5/4) mottles and few medium distinct yellowish brown (10YR 5/8) mottles; weak fine subangular blocky structure; friable; dark gray (10YR 4/1) films on ped surfaces; very dark grayish brown (10YR 3/2) wormcasts in upper part of horizon; mildly alkaline (calcareous); clear smooth boundary.

C1g-13 to 22 inches; dark gray (10YR 4/1) sandy loam that has common medium distinct yellowish brown (10YR 5/6) mottles, few medium faint very dark gray (10YR 3/1) mottles, and few fine prominent yellowish red (5YR 4/6) mottles; massive; friable; mildly alkaline (calcareous); clear smooth boundary.

C2g-22 to 30 inches; dark gray (10YR 4/1) and dark grayish brown (10YR 4/2) sandy clay loam that has common medium distinct reddish brown (5YR 4/4) mottles; massive; firm; moderately alkaline (calcareous); clear wavy boundary.

C3-30 to 60 inches; dark grayish brown (10YR 4/2) sandy loam; massive; friable; moderately alkaline (calcareous).

The A horizon is dark grayish brown (10YR 4/2) or grayish brown (10YR 5/2). The C horizon has a hue of 10YR values of 4 and 5, and chromas of 1 and 2. The texture of the C horizon is loam, sandy clay loam, clay loam, sandy loam, and silt loam. Reaction throughout the profile is slightly acid to moderately alkaline.

Shoals soils are adjacent to dark colored Ross, Medway, and Sloan soils. They are lighter colored and more poorly drained than Ross and Medway soils. They are lighter colored and better drained than Sloan soils.

Sloan Series

The Sloan series consists of dark colored, very poorly drained soils that are subject to flooding. Sloan soils are depressional to nearly level and occupy low-lying areas of flood plains throughout the county.

A representative profile of a Sloan soil has a black silt loam surface layer about 12 inches thick. The subsurface layer is very dark gray clay loam that is mottled with yellowish brown and brownish yellow and extends to a depth of about 20 inches. At a depth below 20 inches is dark gray clay loam that is mottled mainly with yellowish brown. This layer is 5 inches thick and contains many rounded pebbles. Beneath this is more than 30 inches of dark grayish brown gravelly loam that is mottled with yellowish brown.

Representative profile of Sloan silt loam, SE¼NE¼ sec. 4, R. 8, T. 2, 50 feet west of the Greene-Montgomery County line and 300 feet north of Chambersburg Road; Wayne Township:

Ap-0 to 9 inches; black (10YR 2/1) silt loam; weak fine granular structure; friable; neutral; abrupt smooth boundary.

A1-9 to 12 inches; black (10YR 2/1) silt loam; few fine distinct dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/4) mottles; weak coarse subangular blocky structure; friable; neutral; clear smooth boundary.

A3g-12 to 20 inches; very dark gray (10YR 3/1) clay loam; few fine distinct yellowish brown (10YR 5/4 and 5/8)

and brownish yellow (10YR 6/6) mottles; massive; firm; neutral; clear smooth boundary.

B2g-20 to 25 inches; dark gray (10YR 4/1) clay loam; few fine distinct brown (10YR 5/3), yellowish brown (10YR 5/4), and brownish yellow (10YR 6/6) mottles; massive; firm; many rounded pebbles; mildly alkaline, slightly calcareous; clear smooth boundary.

IIC-25 to 60 inches; dark grayish brown (10YR 4/2) gravelly loam; many fine distinct yellowish brown (10YR 5/4) mottles and few fine distinct yellowish brown (10YR 5/6 and 5/8) mottles; massive; 35 to 40 percent pebble content; very friable; mildly alkaline (calcareous).

The A horizon is black (10YR 2/1), very dark gray (10YR 3/1), very dark brown (10YR 2/2), or very dark grayish brown (10YR 3/2) to a depth of about 10 to 24 inches. The underlying alluvium (B and C horizons) is very dark gray (10YR 3/1), dark gray (10YR 4/1), and very dark grayish brown (10YR 3/2), and it becomes dark grayish brown (10YR 4/2) and brown (10YR 4/3) with depth. The B horizon has a weak and moderate, medium and coarse, subangular blocky structure, or it is structureless. The weighted average clay content in the B and C horizons to a depth of 40 inches is between 18 and 35 percent. The C horizon ranges in texture from gravelly loam to sandy loam or loam.

Sloan soils are adjacent to Ross and Medway soils on the larger flood plains and to soils such as Miamian and Celina soils on the smaller, more narrow flood plains. Sloan soils have a darker colored surface layer and are more poorly drained than Shoals soils. The subsoil in Sloan soils lacks a Bt horizon and is less well developed, than that of Brookston, Westland, and Montgomery soils. Sloan soils are dark colored at the surface, but Algiers soils have a layer of light colored recent alluvium over dark colored, very poorly drained material

Thackery Series

The Thackery series consists of moderately well drained soils that formed in glacial outwash material. They are nearly level and occupy areas on stream terraces.

A representative profile of a Thackery soil has a dark grayish brown silt loam plow layer about 7 inches thick. Beneath the plow layer, to a depth of 15 inches, the upper part of the subsoil is dark yellowish brown silt loam. The lower part of the subsoil is dark yellowish brown silty clay loam, clay loam, and gravelly clay loam. The sand content increases with depth throughout the subsoil. At a depth of 40 to 50 inches, there are strata of loamy sand and sandy loam. Calcareous loam glacial till is below a depth of 50 inches.

Representative profile of Thackery silt loam, till substratum, 0 to 2 percent slopes, SE¼SE¼ sec. 21, T. 2 N., R. 5 E.; Miami Township:

Ap-0 to 7 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; neutral; abrupt smooth boundary.

B1-7 to 15 inches; dark yellowish brown (10YR 4/4) silt loam; moderate fine angular blocky structure; friable; medium acid; clear smooth boundary.

B21t-15 to 23 inches; dark yellowish brown (10YR 4/4) silty clay loam; few fine faint yellowish brown (10YR 5/6) mottles; moderate fine and medium subangular blocky structure; firm; thin patchy dark yellowish brown (10YR 3/4) clay films on ped surfaces; slightly acid; clear smooth boundary.

B22t-23 to 30 inches; dark yellowish brown (10YR 4/4) clay loam; few fine faint yellowish brown (10YR 5/4 and 5/6) mottles; moderate medium subangular blocky structure; firm; 5 percent (by volume) fine gravel; thin patchy brown (10YR 4/3) clay films; slightly acid; clear smooth boundary.

IIB3-30 to 40 inches; dark yellowish brown (10YR 4/4) gravelly clay loam; massive parting along vertical clay flows to weak coarse subangular blocky structure; firm; neutral; clear smooth boundary.

IIC1-40 to 45 inches; brown (10YR 4/3) loamy sand; massive; friable; neutral; gradual smooth boundary.

IIC2-45 to 50 inches; dark yellowish brown (10YR 4/4) sandy loam; massive; friable; mildly alkaline (calcareous); gradual smooth boundary.

IIIC3-50 to 60 inches; dark yellowish brown (10YR 4/4) loam; massive; friable; strongly calcareous.

The A horizon is dark grayish brown (10YR 4/2) or brown (10YR 4/3). Color of the B horizon is dark yellowish brown (10YR 4/4) and brown (10YR 4/3 or 7.5YR 4/4). Weighted average clay content of the Bt horizon is 30 to 34 percent. The upper part of the B horizon is medium acid to slightly acid. Depth to the more sandy IIC horizon is 40 to 48 inches.

Thackery soils in Montgomery County have a till substratum that is not representative of that of the Thackery soils in most other survey areas. Typically, Thackery soils are formed in loess-capped loamy outwash over thick deposits of sand and gravel. In this county the till is at a depth of 50 to 70 inches. These soils also lack grayish mottles in the upper part of the Bt horizon as do typical Thackery soils elsewhere. Use and management of these soils, however, are commonly similar to those of the more typical Thackery soils.

Thackery soils are commonly adjacent to Ockley and Tippecanoe soils. They are not so well drained as Ockley soils, and they are lighter colored than the Tippecanoe soils.

Tippecanoe Series

The Tippecanoe series consists of dark, moderately well drained soils that formed in loamy glacial outwash. They are nearly level and are on terraces along streams.

A representative profile of Tippecanoe soil has a very dark grayish brown silt loam surface layer about 12 inches thick. The upper part of the subsoil is very dark grayish brown, brown, and dark yellowish brown clay loam mottled with brown and yellowish brown. This part extends to a depth of about 36 inches. The lower part of the subsoil is brown loam and loamy sand. Loose sand and gravel underlie the subsoil at a depth of about 52 inches.

A representative profile of Tippecanoe silt loam, 0 to 2 percent slopes, NE¼NW¼ sec. 17, T. 2 N., R. 5 E.; German Township (east):

Ap-0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine granular structure; friable; medium acid; abrupt smooth boundary.

A1-7 to 12 inches; very dark grayish brown (10YR 3/2) silt loam; moderate fine and very fine subangular blocky structure; friable; slightly acid; clear smooth boundary.

IIB21t-12 to 18 inches; very dark grayish brown (10YR 3/2) clay loam; few fine faint brown (10YR 5/3) mottles; moderate fine subangular blocky structure; friable; thin patchy very dark brown (10YR 2/2) clay films on ped surfaces; slightly acid; gradual smooth boundary.

IIB22t-18 to 25 inches; brown (10YR 4/3) clay loam; few fine faint yellowish brown (10YR 5/4) mottles; moderate coarse subangular blocky structure; firm; thin patchy very dark grayish brown (10YR 3/2) clay films on ped surfaces; slightly acid; clear smooth boundary.

IIB23t-25 to 36 inches; dark yellowish brown (10YR 4/4) clay loam; few fine faint brown (10YR 5/3) and yellowish brown (10YR 5/4) mottles; moderate very coarse subangular blocky structure; firm; medium patchy dark grayish brown (10YR 4/2) clay films; neutral; clear smooth boundary.

IIB31-36 to 45 inches; brown (10YR 4/3) loam; weak coarse subangular blocky structure; friable; abundant light brownish gray (10YR 6/2) and yellowish brown (10YR 5/4) weathered limestone remnants; mildly alkaline, slightly calcareous; clear smooth boundary.

IIB32-45 to 52 inches; brown (10YR 4/3) loamy sand; single grain; loose; limestone remnant as in IIB31 horizon; moderately alkaline (calcareous); clear smooth boundary.

IIC-52 to 60 inches; sand and gravel; single grain; loose; strongly calcareous.

The A horizon and the upper part of the B horizon are very dark grayish brown (10YR 3/2) and very dark brown (10YR 2/2). The thickness of these dark layers ranges from 14 to 19 inches. The lower part of the B horizon is brown (10YR 4/3), dark yellowish brown (10YR 4/4), and yellowish brown (10YR 5/4). Weighted average clay content of the Bt horizon is 32 to 34 percent. The reaction of the upper part of the B horizon is medium acid to slightly acid. Horizons are progressively less acid with depth. Depth to calcareous sand and gravel is 46 to 60 inches.

Tippecanoe soils are adjacent to Warsaw, Fox, and Ockley soils. Tippecanoe soils are less well drained than these adjacent soils and have a darker surface layer than Fox or Ockley soils. They are deeper to sand and gravel than the Fox soils. Tippecanoe soils also are darker than the moderately well drained Thackery soils that also are adjacent in places.

Warsaw Series

The Warsaw series consists of dark colored, well drained soils that formed in loamy glacial outwash that is underlain by sand and gravel at a depth of 24 to 42 inches. These soils are nearly level to gently sloping and are on stream terraces.

A representative profile of a Warsaw soil has a very dark grayish brown silt loam surface layer about 6 inches thick. The upper part of the subsoil is very dark grayish brown and very dark brown silty clay loam that extends to a depth of 15 inches. Below a depth of 15 inches, the subsoil is a dark yellowish brown clay loam and gravelly sandy loam to a depth of 32 inches. Loose calcareous sand and gravel is at a depth of 32 inches and extends to a depth of more than 60 inches.

Representative profile of Warsaw silt loam, 0 to 2 percent slopes, NE¼NE¼ sec. 21, R. 6, T. 1; Miami Township:

A1-0 to 6 inches; very dark grayish brown (10YR 3/2) silt loam; moderate fine granular structure; friable; slightly acid; clear smooth boundary.

B1-6 to 11 inches; very dark grayish brown (10YR 3/2) silty clay loam; moderate fine subangular blocky structure; firm; medium acid; abrupt smooth boundary.

B21t-11 to 15 inches; very dark brown (10YR 2/2) silty clay loam; moderate medium subangular blocky structure; firm; slightly acid; clear smooth boundary.

B22t-15 to 25 inches; dark yellowish brown (10YR 4/4) clay loam; weak medium subangular blocky structure; firm; thin continuous dark brown (10YR 3/3) clay films on ped surfaces; neutral; diffuse smooth boundary.

B3-25 to 32 inches; dark yellowish brown (10YR 4/4) gravelly sandy loam; massive; friable; very dark grayish brown (10YR 3/2) clay flows; mildly alkaline, slightly calcareous; clear wavy boundary.

C-32 to 60 inches; sand and gravel; single grain; loose; calcareous.

The A horizon is very dark brown (10YR 2/2) or very dark grayish brown (10YR 3/2). These colors extend to a depth of 12 to 20 inches and include the B1 horizon and the upper part of the Bt horizon. The lower part of the Bt horizon is dark yellowish brown (10YR 4/4) and brown (10YR 4/3 and 7.5YR 4/4).

The B2t horizon is clay loam, sandy clay loam, and silty clay loam. Depth to calcareous sand and gravel ranges from 24 to 42 inches, but a depth of 32 to 34 inches is typical. The B1 horizon is medium acid to slightly acid. Acidity decreases with depth, and the lower horizons are neutral.

Warsaw soils are adjacent to Fox, Wea, and Tippecanoe soils. Warsaw soils have a darker surface layer than Fox soils, and they are more shallow to calcareous sand and gravel than Wea and Tippecanoe soils. They also are better drained than Tippecanoe soils.

Wea Series

The Wea series consists of dark colored, well drained soils that formed in glacial outwash materials. These soils are nearly level and gently sloping and are on river and stream terraces.

A representative profile of a Wea soil has a very dark grayish brown silt loam surface layer about 14 inches thick. The upper part of the subsoil is brown silty clay loam to a depth of 22 inches. The lower part of the subsoil is dark yellowish brown clay loam that extends to a depth of 47 inches. Below the subsoil is calcareous sand and gravel.

Representative profile of Wea silt loam, 0 to 2 percent slopes, NW¼SE¼ sec. 5, R. 8, T. 2, 100 feet east and 30 feet south of New Carlisle Road and Taylorsville Road intersection; Wayne Township:

Ap-0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine granular structure; friable; slightly acid; abrupt smooth boundary.

A1-8 to 14 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine subangular blocky structure parting

to moderate fine granular structure; neutral; clear smooth boundary.

B1-14 to 22 inches; brown (10YR 4/3) silty clay loam; moderate fine subangular blocky structure; firm; very dark grayish brown (10YR 3/2) organic stains on ped surfaces; neutral; clear smooth boundary.

B21t-22 to 27 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular blocky structure; firm; black (10YR 2/1) oxide stains; medium continuous dark brown (10YR 3/3) clay films on ped surfaces; neutral; clear smooth boundary.

B22t-27 to 38 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular blocky structure; firm; thin continuous dark yellowish brown (10YR 3/4) clay films on ped surfaces; neutral; clear smooth boundary.

B3-38 to 47 inches; dark yellowish brown (10YR 4/4) clay loam; very weak medium subangular blocky structure; firm; thick vertical dark brown (10YR 3/3) clay flows; mildly alkaline, slightly calcareous; clear wavy boundary.

C-47 to 52 inches; sand and gravel; single grain; loose; calcareous.

The A horizon and the B1 horizon, to a depth of 12 to 20 inches, are very dark grayish brown (10YR 3/2) or very dark brown (10YR 2/2). The lower part of the B horizon is dark yellowish brown (10YR 4/4) or brown (10YR 4/3 and 7.5YR 4/4).

The B2 horizon is clay loam, silty clay loam, and sandy clay loam. Depth to calcareous sand and gravel is 42 to 60 inches. The B1 horizon is slightly acid to neutral.

Wea soils are adjacent to Fox, Ockley, Warsaw, and Tippecanoe soils. They have a darker surface layer than Fox and Ockley soils, and they are deeper to calcareous sand and gravel than Fox and Warsaw soils. They are better drained than moderately well drained Tippecanoe soils.

Westland Series

The Westland series consists of dark colored, very poorly drained soils that formed in glacial outwash. They overlie calcareous sand and gravel at a depth of 42 to 72 inches. These nearly level soils are on terraces along the rivers and streams.

A representative profile has a very dark gray silty clay loam plow layer about 8 inches thick. The upper part of the subsoil is like the plow layer in color and texture and extends to a depth of 16 inches. To a depth of 28 inches, the subsoil is dark gray silty clay loam that is mottled with dark yellowish brown and yellowish brown. It is gray sandy loam between depths of 28 and 45 inches. The subsoil is underlain with calcareous gray sand.

Representative profile of Westland silty clay loam, NW¼SE¼ sec. 14, R. 7, T. 2, 600 feet east of Spaulding Road and 2000 feet north of Patterson Road; city of Kettering:

Ap-0 to 8 inches; very dark gray (10YR 3/1) silty clay loam; moderate fine granular structure; friable; neutral; abrupt smooth boundary.

B21tg-8 to 16 inches; very dark gray (10YR 3/1) silty clay loam; weak medium prismatic structure parting to moderate medium subangular blocky structure; firm; thin patchy very dark gray (10YR 3/1) clay films on horizontal and vertical faces of peds; neutral; gradual smooth boundary.

B22tg-16 to 28 inches; dark gray (N 4/0) silty clay loam; common medium distinct dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/4) mottles; moderate coarse subangular blocky structure; firm; thin patchy very dark gray (10YR 3/1) clay films on vertical ped surfaces; neutral; clear smooth boundary.

IIB3g-28 to 45 inches; gray (10YR 5/1) sandy loam; few fine faint dark grayish brown (10YR 4/2) mottles; massive; friable; many greenish gray (5GY 6/1) limestone remnants; mildly alkaline, slightly calcareous; clear smooth boundary.

IICg-45 to 60 inches; gray (10YR 5/1) sand; single grain; loose; strongly calcareous.

The A horizon is black (10YR 2/1) to very dark gray (10YR 3/1), very dark grayish brown (10YR 3/2), and very dark brown (10YR 2/2). The B horizon is dark gray (N 4/0, 10YR 4/1), very dark gray (10YR 3/1), and gray (10YR 5/1). Clay content of the B2 horizon ranges from 28 to 35 percent, with a weighted average in most profiles of 32 to 34 percent. Thickness of the dark surface layer is 10 to 18 inches. Depth to underlying sand and sand and gravel is 42 to 72 inches. The A horizon is slightly acid to neutral. The B horizon is neutral to moderately alkaline.

Westland soils are adjacent to the well drained Fox and Ockley soils and the very poorly drained Montgomery soils. They are darker colored and much more poorly drained than either Fox or Ockley soils. They have a coarser texture throughout than Montgomery soils. Westland soils have a higher content of sand and coarse fragments than the very poorly drained Brookston soils on uplands. They lack the light colored surface layer of the Algiers soils. Westland soils differ from Sloan soils because they have a Bt horizon and Sloan soils do not.

Wynn Series

The Wynn series consists of well drained soils that formed in silt-capped calcareous till that is moderately deep to limestone bedrock. Wynn soils are gently sloping and are mostly in the southeastern part of the county.

A representative profile has a dark grayish brown silt loam plow layer about 9 inches thick. Beneath the plow layer is a thin, brown silt loam subsurface layer about 2 inches thick. The subsoil is a dark yellowish brown silty clay loam and clay loam. Limestone bedrock is at a depth of 29 inches.

Representative profile of Wynn silt loam, 2 to 6 percent slopes, moderately eroded, SW¼ sec. 30, R. 6, T. 2, 600 feet west of Route 48 and 1,650 feet north of Spring Valley Road; Washington Township:

Ap-0 to 9 inches; dark grayish brown (10YR 4/2) silt loam; weak very fine granular structure; friable; neutral; abrupt smooth boundary.

A2-9 to 11 inches; brown (10YR 5/3) silt loam; weak thin platy structure; friable; slightly acid; clear wavy boundary.

B&A-11 to 14 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine subangular blocky structure; friable;

thin patchy brown (10YR 5/3) silt coats on ped surfaces; medium acid; clear smooth boundary.
B21t-14 to 19 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak medium subangular blocky structure parting to weak fine angular blocky structure; firm; thin continuous dark grayish brown (10YR 4/2) clay films; slightly acid; clear smooth boundary.
IIB22t-19 to 25 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular blocky structure; firm; medium continuous dark brown (10YR 4/3) clay films; neutral; clear smooth boundary.
IIB23t-25 to 29 inches; dark yellowish brown (10YR 4/4) clay loam; weak medium subangular blocky structure; firm; medium patchy dark brown (10YR 3/3) clay films on vertical ped faces; approximately 10 percent weathered limestone fragments; neutral; abrupt smooth boundary.
IIIR-29 to 35 inches; limestone bedrock; calcareous.

The Ap horizon is dark grayish brown (10YR 4/2) and dark brown (10YR 4/3). The B horizon is dark yellowish brown (10YR 4/4), yellowish brown (10YR 5/4), and brown (7.5YR 4/4). The B horizon is clay loam or silty clay loam. The thickness of the silt capping is 18 to 40 inches. The depth to calcareous material, where present, is 24 to 36 inches, and the depth to limestone bedrock is 24 to 40 inches. Reaction of the upper part of the B horizon is medium acid or slightly acid.

Where the Wynn soils are underlain by Ordovician calcareous limestone and shale bedrock, the layer just above the stone in places developed from the shale and is greenish gray (5GY 5/1) and gray (5Y 5/1) in some pedons. Till derived layers over the Ordovician rock contain small amounts of stone fragments mixed with the glacial material in some places.

Wynn soils are adjacent to Russell and Xenia soils. They are underlain by limestone bedrock at a depth of 24 to 40 inches, whereas Russell and Xenia soils have no bedrock at these depths. Wynn soils have a thicker loess cap than Milton soils. The loess cap of Wynn soils is 18 inches thick or more, but it is 18 inches thick or less on Milton soils.

Xenia Series

The Xenia series consists of moderately well drained soils that formed partly in loess and partly in calcareous loam glacial till. They are nearly level to gently sloping and are on uplands in the southeastern part of the county.

A representative profile of a Xenia soil has a dark grayish brown silt loam plow layer about 7 inches thick. Below the plow layer is a thin, dark yellowish brown silt loam subsurface layer about 4 inches thick. The upper part of the subsoil is yellowish brown silty clay loam about 12 inches thick. The middle part of the subsoil is dark yellowish brown and dark brown silty clay loam about 12 inches thick. The lower part of the subsoil, at a depth of 35 to 45 inches, is mainly dark grayish brown clay loam that formed in weathered till. Below the subsoil, at a depth of 45 to 78 inches, is calcareous loam glacial till.

Representative profile of Xenia silt loam, 2 to 6 percent slopes, NW¼NW¼ sec. 14, R. 6, T. 2; 990 feet south of north line of sec. 14 and 825 feet east of Bigger Road; Washington Township (Sample MT-21 in laboratory data):

Ap-0 to 7 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; medium acid; abrupt smooth boundary.
A3-7 to 11 inches; dark yellowish brown (10YR 4/4) silt loam; moderate fine granular structure; friable; brown (10YR 4/3) organic stains on ped surfaces; few black (10YR 2/1) oxide concretions; strongly acid; clear smooth boundary.
B21t-11 to 17 inches; yellowish brown (10YR 5/4) silty clay loam; common fine distinct grayish brown (10YR 5/2) mottles; moderate fine subangular blocky structure; firm; few black (10YR 2/1) oxide concretions; thin patchy dark yellowish brown (10YR 4/4) clay films on ped surfaces; medium acid; clear smooth boundary.
B22t-17 to 23 inches; yellowish brown (10YR 5/4) silty clay loam; common fine distinct grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; firm; thin patchy dark brown (7.5YR 4/4) clay films on ped surfaces; few black (10YR 2/1) oxide concretions; slightly acid; clear smooth boundary.
B23t-23 to 29 inches; dark yellowish brown (10YR 4/4) silty clay loam; common fine faint yellowish brown (10YR 5/6) mottles and many fine distinct grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; firm; thin continuous dark brown (7.5YR 4/4) clay films on ped surfaces; many dark brown (10YR 4/3) concretions and stains; slightly acid; clear smooth boundary.
B24t-29 to 35 inches; dark brown (10YR 4/3) silty clay loam; common fine faint yellowish brown (10YR 5/6 and 10YR 5/8) mottles; weak fine subangular blocky structure; firm; thin patchy grayish brown (10YR 5/2) clay films on ped surfaces; many medium oxide stains; neutral; abrupt smooth boundary.
IIB25t-35 to 41 inches; dark grayish brown (10YR 4/2) and dark brown (10YR 4/3) clay loam; common fine faint yellowish brown (10YR 5/6 and 10YR 5/8) mottles; weak medium subangular blocky structure; firm; thin patchy grayish brown (10YR 5/2) clay films on peds; angular till pebbles present; neutral; clear smooth boundary.
IIB3-41 to 45 inches; dark grayish brown (10YR 4/2) clay loam; many fine distinct yellowish brown (10YR 5/6) mottles; massive; firm; mildly alkaline; clear smooth boundary.
IIC1-45 to 53 inches; yellowish brown (10YR 5/4) loam; massive; firm; mildly alkaline; calcareous.
IIC2-53 to 78 inches, brown (10YR 5/3) loam; massive, firm; mildly alkaline; calcareous.

The A1 or Ap horizon is dark grayish brown (10YR 4/2) and brown (10YR 4/3). The B horizon is dark yellowish brown (10YR 4/4), brown or dark brown (10YR 4/3), yellowish brown (10YR 5/4), and dark grayish brown (10YR 4/2).

The B horizon is silty clay loam and clay loam. Depth to mottling ranges from 16 to 24 inches. The depth of loess ranges from 18 to 40 inches, and the depth to calcareous till ranges from 34 to 60 inches. The reaction in the upper part of the B horizon or in the lower part of the A horizon is strongly acid to slightly acid.

Xenia soils are adjacent to well drained Russell, somewhat poorly drained Fincastle, and very poorly drained Brookston soils. Xenia soils are the moderately well drained soils of this drainage sequence. They have a thicker loess or silt capping than Celina soils. The silt capping is 18 to 40 inches thick on Xenia soils and less than 18 inches thick on Celina soils. Xenia soils have a lighter colored surface layer than moderately well drained Dana soils, which are formed from similar materials.

Rock is not within 40 inches of the surface in Xenia soils, but in Wynn soils limestone or shale is within 40 inches of the surface.

Formation of the Soils

This section relates the factors of soil formation to the soils in Montgomery County and explains the processes of soil formation.

Factors of Soil Formation

A soil is a three-dimensional natural body consisting of mineral and organic material that can support plant growth. The nature of any soil at a given site is the result of the interaction of five general factors—parent material, climate, plants and animals, relief, and time. Climate and plants and animals have an effect on parent material that is modified by relief over time. Theoretically, if all these factors were identical at different sites, the soils at these sites would be identical. Differences among the soils are caused by variations in one or more of these factors.

Parent Material

Parent material is the raw material acted on by the soil forming processes. It largely determines soil texture, which, in turn, affects other properties, such as natural soil drainage and permeability. The physical and chemical composition of parent material has an important effect on the kind of soil that forms.

The soils in Montgomery County formed in many different kinds of parent material. Many of the soils formed in material deposited by the glaciers that covered much of the survey area thousands of years ago or by the meltwater from these glaciers. Other soils formed in loess, which is silty windblown material, or in alluvium, which is material recently deposited by streams. In unglaciated areas, the soils formed in material that was either weathered from bedrock in place or moved by gravity. A few soils formed in organic material that resulted from the slow accumulation of plant residue in marshes or ponds over thousands of years.

Glacial till is material that was deposited directly by glacial ice with little or no water action. It typically has particles that vary in size, including sand, silt, clay, and some pebbles, cobblestones, and larger rock fragments. The smaller rock fragments generally are angular. The composition of the till depends on the nature of the area over which the ice passed before the till was deposited. Some of the material was transported great distances by the ice, but most of the till was of local origin. Most of the till throughout the county was deposited during the latest major glaciation, the Wisconsinan Glaciation.

The glacial plains in Montgomery County are either ground moraines or end moraines. The soils that formed in these two types of deposits have different properties, reflecting variations in the method and rate of till deposition.

Till deposits on ground moraines generally are massive, compact, and dense. They make up the nearly level and gently undulating till plains in Montgomery County. The soils that formed in this kind of till generally are compact and are slowly or moderately slowly permeable. Brookston, Celina, Crosby, Dana, Fincastle, Millsdale, and Pyrmont soils typically formed in ground moraine till of Wisconsinan age.

Till deposits on end moraines can vary more in texture than those on ground moraines. In some areas they are stratified and tend to be less dense. They make up the moderately rolling bands of ridges that trend in a northeasterly direction through the central part of the county. The soils that formed in this kind of till generally are less compact and more permeable than the soils on ground moraines. Hennepin and Miamian soils typically formed in till of Wisconsinan age on end moraines.

Outwash deposits, laid down by moving water, and lacustrine deposits, laid down in still water, are two general kinds of meltwater deposits. The size of the particles that can be carried suspended in water depends on the speed of the moving water. When the water slows to a given speed, the suspended particles that are larger than a given size will settle in the water. Water slows wherever a stream loses grade or flows into a body of still water. At that time, the coarser sand and gravel particles settle near the mouth of the stream and the silt and fine clay particles are carried farther into the lake, where they slowly settle.

The soils that formed in outwash deposits are of moderate extent in Montgomery County. They formed in deposits laid down as surging meltwater poured from the glacier, depositing sand and gravel as outwash terraces, deltas, kames, and kame terraces. The meltwater washed away the smaller particles of silt and clay, leaving behind sand and gravel. The soils that formed in outwash generally have rapid permeability in the substratum.

The amount of natural lime and the proportion of shale, sandstone, limestone, and igneous pebbles in the glacial outwash are determined by the source of the outwash. The Wisconsinan outwash deposits along the major terraces in Montgomery County were derived from limestone influenced glacial drift. Fox, Ockley, Rodman, Warsaw, and Wea soils formed in limy glacial outwash of Wisconsinan age.

Soils that formed in lacustrine deposits are of relatively minor extent throughout Montgomery County, although they are locally extensive in places. They formed in deposits laid down in scattered old glacial or post-glacial lakes. Montgomery soils formed in these silty deposits.

Loess is wind-deposited soil material. Soils that formed in loess are of large extent throughout Montgomery County. The loess was deposited as the outwash terraces were forming. Strong winds swept across these open, level terraces, picked up silt particles, and later deposited them, commonly on landforms at higher elevations. In the southeastern part of the county, Brookston, Fincastle, Russell, and Xenia soils formed in thick deposits of loess deposited over till.

Soils that formed in material weathered from limestone are extensive throughout most of the county. Generally, limestone weathers to silt and clay. Most of the soils that formed in limestone have a thin layer of overlying till or loess or both. Millsdale, Milton, Plattville, Randolph, and Ritchey soils formed in till over limestone and shale bedrock. Fairmount soil formed entirely from limestone and clay shale bedrock.

Recent alluvium is soil material deposited by floodwater along streams. The texture of the soil material varies, depending on the speed of the floodwater, the duration of flooding, and the distance from the streambank. Soils that formed in recent alluvium can be highly stratified. The soil horizons are weakly expressed because the soil forming processes are interrupted with each new deposition. The source of the alluvium generally is material eroded from other soils farther upstream in the watershed. Algiers, Medway, Shoals, and Sloan soils formed in alluvium.

Organic soils formed in decomposed plant material that accumulated under water when ponds were filling with water. Ponds and marshes naturally age as they fill with organic material derived from algae, sedges, rushes, and other water-tolerant plants. The plant residue accumulates because the permanently wet condition of the soils prevents oxidation and slows decomposition. Freshly exposed organic material commonly has a reddish brown color that rapidly turns black when the material is exposed to the air. Carlisle soils formed in decomposed plant material.

Climate

The climate in Montgomery County has significantly affected the soil forming processes. Climatic factors, such as precipitation and temperature, have influenced the existing plant and animal communities and the physical and chemical weathering of the parent material.

During the colder glacial epoch, the advancing glaciers spread over the glaciated part of the county and buried the boreal forest and the underlying soils. The cold temperatures in the soil reduced the rate of chemical reactions in the existing soils and in the raw parent material. Increased frost action, resulting from a periglacial climate, caused frost churning in some soils. Strong winds swept across the recently deposited glacial parent material, which was largely devoid of vegetation, and carried away large amounts of silt sized particles, which were later deposited as loess. When the glacial ice retreated and the climate gradually warmed, deciduous forests eventually succeeded the boreal vegetation.

The county currently has a humid, temperate climate, which has persisted for thousands of years. In this climatic environment, physical and chemical weathering of the parent material can occur along with the accumulation of organic matter, the decomposition of minerals, the formation and translocation of clay, the leaching of soluble compounds, and alternating periods of freezing and thawing.

The microclimate in a given area can affect soil formation. Brookston soils, which are in depressional or low lying areas, receive runoff from the higher adjacent slopes. The runoff creates a wet microclimate that results in prolonged saturation, the reduction of iron, and a gray subsoil. Sloping soils, such as Ritchey soils, formed under a drier microclimate because of runoff. This better external drainage results in better aeration, the oxidation of iron, and a yellowish brown subsoil. Through its effect on the amount of sunlight and heat energy reaching the soil, the trees that grow on the soil, the accumulation of organic matter in the soil, aspect also affects the microclimate.

Living Organisms

The vegetation under which a soil forms influences soil properties, such as color, structure, reaction, and content and distribution of organic matter. Vegetation extracts water from the soil, recycles nutrients, and adds organic matter to the soil. Gases derived from root respiration combine with water to form acids that influence the weathering of minerals. Because of a lower content of organic matter, soils that formed under forest vegetation are generally lighter colored than those that formed under grasses.

At the time Montgomery County was settled, the native vegetation consisted mainly of hardwood forests. Red oak, white oak, sugar maple, and American beech commonly grew on the better drained soils on the Wisconsinan till plains. Pin oak, shagbark hickory, red maple, American elm, and white ash were common on the wetter soils on these till plains. White oak, red oak, hickory, and dogwood were common on the Illinoian till plains and in unglaciated areas. Water-tolerant reeds and sedges, willow, tamarack, and alder grew in scattered small fens or marshes.

Bacteria, fungi, and many other micro–organisms decompose organic matter and release nutrients to growing plants. They influence the formation of peds. Soil properties, such as drainage, temperature, and reaction, influence the type of microorganisms that live in the soil. Fungi are generally more active in the more acid soils, while bacteria are more active in the less active soils.

Earthworms, insects, and small burrowing animals mix the soil and create small channels that influence soil aeration and the percolation of water. Earthworms help to incorporate crop residue or other organic matter into the soil. The organic material improves tilth. In areas that are well populated with earthworms, the leaf litter that accumulates on the soil in the fall is generally incorporated into the soil by the following spring. If the earthworm population is low, part of the leaf fall can remain on the surface of the soil for several years.

Human activities have significantly influenced soil formation. Native forests have been cleared and developed for farming and other uses. Cultivation has accelerated erosion on sloping soils, wet soils have been drained, and manure, lime, chemical fertilizer, and pesticides have been applied in cultivated areas. Cultivation has affected soil structure and compaction and lowered the content of organic matter. The development of land for urban uses or for mining has significantly influenced the soils in some areas.

Relief

Relief influences soil formation mainly through its effect on runoff and erosion. To a lesser extent, it also influences soil temperature, the plant cover, depth to the water table, and the accumulation and removal of organic matter.

Because it causes differences in external soil drainage, relief can differentiate soils that formed in the same kind of parent material. Water that runs off the more sloping soils can collect in depressions or swales. Brookston and Lewisburg soils both formed in loamy till. The sloping to steep Lewisburg soils on ridges, knolls, and side slopes are moderately well drained. They are in areas where external drainage is good. The nearly level Brookston soils are very poorly drained. They are in swales or depressions that receive runoff from the higher adjacent soils, such as Miamian and Crosby soils.

Relief varies greatly in Montgomery County. On the ground moraines in the western part of the county, the soils generally are nearly level to gently undulating. Relief becomes more pronounced in the middle to eastern part of the county, where the Great Miami River dissects the county. The Stillwater River and other drainageways dissect the county causing significant relief change.

Time

The length of time that the parent material has been exposed to soil forming processes influences the nature of the soil that forms. The youngest soils in Montgomery County, such as Algiers and Shoals soils, formed in recent alluvium. These soils can be stratified and have weakly expressed horizons because the soil forming processes are interrupted with each new deposition.

Glaciers advanced over all of Montgomery County during the Wisconsinan Glaciation and the Illinoian Glaciation, possibly as much as 100,000 years apart. Glacial deposits of Wisconsinan age are geologically young, yet enough time has elapsed for the initially raw parent material to weather into soils that have distinct horizons. In most of the soils, including Miamian, Lewisburg, and Crosby soils, carbonates have been leached to a depth of about 10 to 40 inches, clay has been translocated from the A horizon to the B horizon, and organic matter has accumulated in the A horizon.

Processes of Soil Formation

Soil forms through complex processes that are grouped into four general categories. These are additions, removals, transfers, and transformations. These processes affect soil formation, although in differing degrees.

The accumulation of organic matter in the A horizon of the mineral soils in Montgomery County is an example of an addition. This accumulation is the main reason for the dark color of the A horizon. The color of the raw parent material is uniform with increasing depth.

The leaching of lime from the upper 1 to 4 feet in many of the soils in Montgomery County that formed in till is an example of a removal. The parent material of these soils was initially limy, but the lime has been leached from the upper part of the profile by percolating water.

The translocation of clay from the A horizon to the B horizon in many soils on uplands in the county is an example of a transfer. The A horizon or an E horizon is a zone of eluviation, or loss. The B horizon is a zone of illuviation, or gain. In Miamian and Celina soils, and other soils, the B horizon has more clay than the parent material and the A horizon has less clay. In the B horizon of some soils, thin clay films are in pores and on faces of peds. This clay has been transferred from the A horizon.

An example of a transformation is the reduction and solubilization of ferrous iron. This process takes place under wet, saturated conditions in which there is no molecular oxygen. Gleying, or the reduction of iron, is evident in Algiers, Brookston, and Celina soils, which have a dominantly gray subsoil. The gray color indicates the presence of reduced ferrous iron, which, in turn, implies wetness. Reduced iron is soluble, but it commonly has been moved short distances in the soils in Montgomery County, stopping either in the horizon where it originated or in an underlying horizon. Part of this iron can be reoxidized and segregated in the form of stains, concretions, or bright yellow and red mottles.

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.

Ablation till. Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvial fan. 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.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available water capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Backswamp. A floodplain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.

Basal area. The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Basal till. Compact till deposited beneath the ice.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope. A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Beach ridge. A low, essentially continuous mound of beach or beach and dune material heaped up by the action of waves and currents on the backshore of a beach, beyond the present limit of storm waves, and occurring singly or as one of a series of approximately parallel deposits. These ridges define the limits of relict lakes.

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

Bedding system. A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Beta horizon. A special type of lower Bt horizon with a significant accumulation of translocated silicate clay between two contrasting parent materials.

Borrow pit. An open excavation from which soil and underlying material have been removed, usually for construction purposes. Typically less than 2 acres in size. Larger areas are mapped as Udorthents.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks. The steep and very steep broken land at the border of an upland summit that is dissected by ravines.

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.

Bulk density. The mass of a dry soil per unit bulk volume. The bulk volume is determined before drying to a constant weight at 105 degrees C. The value is expressed in grams per cubic centimeter.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material 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.

Cement rock. Shaly limestone used in the manufacture of cement.

Channery soil material. Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. 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.

Clayey. Containing more than 35 percent clay.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Closed depression. A shallow, saucer-shaped area that is slightly lower on the landscape than the surrounding area and is without a natural outlet for surface drainage.

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.

Compaction. Any process by which the mineral grains of soil are rearranged to decrease void space and bring them into closer contact with one another, thereby increasing the weight of solid material per cubic foot. In agronomy, usually associated with machinery traffic across the soil during farming operations.

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.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conglomerate. A coarse grained, clastic rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour. An imaginary line on the surface of the earth connecting points of the same elevation.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat). Fecal material deposited in water by aquatic organisms.

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.

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.

Cropland. Land used primarily for the production of adapted cultivated, close-growing crops, fruit, or nut crops for harvest, alone or in association with sod crops.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Delta. A body of alluvium having a surface that is nearly flat and fan shaped; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

Dense material. A very firm, massive, noncemented, root-restrictive layer (commonly till) that has no cracks or in which the spacing of cracks that roots can enter is 10 centimeters or more. The materials within the survey area have a bulk density of more than 1.8 grams per cubic centimeter.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Depth to bedrock (in tables). Bedrock is too near the surface for the specified use.

Depth to dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Dip slope. A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming. A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Dolostone. A term used for the sedimentary rock dolomite in order to avoid confusion with the mineral of the same name. A carbonate sedimentary rock consisting mostly (more than 50 percent by weight) of the mineral dolomite [$CaMg(CO_3)_2$].

Drainage, surface. Runoff, or surface flow of water, from an area.

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."

Drainageway. A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Draw. A small stream valley that generally is more open and has broader bottom land than a ravine or gulch.

Drift. Pulverized and other rock material transported by glacial ice and then deposited. Also, the sorted and unsorted material deposited by streams flowing from glaciers.

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.

Ecological site. An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Effervescence. The gaseous response (observed as bubbles) of soil to applied hydrochloric acid (HCl) or other chemicals. A field or laboratory test to determine the presence of carbonates in the soil.

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.

End moraine. A moraine produced at the front of an actively flowing glacier at any given time.

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, generally produced by erosion or faulting, breaking the general continuity of more gently sloping land surfaces. Exposed nonbedrock material is nonsoil material or very shallow, poorly developed soil. Typically 0.1 acre to 2 acres in size. Synonym: scarp.

Esker. A narrow, winding ridge of stratified gravelly and sandy drift deposited by a stream flowing in a tunnel beneath a glacier.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Filtering capacity (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Fine textured soil. Sandy clay, silty clay, or clay.

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.

Floodplain. 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 geomorphic component that forms the inner, gently inclined surface at the base of a hillslope. The surface profile is dominantly concave. In terms of gradational processes, the 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.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil–forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Glaciofluvial deposits. Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are interbedded or laminated.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravel pit. An open excavation from which soil and the loose underlying material have been removed and used as a source of sand or gravel, usually for construction purposes.

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.

Gravelly spot. An area in which the surface layer has more than 35 percent, by volume, rock fragments (mostly less than 3 inches in diameter) in an area of surrounding soil that has less than 15 percent rock fragments.

Green manure crop (agronomy). A soil–improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground moraine. An extensive, fairly even layer of till that has an uneven, undulating surface; a deposit of rock and mineral debris dragged along, in, on, and beneath a glacier and emplaced by processes including basal lodgment and release from downwasting stagnant ice by ablation.

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.

Hard to reclaim (in tables). Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head out. To form a flower head.

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.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High–residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil–forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil–forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

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.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close–growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame. An irregular, short ridge or hill of stratified drift.

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.

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Landfill. An area where waste products of human habitation are disposed. These products can be above or below natural ground level.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Limestone. A sedimentary rock composed of calcium carbonate. There are many impure varieties.

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.

Lithic contact. A boundary between soil and continuous, coherent underlying material. The underlying material must be sufficiently coherent to make hand digging with a spade impractical.

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.

Longshore bar. A narrow, elongate, coarse textured ridge that once rose near to, or barely above, a pluvial or glacial lake and extended generally parallel to the shore but was separated from it by an intervening trough or lagoon; both the bar and lagoon are now relict features.

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.

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal amounts.

Marsh. A water–saturated, very poorly drained area, intermittently or permanently covered by water. Marsh areas dominantly support sedges, cattails, and rushes. Not used in map units where poorly drained or very poorly drained soils are the named components. Typically 0.5 acre to 2 acres in size.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus–rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Moraine. An accumulation of earth, stones, and other debris deposited by a glacier. Some types are terminal, lateral, medial, and ground.

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).

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mudstone. Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

Mulch. Any material, such as straw, sawdust, leaves, plastic film, or loose soil, that is spread upon the surface of the soil to protect the soil and plant roots from the effects of raindrops, soil crusting, freezing, and evaporation.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

No–till farming. A method of planting crops that involves no seedbed preparation other than opening the soil for the purpose of placing the seed at the intended depth, which typically involves opening a small slit or punching a hole into the soil. There is usually no cultivation during crop production. Chemical weed control is normally used.

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

Outwash. Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.

Outwash plain. A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Paralithic contact. Similar to a lithic contact, except that the underlying material is softer and can be dug with difficulty with a spade.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Pebbles. Rounded or partially rounded rock or mineral fragments between 2 and 75 millimeters in diameter.

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.

Perennial water. A natural or manmade lake, pool, pit, or stream course that contains water for most of the year.

Permafrost. Layers of soil, or even bedrock, occurring in arctic or subarctic regions, in which a temperature below freezing has existed continuously for a long time.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Impermeable	less than 0.0015
Very slow	0.0015 to 0.06
Slow	0.06 to 0.2
Moderately slow	0.2 to 0.6
Moderate	0.6 inch to 2.0
Moderately rapid	2.0 to 6.0
Rapid	6.0 to 20
Very rapid	more than 20

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in 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 native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Quarry. An open excavation from which bedrock has been removed.

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

Red beds. Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low–chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha, alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Restricted permeability (in tables). The slow movement of water through the soil adversely affects the specified use.

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.

Rise. A geomorphic component of flat plains (e.g., lake plain, low coastal plain, low–gradient till plain) consisting of a slightly elevated but low, broad area with slow slope gradients (*i.e., slopes of 1 to 3 percent); typically a microfeature but can be fairly extensive. Commonly, soils on a rise are better drained than those in the surrounding flat area.*

Riser. The sloping surface of a series of natural steplike landforms, as those of successive stream terraces.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop. Exposures of base bedrock, typically hard rock, at the surface of the earth.

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 groundwater runoff or seepage flow from groundwater.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand–sized particles.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

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.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Short steep slope. A narrow area in which the soil has slopes that are at least two slope classes steeper than the slope class of the surrounding map unit.

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.

Shrink–swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Side slope. A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt–sized particles.

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.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil generally is silty or clayey, is slippery when wet, and is low in productivity.

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.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Sloughed till. Water-saturated till that has flowed slowly downhill from its original place of deposit by glacial ice. It may rest on other till, on outwash, or on a glaciolacustrine deposit.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief 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.

Subsidence. The loss in volume that occurs in muck soils when they oxidize or dry.

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.

Summit. The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Swamp. An area that is saturated with water throughout much of the year but in which the surface of the soil is generally not deeply submerged. Swamp areas dominantly support trees and shrubs.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terminal moraine. A belt of thick drift that generally marks the termination of important glacial advances.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Till. Unsorted, nonstratified drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Till plain. An extensive area of nearly level to undulating soils underlain by till.

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.

Tread. The flat or gently sloping surface of natural steplike landforms, commonly one of a series, such as successive stream terraces.

Typical pedon. The site of the pedon described as typical for the series in the survey area.

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.

Varve. A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

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.

Water table. The upper surface of ground water, or the level below which the soil is saturated with water.

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.

Wet spot. An area of soil that is somewhat poorly drained to very poorly drained and that is at least two drainage classes wetter than the named soils in the surrounding map unit.

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 1971-2000 at DAYTON, OH2067. See text on page 9 for additional information.)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January-----	35.2	20.6	27.9	64	-9	27	2.65	1.43	3.85	6	6.4
February----	40.0	23.5	31.8	71	-2	49	2.41	1.17	3.63	5	3.5
March-------	50.8	32.2	41.5	79	11	164	3.08	2.10	3.96	7	2.0
April-------	62.9	42.1	52.5	86	24	384	4.04	2.43	5.54	7	0.2
May---------	74.1	53.1	63.6	92	36	725	4.38	2.40	6.23	8	0.0
June--------	83.3	62.6	72.9	98	47	972	4.17	2.42	5.95	7	0.0
July--------	87.3	66.8	77.0	100	54	1140	3.93	2.24	5.52	6	0.0
August------	85.4	64.6	75.0	97	52	1077	3.28	1.74	4.57	5	0.0
September---	78.6	57.1	67.9	95	40	827	2.60	1.03	4.01	4	0.0
October-----	65.9	45.3	55.6	86	29	483	2.69	1.52	3.71	5	0.0
November----	52.2	36.2	44.2	77	18	193	3.27	1.78	4.52	6	0.4
December----	40.3	26.2	33.2	67	0	54	2.94	1.67	4.19	6	3.1
Yearly:											
Average---	63.0	44.2	53.6	---	---	---	---	---	---	---	---
Extreme---	104	-21	---	100	-11	---	---	---	---	---	---
Total-----	---	---	---	---	---	6093	39.46	33.55	44.77	72	15.6

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees. F)

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1971-2000 at DAYTON, OH2067. See text on page 9 for additional information.)

Probability	Temperature 24 °F or lower	Temperature 28 °F or lower	Temperature 32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	April 3	April 14	April 21
2 year in 10 later than--	March 29	April 10	April 17
5 year in 10 later than--	March 21	April 1	April 9
First freezing temperature in fall:			
1 yr in 10 earlier than--	November 5	October 27	October 16
2 yr in 10 earlier than--	November 11	October 31	October 21
5 yr in 10 earlier than--	November 23	November 8	October 30

TABLE 3.--GROWING SEASON

(Recorded for the period 1971-2000 at DAYTON, OH2067. See text on page 9 for additional information.)

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	223	202	183
8 years in 10	231	208	190
5 years in 10	246	220	202
2 years in 10	262	233	215
1 year in 10	269	239	221

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE MAP UNITS

Map symbol	Soil name	Acres	Percent
Ag	Algiers silt loam	216	*
Bo	Borrow pits	521	0.2
Bp	Brookston silt loam	8,572	2.9
Br	Brookston silt loam, overwash	865	0.3
Bs	Brookston silty clay loam	33,135	11.2
Bu	Brookston-Urban land complex	1,117	0.4
Ca	Carlisle muck	51	*
CeA	Celina silt loam, 0 to 2 percent slopes	7,725	2.6
CeB	Celina silt loam, 2 to 6 percent slopes	28,889	9.7
CeB2	Celina silt loam, 2 to 6 percent slopes, moderately eroded	1,622	0.5
ClB	Celina bouldery silt loam, 2 to 6 percent slopes	142	*
CoA	Corwin silt loam, 0 to 2 percent slopes	511	0.2
CoB	Corwin silt loam, 2 to 6 percent slopes	2,199	0.7
CsA	Crosby silt loam, 0 to 2 percent slopes	18,573	6.3
CtB	Crosby-Celina silt loams, 2 to 6 percent slopes	1,622	0.5
Cu	Crosby-Urban land complex	5,982	2.0
DaB	Dana silt loam, 2 to 6 percent slopes	853	0.3
FaE2	Fairmount silty clay loam, 12 to 25 percent slopes, moderately eroded	236	*
FaF2	Fairmount silty clay loam, 25 to 50 percent slopes, moderately eroded	233	*
FcA	Fincastle silt loam, 0 to 4 percent slopes	2,365	0.8
FkA	Fox sandy loam, 0 to 2 percent slopes	691	0.2
FkB	Fox sandy loam, 2 to 6 percent slopes	219	*
FlA	Fox loam, 0 to 2 percent slopes	703	0.2
FlB	Fox loam, 2 to 6 percent slopes	559	0.2
FlC2	Fox loam, 6 to 12 percent slopes, moderately eroded	160	*
FmA	Fox silt loam, 0 to 2 percent slopes	2,600	0.9
FmB	Fox silt loam, 2 to 6 percent slopes	2,670	0.9
FmC2	Fox silt loam, 6 to 12 percent slopes, moderately eroded	594	0.2
FmD2	Fox silt loam, 12 to 18 percent slopes, moderately eroded	310	0.1
FsC3	Fox soils, 6 to 12 percent slopes, severely eroded	98	*
FuB	Fox-Urban land complex, gently sloping	12,156	4.1
FuC	Fox-Urban land complex, rolling	834	0.3
FuF	Fox-Urban land complex, steep	194	*
Gp	Gravel pits	1,165	0.4
HeE2	Hennepin and Miamian silt loams, 18 to 25 percent slopes, moderately eroded	2,599	0.9
HeF2	Hennepin and Miamian silt loams, 25 to 50 percent slopes, moderately eroded	2,155	0.7
HmF3	Hennepin and Miamian soils, 18 to 50 percent slopes, severely eroded	1,368	0.5
KeA	Kendallville silt loam, 0 to 2 percent slopes	143	*
KeB	Kendallville silt loam, 2 to 6 percent slopes	176	*
KeC2	Kendallville silt loam, 6 to 12 percent slopes, moderately eroded	91	*
Ld	Landes sandy loam	701	0.2
Lg	Lanier sandy loam	348	0.1
LsB	Lewisburg silt loam, 2 to 6 percent slopes	299	0.1
LxC2	Lorenzo-Rodman complex, 4 to 12 percent slopes, moderately eroded	135	*
LxD2	Lorenzo-Rodman complex, 12 to 18 percent slopes, moderately eroded	105	*
Mb	Made land	1,697	0.6
Md	Medway silt loam	3,698	1.2
MlA	Miamian silt loam, 0 to 2 percent slopes	1,956	0.7
MlB	Miamian silt loam, 2 to 6 percent slopes	23,343	7.9
MlB2	Miamian silt loam, 2 to 6 percent slopes, moderately eroded	21,841	7.4
MlC2	Miamian silt loam, 6 to 12 percent slopes, moderately eroded	9,413	3.2
MlD2	Miamian silt loam, 12 to 18 percent slopes, moderately eroded	2,067	0.7
MmB	Miamian bouldery silt loam, 2 to 6 percent slopes	200	*
MnB3	Miamian clay loam, 2 to 6 percent slopes, severely eroded	513	0.2
MnC3	Miamian clay loam, 6 to 12 percent slopes, severely eroded	6,216	2.1
MnD3	Miamian clay loam, 12 to 18 percent slopes, severely eroded	2,641	0.9
MoB	Miamian-Urban land complex, undulating	21,423	7.2
MoC	Miamian-Urban land complex, rolling	3,718	1.3
MoE	Miamian-Urban land complex, steep	1,248	0.4
MrA	Millsdale silty clay loam, 0 to 3 percent slopes	1,082	0.4
MsA	Milton silt loam, 0 to 2 percent slopes	1,030	0.3
MsB	Milton silt loam, 2 to 6 percent slopes	2,265	0.8
MsB2	Milton silt loam, 2 to 6 percent slopes, moderately eroded	1,887	0.6
MsC2	Milton silt loam, 6 to 12 percent slopes, moderately eroded	1,230	0.4
MsD2	Milton silt loam, 12 to 18 percent slopes, moderately eroded	157	*
MtD3	Milton silty clay loam, 6 to 18 percent slopes, severely eroded	510	0.2
MuB	Milton-Urban land complex, undulating	947	0.3
MuC	Milton-Urban land complex, rolling	441	0.1
MuD	Milton-Urban land complex, hilly	67	*
Mv	Montgomery silty clay loam	643	0.2
OcA	Ockley silt loam, 0 to 2 percent slopes	1,418	0.5
OcB	Ockley silt loam, 2 to 6 percent slopes	464	0.2
PlB	Plattville silt loam, 2 to 6 percent slopes	490	0.2
PlC	Plattville silt loam, 6 to 12 percent slopes	107	*
PyA	Pyrmont silt loam, 0 to 2 percent slopes	185	*

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE MAP UNITS--Continued

Map symbol	Soil name	Acres	Percent
Qu	Quarries	203	*
RcA	Randolph silt loam, 0 to 2 percent slopes	664	0.2
ReB	Ritchey silt loam, 2 to 6 percent slopes	271	*
ReB2	Ritchey silt loam, 2 to 6 percent slopes, moderately eroded	192	*
ReC2	Ritchey silt loam, 6 to 12 percent slopes, moderately eroded	458	0.2
ReE2	Ritchey silt loam, 12 to 25 percent slopes, moderately eroded	445	0.1
ReF2	Ritchey silt loam, 25 to 50 percent slopes, moderately eroded	373	0.1
RfD3	Ritchey silt clay loam, 6 to 18 percent slopes, severely eroded	106	*
Rh	Riverwash	258	*
RlE2	Rodman and Fox soils, 18 to 25 percent slopes, moderately eroded	403	0.1
RlF2	Rodman and Fox soils, 25 to 50 percent slopes, moderately eroded	302	0.1
Rs	Ross silt loam	10,731	3.6
Rt	Ross-Urban land complex	3,786	1.3
RuB	Russell silt loam, 2 to 6 percent slopes	3,953	1.3
RvC2	Russell-Miamian silt loams, 6 to 12 percent slopes, moderately eroded	489	0.2
RvD2	Russell-Miamian silt loams, 12 to 18 percent slopes, moderately eroded	116	*
Sh	Shoals silt loam	101	*
So	Sloan silt loam	953	0.3
ThA	Thackery silt loam, till substratum, 0 to 2 percent slopes	145	*
TpA	Tippecanoe silt loam, 0 to 2 percent slopes	134	*
Ua	Urban land, alluvial	738	0.2
Ud	Udorthents	2,196	0.7
Ug	Urban land, gravelly material	186	*
Um	Urban land, loamy material	74	*
W	Water	2,233	0.8
WaA	Warsaw silt loam, 0 to 2 percent slopes	408	0.1
WaB	Warsaw silt loam, 2 to 6 percent slopes	75	*
WeA	Wea silt loam, 0 to 2 percent slopes	1,424	0.5
WeB	Wea silt loam, 2 to 6 percent slopes	179	*
Ws	Westland silty clay loam	898	0.3
WyB2	Wynn silt loam, 2 to 6 percent slopes, moderately eroded	199	*
XeA	Xenia silt loam, 0 to 2 percent slopes	1,224	0.4
XeB	Xenia silt loam, 2 to 6 percent slopes	3,836	1.3
	Total	297,152	100.0

* Less than 0.1 percent.

TABLE 5.--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. See text on page 151 for additional information.)

Map symbol	Soil name
Ag	Algiers silt loam (Prime farmland if drained)
Bp	Brookston silt loam (Prime farmland if drained)
Br	Brookston silt loam, overwash (Prime farmland if drained)
Bs	Brookston silty clay loam (Prime farmland if drained)
CeA	Celina silt loam, 0 to 2 percent slopes
CeB	Celina silt loam, 2 to 6 percent slopes
CeB2	Celina silt loam, 2 to 6 percent slopes, moderately eroded
ClB	Celina bouldery silt loam, 2 to 6 percent slopes
CoA	Corwin silt loam, 0 to 2 percent slopes
CoB	Corwin silt loam, 2 to 6 percent slopes
CsA	Crosby silt loam, 0 to 2 percent slopes (Prime farmland if drained)
CtB	Crosby-Celina silt loams, 2 to 6 percent slopes (Prime farmland if drained)
DaB	Dana silt loam, 2 to 6 percent slopes
FcA	Fincastle silt loam, 0 to 4 percent slopes (Prime farmland if drained)
FkA	Fox sandy loam, 0 to 2 percent slopes
FkB	Fox sandy loam, 2 to 6 percent slopes
FlA	Fox loam, 0 to 2 percent slopes
FlB	Fox loam, 2 to 6 percent slopes
FmA	Fox silt loam, 0 to 2 percent slopes
FmB	Fox silt loam, 2 to 6 percent slopes
KeA	Kendallville silt loam, 0 to 2 percent slopes
KeB	Kendallville silt loam, 2 to 6 percent slopes
Ld	Landes sandy loam
Lg	Lanier sandy loam
LsB	Lewisburg silt loam, 2 to 6 percent slopes
Md	Medway silt loam
MlA	Miamian silt loam, 0 to 2 percent slopes
MlB	Miamian silt loam, 2 to 6 percent slopes
MlB2	Miamian silt loam, 2 to 6 percent slopes, moderately eroded
MrA	Millsdale silty clay loam, 0 to 3 percent slopes (Prime farmland if drained)
MsA	Milton silt loam, 0 to 2 percent slopes
MsB	Milton silt loam, 2 to 6 percent slopes
MsB2	Milton silt loam, 2 to 6 percent slopes, moderately eroded
Mv	Montgomery silty clay loam (Prime farmland if drained)
OcA	Ockley silt loam, 0 to 2 percent slopes
OcB	Ockley silt loam, 2 to 6 percent slopes
PlB	Plattville silt loam, 2 to 6 percent slopes
PyA	Pyrmont silt loam, 0 to 2 percent slopes (Prime farmland if drained)
RcA	Randolph silt loam, 0 to 2 percent slopes (Prime farmland if drained)
Rs	Ross silt loam
RuB	Russell silt loam, 2 to 6 percent slopes
Sh	Shoals silt loam (Prime farmland if drained)
ThA	Thackery silt loam, till substratum, 0 to 2 percent slopes
TpA	Tippecanoe silt loam, 0 to 2 percent slopes
WaA	Warsaw silt loam, 0 to 2 percent slopes
WaB	Warsaw silt loam, 2 to 6 percent slopes
WeA	Wea silt loam, 0 to 2 percent slopes
WeB	Wea silt loam, 2 to 6 percent slopes
Ws	Westland silty clay loam (Prime farmland if drained)
WyB2	Wynn silt loam, 2 to 6 percent slopes, moderately eroded
XeA	Xenia silt loam, 0 to 2 percent slopes
XeB	Xenia silt loam, 2 to 6 percent slopes

TABLE 6.--HYDRIC SOILS LIST

(See text on page 153 for additional information)

Map symbol	Soil name
Bp	Brookston silt loam
Br	Brookston silt loam, overwash
Bs	Brookston silty clay loam
Bu	Brookston-Urban land complex
Ca	Carlisle muck
MrA	Millsdale silty clay loam, 0 to 3 percent slopes
Mv	Montgomery silty clay loam
So	Sloan silt loam
Ws	Westland silty clay loam

TABLE 7.--NON-HYDRIC MAPUNITS WITH HYDRIC COMPONENTS

(See text on page 153 for additional information)

Map symbol and map unit name	Hydric Component	Landform
Ag: Algiers silt loam		
	Sloan	depression, slough, flood plain
	Westland	depression, terrace
CeA: Celina silt loam, 0 to 2 percent slopes		
	Brookston	depression, ground moraine
CeB: Celina silt loam, 2 to 6 percent slopes		
	Brookston	drainageway, depression, ground moraine
CeB2: Celina silt loam, 2 to 6 percent slopes, moderately eroded		
	Brookston	drainageway, depression, ground moraine
ClB: Celina bouldery silt loam, 2 to 6 percent slopes		
	Brookston	drainageway, depression, ground moraine
CoA: Corwin silt loam, 0 to 2 percent slopes		
	Brookston	depression, ground moraine
CoB: Corwin silt loam, 2 to 6 percent slopes		
	Brookston	drainageway, depression, ground moraine
CsA: Crosby silt loam, 0 to 2 percent slopes		
	Brookston	depression, ground moraine
CtB: Crosby-Celina silt loams, 2 to 6 percent slopes		
	Brookston	drainageway, depression, ground moraine
Cu: Crosby-Urban land complex		
	Brookston	depression, ground moraine
DaB: Dana silt loam, 2 to 6 percent slopes		
	Brookston	drainageway, depression, ground moraine

TABLE 7.--NON-HYDRIC MAPUNITS WITH HYDRIC COMPONENTS--Continued

Map symbol and map unit name	Hydric Component	Landform
FcA: Fincastle silt loam, 0 to 4 percent slopes		
	Brookston	depression, ground moraine
Lg: Lanier sandy loam		
	Sloan	oxbow, flood plain
LsB: Lewisburg silt loam, 2 to 6 percent slopes		
	Brookston	depression, drainageway, ground moraine
Md: Medway silt loam		
	Sloan	slough, oxbow, flood plain
MlA: Miamian silt loam, 0 to 2 percent slopes		
	Brookston	drainageway, depression, ground moraine
MlB: Miamian silt loam, 2 to 6 percent slopes		
	Brookston	drainageway, depression, ground moraine
MlB2: Miamian silt loam, 2 to 6 percent slopes, moderately eroded		
	Brookston	drainageway, depression, ground moraine
MlC2: Miamian silt loam, 6 to 12 percent slopes, moderately eroded		
	Brookston	drainageway, ground moraine
MmB: Miamian bouldery silt loam, 2 to 6 percent slopes		
	Brookston	drainageway, depression, ground moraine
MnB3: Miamian clay loam, 2 to 6 percent slopes, severely eroded		
	Brookston	drainageway, depression, ground moraine
MnC3: Miamian clay loam, 6 to 12 percent slopes, severely eroded		
	Brookston	drainageway, depression, ground moraine

TABLE 7.--NON-HYDRIC MAPUNITS WITH HYDRIC COMPONENTS--Continued

Map symbol and map unit name	Hydric Component	Landform
MoB: Miamian-Urban land complex, undulating		
	Brookston	depression, flat, ground moraine
MoC: Miamian-Urban land complex, rolling		
	Brookston	depression, flat, ground moraine
PlB: Plattville silt loam, 2 to 6 percent slopes		
	Millsdale	depression
PlC: Plattville silt loam, 6 to 12 percent slopes		
	Millsdale	depression
PyA: Pyrmont silt loam, 0 to 2 percent slopes		
	Brookston	depression
RcA: Randolph silt loam, 0 to 2 percent slopes		
	Millsdale	depression
Rs: Ross silt loam		
	Sloan	slough, oxbow, flood plain
Rt: Ross-Urban land complex		
	Sloan	oxbow, flood plain
RuB: Russell silt loam, 2 to 6 percent slopes		
	Ragsdale	drainageway, depression, ground moraine
RvC2: Russell-Miamian silt loams, 6 to 12 percent slopes, moderately eroded		
	Brookston	drainageway, depression, ground moraine
Sh: Shoals silt loam		
	Sloan	oxbow, slough, flood plain
ThA: Thackery silt loam, till substratum, 0 to 2 percent slopes		
	Westland	depression
TpA: Tippecanoe silt loam, 0 to 2 percent slopes		
	Westland	depression, drainageway
XeA: Xenia silt loam, 0 to 2 percent slopes		
	Brookston	drainageway

TABLE 7.--NON-HYDRIC MAPUNITS WITH HYDRIC COMPONENTS--Continued

Map symbol and map unit name	Hydric Component	Landform
XeB: Xenia silt loam, 2 to 6 percent slopes		
	Brookston	drainageway

TABLE 8.--CROPLAND LIMITATIONS AND HAZARDS

(See text on page 157 for a description of the limitations and hazards listed in this table. Only soils suitable for cultivated crops are listed in this table.)

Soil name and map symbol	Cropland limitations and hazards
Ag:	
Algiers	Occasional flooding, seasonal high water table, surface compaction, moderate potential for ground-water pollution, frost action, surface crusting.
Bp:	
Brookston	Ponding, surface compaction, moderate potential for ground-water pollution, frost action.
Br:	
Brookston	Ponding, surface compaction, moderate potential for ground-water pollution, frost action.
Bs:	
Brookston	Ponding, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth.
Ca:	
Carlisle	Ponded for extended periods, moderate potential for ground-water pollution, frost action, subsidence of the muck, very high organic matter content, wind erosion.
CeA:	
Celina	Surface compaction, frost action, surface crusting, high clay content.
CeB:	
Celina	Surface compaction, frost action, surface crusting, erosion hazard, high clay content.
CeB2:	
Celina	Part of the surface layer removed by erosion, surface compaction, frost action, fair tilth, surface crusting, erosion hazard, high clay content.
ClB:	
Celina	Stony surface, surface compaction, frost action, surface crusting, erosion hazard, high clay content.
CoA:	
Corwin	Surface compaction, moderate potential for ground-water pollution, surface crusting.
CoB:	
Corwin	Surface compaction, moderate potential for ground-water pollution, surface crusting, erosion hazard.
CsA:	
Crosby	Seasonal high water table, surface compaction, frost action, surface crusting, high clay content.
CtB:	
Crosby	Seasonal high water table, surface compaction, frost action, surface crusting, high clay content.
Celina	Surface compaction, frost action, surface crusting, erosion hazard, high clay content.
DaB:	
Dana	Surface compaction, frost action, erosion hazard.

TABLE 8.--CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations and hazards
FcA:	
Fincastle	Seasonal high water table, surface compaction, moderate potential for ground-water pollution, frost action, surface crusting.
FkA:	
Fox	High potential for ground-water pollution, wind erosion, limited available water capacity.
FkB:	
Fox	High potential for ground-water pollution, erosion hazard, wind erosion, limited available water capacity.
FlA:	
Fox	High potential for ground-water pollution, limited available water capacity.
FlB:	
Fox	High potential for ground-water pollution, erosion hazard, limited available water capacity.
FlC2:	
Fox	Part of the surface layer removed by erosion, high potential for ground-water pollution, fair tilth, easily eroded, erosion hazard, limited available water capacity.
FmA:	
Fox	Surface compaction, high potential for ground-water pollution, surface crusting, limited available water capacity.
FmB:	
Fox	Surface compaction, high potential for ground-water pollution, surface crusting, erosion hazard, limited available water capacity.
FmC2:	
Fox	Part of the surface layer removed by erosion, surface compaction, high potential for ground-water pollution, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity.
FmD2:	
Fox	Part of the surface layer removed by erosion, surface compaction, high potential for ground-water pollution, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity.
FsC3:	
Fox	Most of the surface layer removed by erosion, surface compaction, high potential for ground-water pollution, fair tilth, easily eroded, erosion hazard, limited available water capacity.
KeA:	
Kendallville	Surface compaction, surface crusting.
KeB:	
Kendallville	Surface compaction, surface crusting, erosion hazard.
KeC2:	
Kendallville	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard.
Ld:	
Landes	Occasional flooding, high potential for ground-water pollution, wind erosion, limited available water capacity.
Lg:	
Lanier	Occasional flooding, high potential for ground-water pollution, wind erosion, limited available water capacity.

TABLE 8.--CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations and hazards
LsB:	
Lewisburg	Surface compaction, surface crusting, erosion hazard, high clay content.
LxC2:	
Lorenzo	Part of the surface layer removed by erosion, high potential for ground-water pollution, fair tilth, easily eroded, erosion hazard, limited available water capacity.
Rodman	Part of the surface layer removed by erosion, high potential for ground-water pollution, fair tilth, erosion hazard, limited available water capacity, sandy layers.
LxD2:	
Lorenzo	Part of the surface layer removed by erosion, high potential for ground-water pollution, fair tilth, easily eroded, erosion hazard, limited available water capacity.
Rodman	Part of the surface layer removed by erosion, high potential for ground-water pollution, fair tilth, easily eroded, erosion hazard, limited available water capacity, sandy layers.
Md:	
Medway	Occasional flooding, surface compaction, moderate potential for ground-water pollution, frost action.
MlA:	
Miamian	Surface compaction, surface crusting, high clay content.
MlB:	
Miamian	Surface compaction, surface crusting, erosion hazard, high clay content.
MlB2:	
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, erosion hazard, high clay content.
MlC2:	
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard, high clay content.
MlD2:	
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard, high clay content.
MmB:	
Miamian	Stony surface, surface compaction, surface crusting, erosion hazard, high clay content.
MnB3:	
Miamian	Most of the surface layer removed by erosion, surface compaction, poor tilth, erosion hazard, high clay content.
MnC3:	
Miamian	Most of the surface layer removed by erosion, surface compaction, poor tilth, easily eroded, erosion hazard, high clay content.
MnD3:	
Miamian	Most of the surface layer removed by erosion, surface compaction, poor tilth, easily eroded, erosion hazard, high clay content.

TABLE 8.--CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations and hazards
MrA:	
Millsdale	Ponding, surface compaction, depth to bedrock, high potential for ground-water pollution, frost action, fair tilth, limited available water capacity, high clay content.
MsA:	
Milton	Surface compaction, depth to bedrock, high potential for ground-water pollution, surface crusting, limited available water capacity, high clay content.
MsB:	
Milton	Surface compaction, depth to bedrock, high potential for ground-water pollution, surface crusting, erosion hazard, limited available water capacity, high clay content.
MsB2:	
Milton	Part of the surface layer removed by erosion, surface compaction, depth to bedrock, high potential for ground-water pollution, fair tilth, surface crusting, erosion hazard, limited available water capacity, high clay content.
MsC2:	
Milton	Part of the surface layer removed by erosion, surface compaction, depth to bedrock, high potential for ground-water pollution, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity, high clay content.
MsD2:	
Milton	Part of the surface layer removed by erosion, surface compaction, depth to bedrock, high potential for ground-water pollution, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity, high clay content.
MtD3:	
Milton	Most of the surface layer removed by erosion, surface compaction, depth to bedrock, high potential for ground-water pollution, poor tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity, high clay content.
Mv:	
Montgomery	Ponding, surface compaction, moderate potential for ground-water pollution, poor tilth, frost action, restricted permeability, clodding, high clay content.
OcA:	
Ockley	Surface compaction, high potential for ground-water pollution, surface crusting.
OcB:	
Ockley	Surface compaction, high potential for ground-water pollution, surface crusting, erosion hazard.
PlB:	
Plattville	Surface compaction, depth to bedrock, high potential for ground-water pollution, erosion hazard, limited available water capacity.
PlC:	
Plattville	Surface compaction, depth to bedrock, high potential for ground-water pollution, surface crusting, easily eroded, erosion hazard, limited available water capacity.
PyA:	
Pyrmont	Seasonal high water table, surface compaction, frost action, surface crusting.

TABLE 8.--CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations and hazards
RcA:	
Randolph	Seasonal high water table, surface compaction, depth to bedrock, high potential for ground-water pollution, frost action, surface crusting, limited available water capacity, high clay content.
ReB:	
Ritchey	Surface compaction, depth to bedrock, high potential for ground-water pollution, surface crusting, erosion hazard, limited available water capacity.
ReB2:	
Ritchey	Part of the surface layer removed by erosion, surface compaction, depth to bedrock, high potential for ground-water pollution, fair tilth, surface crusting, erosion hazard, limited available water capacity.
ReC2:	
Ritchey	Part of the surface layer removed by erosion, surface compaction, depth to bedrock, high potential for ground-water pollution, fair tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity.
RfD3:	
Ritchey	Most of the surface layer removed by erosion, surface compaction, depth to bedrock, high potential for ground-water pollution, poor tilth, surface crusting, easily eroded, erosion hazard, limited available water capacity, clodding.
Rs:	
Ross	Occasional flooding, surface compaction.
RuB:	
Russell	Surface compaction, frost action, surface crusting, erosion hazard.
RvC2:	
Russell	Part of the surface layer removed by erosion, surface compaction, frost action, fair tilth, surface crusting, easily eroded, erosion hazard.
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard, high clay content.
RvD2:	
Russell	Part of the surface layer removed by erosion, surface compaction, frost action, fair tilth, surface crusting, easily eroded, erosion hazard.
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard, high clay content.
Sh:	
Shoals	Occasional flooding, seasonal high water table, surface compaction, moderate potential for ground-water pollution, frost action, surface crusting.
So:	
Sloan	Frequent flooding, ponding, surface compaction, moderate potential for ground-water pollution, frost action.
ThA:	
Thackery	Surface compaction, moderate potential for ground-water pollution, surface crusting.

TABLE 8.--CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations and hazards
TpA:	
Tippecanoe	Surface compaction, high potential for ground-water pollution.
WaA:	
Warsaw	Surface compaction, high potential for ground-water pollution, limited available water capacity.
WaB:	
Warsaw	Surface compaction, high potential for ground-water pollution, erosion hazard, limited available water capacity.
WeA:	
Wea	Surface compaction, high potential for ground-water pollution.
WeB:	
Wea	Surface compaction, high potential for ground-water pollution, erosion hazard.
Ws:	
Westland	Ponding, surface compaction, high potential for ground-water pollution, frost action, fair tilth.
WyB2:	
Wynn	Part of the surface layer removed by erosion, surface compaction, depth to bedrock, high potential for ground-water pollution, fair tilth, surface crusting, erosion hazard, limited available water capacity.
XeA:	
Xenia	Surface compaction, moderate potential for ground-water pollution, frost action, surface crusting.
XeB:	
Xenia	Surface compaction, moderate potential for ground-water pollution, frost action, surface crusting, erosion hazard.

TABLE 9.--CROP YIELD INDEX

(This table is based on yields from the years 1992-2000. Estimated yields for soils with a yield index of 100 are: corn - 125 bushels; soybeans - 45 bushels; and wheat - 45 bushels. Refer to Crop Yield Index section in the text on page 160 for more information on how this table was developed, and instructions on converting yield index numbers to estimated yields. Absence of a yield index indicates that the soil is not suited to the crop or the crop is generally not grown on the soil.)

Map symbol and soil name	Corn	Soybeans	Winter Wheat
Ag:	100	89	100
Algiers			
Bp:	92	89	100
Brookston			
Br:	92	89	100
Brookston			
Bs:	100	100	100
Brookston			
Ca:	100	---	---
Carlisle			
CeA:	92	89	100
Celina			
CeB:	88	89	100
Celina			
CeB2:	80	78	89
Celina			
ClB:	80	73	89
Celina			
CoA:	80	78	89
Corwin			
CoB:	96	89	100
Corwin			
CsA:	88	89	89
Crosby			
CtB:	92	89	89
Crosby			
Celina			
DaB:	88	89	98
Dana			
FcA:	84	89	89
Fincastle			
FkA:	68	58	78
Fox			
FkB:	58	56	64
Fox			
FlA:	72	67	89
Fox			

TABLE 9.--CROP YIELD INDEX--Continued

Map symbol and soil name	Corn	Soybeans	Winter Wheat
FlB: Fox	72	62	89
FlC2: Fox	62	56	78
FmA: Fox	76	71	89
FmB: Fox	76	71	89
FmC2: Fox	64	56	73
FmD2: Fox	56	47	49
FsC3: Fox	48	47	49
KeA: Kendallville	88	76	100
KeB: Kendallville	88	76	100
KeC2: Kendallville	84	78	89
Ld: Landes	82	76	87
Lg: Lanier	60	56	76
LsB: Lewisburg	80	78	89
LxC2: Lorenzo, Rodman	52	44	56
LxD2: Lorenzo, Rodman	---	---	---
Md: Medway	100	100	89
MlA: Miamian	80	89	89
MlB: Miamian	80	89	89
MlB2: Miamian	72	62	80
MlC2: Miamian	68	58	80
MlD2: Miamian	60	44	58

TABLE 9.--CROP YIELD INDEX--Continued

Map symbol and soil name	Corn	Soybeans	Winter Wheat
MmB: Miamian	72	76	87
MnB3: Miamian	56	44	67
MnC3: Miamian	52	56	56
MnD3: Miamian	---	---	---
MrA: Millsdale	84	89	100
MsA: Milton	72	71	93
MsB: Milton	68	67	89
MsB2: Milton	64	56	78
MsC2: Milton	60	56	76
MsD2: Milton	48	40	67
MtD3: Milton	48	36	53
Mv: Montgomery	100	93	98
OcA: Ockley	88	89	89
OcB: Ockley	84	76	96
PlB: Plattville	76	71	84
PlC: Plattville	72	62	78
PyA: Pyrmont	48	62	67
RcA: Randolph	80	71	76
ReB: Ritchey	52	49	67
ReB2: Ritchey	48	44	67
ReC2: Ritchey	---	---	62
RfD3: Ritchey	---	---	49

TABLE 9.--CROP YIELD INDEX--Continued

Map symbol and soil name	Corn	Soybeans	Winter Wheat
Rs: Ross	100	89	100
RuB: Russell	80	80	93
RvC2: Russell, Miamian	68	67	84
RvD2: Russell, Miamian	60	47	60
Sh: Shoals	80	89	89
So: Sloan	88	100	100
ThA: Thackery	82	78	93
TpA: Tippecanoe	94	87	87
WaA: Warsaw	88	89	89
WaB: Warsaw	86	89	89
WeA: Wea	96	100	100
WeB: Wea	92	71	87
Ws: Westland	100	84	89
WyB2: Wynn	72	67	80
XeA: Xenia	84	78	100
XeB: Xenia	80	67	89

TABLE 10.--ACREAGE BY CAPABILITY CLASSES AND SUBCLASSES

(See text on page 161 for additional information.)

Capability class	Capability subclass	Acreage
Unclassified	---	61,184
1	---	14,680
2	e	96,360
	w	82,010
	s	5,432
3	e	13,060
	w	3,393
4	e	9,663
6	e	7,142
7	e	3,523
	s	705

TABLE 11.--WOODLAND 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 potential limitation. See text on page 163 for further explanation of ratings in this table.)

Map symbol and soil name	Erosion hazard		Seedling mortality		Soil rutting hazard	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ag:						
Algiers	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
Bo:						
Borrow Pits	Not rated		Not rated		Not rated	
Bp:						
Brookston	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Br:						
Brookston	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Bs:						
Brookston	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Bu:						
Brookston	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
Ca:						
Carlisle	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
CeA:						
Celina	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
CeB:						
Celina	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
CeB2:						
Celina	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
ClB:						
Celina	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
CoA:						
Corwin	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
CoB:						
Corwin	Slight		Low		Severe	
	Water erosion	0.05			Low strength	1.00
CsA:						
Crosby	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00

TABLE 11.--WOODLAND MANAGEMENT--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Value	Seedling mortality: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
CtB:						
Crosby	Slight		High		Severe	
	Water erosion	0.05	Wetness	1.00	Low strength	1.00
Celina	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
Cu:						
Crosby	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
DaB:						
Dana	Slight		Low		Severe	
	Water erosion	0.05			Low strength	1.00
FaE2:						
Fairmount	Moderate		Low		Severe	
	Water erosion	0.46			Low strength	1.00
FaF2:						
Fairmount	Severe		Low		Severe	
	Water erosion	0.93			Low strength	1.00
FcA:						
Fincastle	Slight		High		Severe	
	Water erosion	0.05	Wetness	1.00	Low strength	1.00
FkA:						
Fox	Slight		Moderate		Moderate	
	Water erosion	0.01	Carbonate content	0.50	Low strength	0.50
FkB:						
Fox	Slight		Moderate		Moderate	
	Water erosion	0.05	Carbonate content	0.50	Low strength	0.50
FlA:						
Fox	Slight		Moderate		Severe	
	Water erosion	0.02	Carbonate content	0.50	Low strength	1.00
FlB:						
Fox	Slight		Moderate		Severe	
	Water erosion	0.10	Carbonate content	0.50	Low strength	1.00
FlC2:						
Fox	Slight		Moderate		Severe	
	Water erosion	0.22	Carbonate content	0.50	Low strength	1.00
FmA:						
Fox	Slight		Moderate		Severe	
	Water erosion	0.02	Carbonate content	0.50	Low strength	1.00
FmB:						
Fox	Slight		Moderate		Severe	
	Water erosion	0.10	Carbonate content	0.50	Low strength	1.00
FmC2:						
Fox	Slight		Moderate		Severe	
	Water erosion	0.22	Carbonate content	0.50	Low strength	1.00
FmD2:						
Fox	Moderate		Moderate		Severe	
	Water erosion	0.37	Carbonate content	0.50	Low strength	1.00

TABLE 11.--WOODLAND MANAGEMENT--Continued

Map symbol and soil name	Erosion hazard		Seedling mortality		Soil rutting hazard	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
FsC3:						
Fox	Slight		Moderate		Severe	
	Water erosion	0.13	Carbonate content	0.50	Low strength	1.00
FuB:						
Fox	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
FuC:						
Urban Land	Not rated		Not rated		Not rated	
Fox	Not rated		Not rated		Not rated	
FuF:						
Urban Land	Not rated		Not rated		Not rated	
Fox	Not rated		Not rated		Not rated	
Gp:						
Gravel Pits	Not rated		Not rated		Not rated	
HeE2:						
Hennepin	Moderate		Moderate		Severe	
	Water erosion	0.37	Carbonate content	0.50	Low strength	1.00
			Soil reaction	0.50		
Miamian	Moderate		Low		Severe	
	Water erosion	0.54			Low strength	1.00
HeF2:						
Hennepin	Severe		Moderate		Severe	
	Water erosion	0.68	Carbonate content	0.50	Low strength	1.00
			Soil reaction	0.50		
Miamian	Severe		Low		Severe	
	Water erosion	0.93			Low strength	1.00
HmF3:						
Hennepin	Moderate		Moderate		Severe	
	Water erosion	0.58	Carbonate content	0.50	Low strength	1.00
			Soil reaction	0.50		
Miamian	Severe		Low		Severe	
	Water erosion	0.83			Low strength	1.00
KeA:						
Kendallville	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
KeB:						
Kendallville	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
KeC2:						
Kendallville	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
Ld:						
Landes	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50

TABLE 11.--WOODLAND MANAGEMENT--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Value	Seedling mortality: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
Lg:						
Lanier	Slight		Low		Moderate	
	Water erosion	0.01			Low strength	0.50
LsB:						
Lewisburg	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
LxC2:						
Lorenzo	Slight		Low		Severe	
	Water erosion	0.12			Low strength	1.00
Rodman	Slight		Moderate		Severe	
	Water erosion	0.12	Carbonate content	0.50	Low strength	1.00
			Soil reaction	0.50		
LxD2:						
Lorenzo	Moderate		Low		Severe	
	Water erosion	0.25			Low strength	1.00
Rodman	Moderate		Moderate		Severe	
	Water erosion	0.25	Carbonate content	0.50	Low strength	1.00
			Soil reaction	0.50		
Mb:						
Made Land	Not rated		Not rated		Not rated	
Md:						
Medway	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
MlA:						
Miamian	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
MlB:						
Miamian	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
MlB2:						
Miamian	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
MlC2:						
Miamian	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
MlD2:						
Miamian	Moderate		Low		Severe	
	Water erosion	0.37			Low strength	1.00
MmB:						
Miamian	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
MnB3:						
Miamian	Slight		Low		Severe	
	Water erosion	0.05			Low strength	1.00
MnC3:						
Miamian	Slight		Low		Severe	
	Water erosion	0.13			Low strength	1.00

TABLE 11.--WOODLAND MANAGEMENT--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Erosion hazard: Value	Seedling mortality: Rating class and limiting features	Seedling mortality: Value	Soil rutting hazard: Rating class and limiting features	Soil rutting hazard: Value
MnD3:						
Miamian	Moderate		Low		Severe	
	Water erosion	0.25			Low strength	1.00
MoB:						
Miamian	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MoC:						
Miamian	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MoE:						
Miamian	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MrA:						
Millsdale	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
MsA:						
Milton	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
MsB:						
Milton	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
MsB2:						
Milton	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
MsC2:						
Milton	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
MsD2:						
Milton	Moderate		Low		Severe	
	Water erosion	0.37			Low strength	1.00
MtD3:						
Milton	Moderate		Low		Severe	
	Water erosion	0.29			Low strength	1.00
MuB:						
Milton	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MuC:						
Milton	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MuD:						
Milton	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	

TABLE 11.--WOODLAND MANAGEMENT--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Value	Seedling mortality: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
Mv:						
Montgomery	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
OcA:						
Ockley	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
OcB:						
Ockley	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
PlB:						
Plattville	Slight		Low		Severe	
	Water erosion	0.05			Low strength	1.00
PlC:						
Plattville	Slight		Low		Severe	
	Water erosion	0.13			Low strength	1.00
PyA:						
Pyrmont	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
Qu:						
Quarries	Not rated		Not rated		Not rated	
RcA:						
Randolph	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
ReB:						
Ritchey	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
ReB2:						
Ritchey	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
ReC2:						
Ritchey	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
ReE2:						
Ritchey	Moderate		Low		Severe	
	Water erosion	0.46			Low strength	1.00
ReF2:						
Ritchey	Severe		Low		Severe	
	Water erosion	0.93			Low strength	1.00
RfD3:						
Ritchey	Moderate		Low		Severe	
	Water erosion	0.29			Low strength	1.00
Rh:						
Riverwash	Not rated		Not rated		Not rated	

TABLE 11.--WOODLAND MANAGEMENT--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Value	Seedling mortality: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
RlE2:						
Rodman---------------	Moderate		Moderate		Severe	
	Water erosion	0.37	Carbonate content	0.50	Low strength	1.00
			Soil reaction	0.50		
Fox------------------	Moderate		Moderate		Severe	
	Water erosion	0.54	Carbonate content	0.50	Low strength	1.00
RlF2:						
Rodman---------------	Severe		Moderate		Severe	
	Water erosion	0.68	Carbonate content	0.50	Low strength	1.00
			Soil reaction	0.50		
Fox------------------	Severe		Moderate		Severe	
	Water erosion	0.73	Carbonate content	0.50	Low strength	1.00
Rs:						
Ross-----------------	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
Rt:						
Urban Land-----------	Not rated		Not rated		Not rated	
Ross-----------------	Not rated		Not rated		Not rated	
RuB:						
Russell--------------	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
RvC2:						
Russell--------------	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
Miamian--------------	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
RvD2:						
Russell--------------	Moderate		Low		Severe	
	Water erosion	0.37			Low strength	1.00
Miamian--------------	Moderate		Low		Severe	
	Water erosion	0.37			Low strength	1.00
Sh:						
Shoals---------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
So:						
Sloan----------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
ThA:						
Thackery-------------	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
TpA:						
Tippecanoe-----------	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
Ua:						
Urban Land-----------	Not rated		Not rated		Not rated	

TABLE 11.--WOODLAND MANAGEMENT--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Value	Seedling mortality: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
Ud:						
Udorthents	Not rated		Not rated		Not rated	
Ug:						
Urban Land	Not rated		Not rated		Not rated	
Um:						
Urban Land	Not rated		Not rated		Not rated	
WaA:						
Warsaw	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
WaB:						
Warsaw	Slight		Low		Severe	
	Water erosion	0.05			Low strength	1.00
WeA:						
Wea	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
WeB:						
Wea	Slight		Low		Severe	
	Water erosion	0.05			Low strength	1.00
Ws:						
Westland	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
WyB2:						
Wynn	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
XeA:						
Xenia	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
XeB:						
Xenia	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00

TABLE 12.--WOODLAND HARVESTING ACTIVITIES

(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 potential limitation. See text on page 163 for further explanation of ratings in this table.)

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ag:						
Algiers	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Depth to saturated zone	1.00		
			Low strength	0.50		
Bo:						
Borrow Pits	Not rated		Not rated		Not rated	
Bp:						
Brookston	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
Br:						
Brookston	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
Bs:						
Brookston	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
Bu:						
Brookston	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
Ca:						
Carlisle	Severe		Poorly suited		Poorly suited	
	Low strength	1.00	Ponding	1.00	Low strength	1.00
			Low strength	1.00		
			Depth to saturated zone	1.00		
CeA:						
Celina	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
CeB:						
Celina	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
CeB2:						
Celina	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50

TABLE 12.--WOODLAND HARVESTING ACTIVITIES--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ClB:						
Celina	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
CoA:						
Corwin	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
CoB:						
Corwin	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
CsA:						
Crosby	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
CtB:						
Crosby	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
Celina	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Cu:						
Crosby	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
DaB:						
Dana	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
FaE2:						
Fairmount	Severe		Poorly suited		Moderately suited	
	Soil slippage	1.00	Soil slippage	1.00	Low strength	0.50
	Depth to bedrock	1.00	Slope	1.00		
	Slope	0.50	Low strength	0.50		
	Stickiness	0.50				
	Low strength	0.50				
FaF2:						
Fairmount	Severe		Poorly suited		Poorly suited	
	Soil slippage	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Soil slippage	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
FcA:						
Fincastle	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
FkA:						
Fox	Slight		Well suited		Well suited	
FkB:						
Fox	Slight		Well suited		Well suited	

TABLE 12.--WOODLAND HARVESTING ACTIVITIES--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
FlA:						
Fox	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
FlB:						
Fox	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
FlC2:						
Fox	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
FmA:						
Fox	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
FmB:						
Fox	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
FmC2:						
Fox	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
FmD2:						
Fox	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
	Too sandy	0.50				
FsC3:						
Fox	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
FuB:						
Fox	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
FuC:						
Urban Land	Not rated		Not rated		Not rated	
Fox	Not rated		Not rated		Not rated	
FuF:						
Urban Land	Not rated		Not rated		Not rated	
Fox	Not rated		Not rated		Not rated	
Gp:						
Gravel Pits	Not rated		Not rated		Not rated	

TABLE 12.--WOODLAND HARVESTING ACTIVITIES--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
HeE2:						
Hennepin	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50	Slope	0.50
Miamian	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50	Slope	0.50
HeF2:						
Hennepin	Severe		Poorly suited		Poorly suited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Miamian	Severe		Poorly suited		Poorly suited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	0.50	Low strength	0.50	Low strength	0.50
HmF3:						
Hennepin	Severe		Poorly suited		Moderately suited	
	Slope	1.00	Slope	1.00	Slope	0.50
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Miamian	Severe		Poorly suited		Moderately suited	
	Slope	1.00	Slope	1.00	Slope	0.50
	Low strength	0.50	Low strength	0.50	Low strength	0.50
KeA:						
Kendallville	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
KeB:						
Kendallville	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
KeC2:						
Kendallville	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
Ld:						
Landes	Severe		Poorly suited		Well suited	
	Flooding	1.00	Flooding	1.00		
Lg:						
Lanier	Severe		Poorly suited		Well suited	
	Flooding	1.00	Flooding	1.00		
LsB:						
Lewisburg	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
LxC2:						
Lorenzo	Slight		Moderately suited		Moderately suited	
			Low strength	0.50	Low strength	0.50
			Slope	0.50		
Rodman	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Slope	0.50		

TABLE 12.--WOODLAND HARVESTING ACTIVITIES--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
LxD2:						
Lorenzo	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Too sandy	0.50	Low strength	0.50		
Rodman	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
	Too sandy	0.50				
Mb:						
Made Land	Not rated		Not rated		Not rated	
Md:						
Medway	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
MlA:						
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
MlB:						
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
MlB2:						
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
MlC2:						
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
MlD2:						
Miamian	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
MmB:						
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
MnB3:						
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
MnC3:						
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
MnD3:						
Miamian	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		

TABLE 12.--WOODLAND HARVESTING ACTIVITIES--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MoB:						
Miamian	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MoC:						
Miamian	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MoE:						
Miamian	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MrA:						
Millsdale	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
	Depth to bedrock	0.50	Depth to saturated zone	1.00		
			Low strength	0.50		
MsA:						
Milton	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
	Depth to bedrock	0.50				
MsB:						
Milton	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
	Depth to bedrock	0.50				
MsB2:						
Milton	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
	Depth to bedrock	0.50				
MsC2:						
Milton	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
	Depth to bedrock	0.50	Low strength	0.50		
MsD2:						
Milton	Severe		Poorly suited		Moderately suited	
	Depth to bedrock	1.00	Slope	1.00	Low strength	0.50
	Slope	0.50	Low strength	0.50		
	Low strength	0.50				
MtD3:						
Milton	Moderate		Moderately suited		Moderately suited	
	Depth to bedrock	0.50	Slope	0.50	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
MuB:						
Milton	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	

TABLE 12.--WOODLAND HARVESTING ACTIVITIES--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MuC:						
Milton	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MuD:						
Milton	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
Mv:						
Montgomery	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
OcA:						
Ockley	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
OcB:						
Ockley	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
PlB:						
Plattville	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
	Depth to bedrock	0.50				
PlC:						
Plattville	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
	Depth to bedrock	0.50	Low strength	0.50		
PyA:						
Pyrmont	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
Qu:						
Quarries	Not rated		Not rated		Not rated	
RcA:						
Randolph	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
	Depth to bedrock	0.50	Low strength	0.50		
ReB:						
Ritchey	Severe		Moderately suited		Moderately suited	
	Depth to bedrock	1.00	Low strength	0.50	Low strength	0.50
	Low strength	0.50				
ReB2:						
Ritchey	Severe		Moderately suited		Moderately suited	
	Depth to bedrock	1.00	Low strength	0.50	Low strength	0.50
	Low strength	0.50				

TABLE 12.--WOODLAND HARVESTING ACTIVITIES--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ReC2:						
Ritchey	Severe		Moderately suited		Moderately suited	
	Depth to bedrock	1.00	Slope	0.50	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
ReE2:						
Ritchey	Severe		Poorly suited		Moderately suited	
	Depth to bedrock	1.00	Slope	1.00	Low strength	0.50
	Slope	0.50	Low strength	0.50		
	Low strength	0.50				
ReF2:						
Ritchey	Severe		Poorly suited		Poorly suited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	0.50	Low strength	0.50	Low strength	0.50
RfD3:						
Ritchey	Severe		Moderately suited		Moderately suited	
	Depth to bedrock	1.00	Slope	0.50	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
Rh:						
Riverwash	Not rated		Not rated		Not rated	
RlE2:						
Rodman	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50	Slope	0.50
	Too sandy	0.50				
Fox	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50	Slope	0.50
	Too sandy	0.50				
RlF2:						
Rodman	Severe		Poorly suited		Poorly suited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Fox	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Slope	0.50
	Low strength	0.50	Low strength	0.50	Low strength	0.50
	Too sandy	0.50				
Rs:						
Ross	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
Rt:						
Urban Land	Not rated		Not rated		Not rated	
Ross	Not rated		Not rated		Not rated	
RuB:						
Russell	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50

TABLE 12.--WOODLAND HARVESTING ACTIVITIES--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RvC2:						
Russell	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
RvD2:						
Russell	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
Miamian	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
Sh:						
Shoals	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Depth to saturated zone	0.50		
			Low strength	0.50		
So:						
Sloan	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Ponding	1.00	Low strength	0.50
	Low strength	0.50	Flooding	1.00		
			Depth to saturated zone	1.00		
			Low strength	0.50		
ThA:						
Thackery	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
TpA:						
Tippecanoe	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Ua:						
Urban Land	Not rated		Not rated		Not rated	
Ud:						
Udorthents	Not rated		Not rated		Not rated	
Ug:						
Urban Land	Not rated		Not rated		Not rated	
Um:						
Urban Land	Not rated		Not rated		Not rated	
WaA:						
Warsaw	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50

TABLE 12.--WOODLAND HARVESTING ACTIVITIES--Continued

Map symbol and soil name	Limitations affecting construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
WaB:						
Warsaw	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
WeA:						
Wea	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
WeB:						
Wea	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Ws:						
Westland	Moderate		Poorly suited		Moderately suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
WyB2:						
Wynn	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
	Depth to bedrock	0.50				
XeA:						
Xenia	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
XeB:						
Xenia	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50

TABLE 13.--WOODLAND REGENERATION ACTIVITIES

(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 potential limitation. See text on page 163 for further explanation of ratings in this table.)

Map symbol and soil name	Suitability for mechanical planting		Suitability for site preparation		Potential for damage to soil by fire	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ag:						
Algiers	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Bo:						
Borrow Pits	Not rated		Not rated		Not rated	
Bp:						
Brookston	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Br:						
Brookston	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Bs:						
Brookston	Well suited		Well suited		Low	
					Texture/rock fragments	0.30
Bu:						
Brookston	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
Ca:						
Carlisle	Well suited		Well suited		Low	
CeA:						
Celina	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
CeB:						
Celina	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
CeB2:						
Celina	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
ClB:						
Celina	Poorly suited		Well suited		Low	
	Rock fragment content	0.75			Texture/rock fragments	0.01
	Stickiness	0.50				
CoA:						
Corwin	Well suited		Well suited		Low	
					Texture/rock fragments	0.01

TABLE 13.--WOODLAND REGENERATION ACTIVITIES--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
CoB:						
Corwin	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
CsA:						
Crosby	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
CtB:						
Crosby	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
Celina	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
Cu:						
Crosby	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
DaB:						
Dana	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
FaE2:						
Fairmount	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.50
	Stickiness	0.75	Stickiness	0.50		
	Rock fragment content	0.50				
FaF2:						
Fairmount	Unsuited		Unsuited		Moderate	
	Slope	1.00	Slope	1.00	Texture/slope/surface depth	0.50
	Stickiness	0.75	Stickiness	0.50		
	Rock fragment content	0.50				
FcA:						
Fincastle	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
FkA:						
Fox	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
FkB:						
Fox	Well suited		Well suited		Low	
					Texture/rock fragments	0.01

TABLE 13.--WOODLAND REGENERATION ACTIVITIES--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
FlA:						
Fox	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
FlB:						
Fox	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
FlC2:						
Fox	Moderately suited		Well suited		Low	
	Slope	0.50			Texture/surface depth/rock fragments	0.30
FmA:						
Fox	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
FmB:						
Fox	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
FmC2:						
Fox	Moderately suited		Well suited		Low	
	Slope	0.50			Texture/surface depth/rock fragments	0.30
FmD2:						
Fox	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.30
FsC3:						
Fox	Moderately suited		Well suited		Moderate	
	Slope	0.50			Texture/surface depth/rock fragments	0.50
FuB:						
Fox	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
FuC:						
Urban Land	Not rated		Not rated		Not rated	
Fox	Not rated		Not rated		Not rated	
FuF:						
Urban Land	Not rated		Not rated		Not rated	
Fox	Not rated		Not rated		Not rated	
Gp:						
Gravel Pits	Not rated		Not rated		Not rated	

TABLE 13.--WOODLAND REGENERATION ACTIVITIES--Continued

Map symbol and soil name	Suitability for mechanical planting		Suitability for site preparation		Potential for damage to soil by fire	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HeE2:						
Hennepin	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.50
Miamian	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.30
	Stickiness	0.50				
HeF2:						
Hennepin	Unsuited		Unsuited		High	
	Slope	1.00	Slope	1.00	Texture/slope/sur face depth/rock fragments	1.00
Miamian	Unsuited		Unsuited		Moderate	
	Slope	1.00	Slope	1.00	Texture/slope/sur face depth/rock fragments	0.50
	Stickiness	0.50				
HmF3:						
Hennepin	Unsuited		Poorly suited		Moderate	
	Slope	1.00	Slope	0.75	Texture/slope/roc k fragments	0.70
Miamian	Unsuited		Poorly suited		Moderate	
	Slope	1.00	Slope	0.75	Texture/rock fragments	0.70
	Stickiness	0.50			Texture/rock fragments	0.50
KeA:						
Kendallville	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
KeB:						
Kendallville	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
KeC2:						
Kendallville	Moderately suited		Well suited		Low	
	Slope	0.50			Texture/surface depth/rock fragments	0.30
Ld:						
Landes	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
Lg:						
Lanier	Well suited		Well suited		Low	
					Texture/rock fragments	0.01

TABLE 13.--WOODLAND REGENERATION ACTIVITIES--Continued

Map symbol and soil name	Suitability for mechanical planting		Suitability for site preparation		Potential for damage to soil by fire	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
LsB:						
Lewisburg-----------	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
LxC2:						
Lorenzo-------------	Moderately suited		Well suited		Low	
	Slope	0.50			Texture/surface depth/rock fragments	0.30
Rodman--------------	Moderately suited		Well suited		Low	
	Too sandy	0.50			Texture/surface depth/rock fragments	0.30
	Slope	0.50				
	Rock fragment content	0.50				
LxD2:						
Lorenzo-------------	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.30
Rodman--------------	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.30
	Too sandy	0.50				
	Rock fragment content	0.50				
Mb:						
Made Land-----------	Not rated		Not rated		Not rated	
Md:						
Medway--------------	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
MlA:						
Miamian-------------	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
MlB:						
Miamian-------------	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
MlB2:						
Miamian-------------	Moderately suited		Well suited		Moderate	
	Stickiness	0.50			Texture/rock fragments	0.50
MlC2:						
Miamian-------------	Moderately suited		Well suited		Moderate	
	Stickiness	0.50			Texture/rock fragments	0.50
	Slope	0.50				

TABLE 13.--WOODLAND REGENERATION ACTIVITIES--Continued

Map symbol and soil name	Suitability for mechanical planting		Suitability for site preparation		Potential for damage to soil by fire	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MlD2:						
Miamian	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.50
	Stickiness	0.50				
MmB:						
Miamian	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
MnB3:						
Miamian	Moderately suited		Well suited		Moderate	
	Stickiness	0.50			Texture/rock fragments	0.50
MnC3:						
Miamian	Moderately suited		Well suited		Moderate	
	Stickiness	0.50			Texture/rock fragments	0.50
	Slope	0.50				
MnD3:						
Miamian	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.50
	Stickiness	0.50				
MoB:						
Miamian	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MoC:						
Miamian	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MoE:						
Miamian	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MrA:						
Millsdale	Well suited		Well suited		Low	
					Texture/rock fragments	0.30
MsA:						
Milton	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
MsB:						
Milton	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01

TABLE 13.--WOODLAND REGENERATION ACTIVITIES--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
MsB2:						
Milton	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
MsC2:						
Milton	Moderately suited		Well suited		Low	
	Slope	0.50			Texture/rock fragments	0.01
	Stickiness	0.50				
MsD2:						
Milton	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.01
	Stickiness	0.50				
MtD3:						
Milton	Moderately suited		Well suited		High	
	Slope	0.50			Texture/surface depth/rock fragments	1.00
	Stickiness	0.50				
MuB:						
Milton	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MuC:						
Milton	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MuD:						
Milton	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
Mv:						
Montgomery	Poorly suited		Poorly suited		Low	
	Stickiness	0.75	Stickiness	0.50	Texture/rock fragments	0.30
OcA:						
Ockley	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
OcB:						
Ockley	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
PlB:						
Plattville	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
PlC:						
Plattville	Moderately suited		Well suited		Low	
	Slope	0.50			Texture/rock fragments	0.01

TABLE 13.--WOODLAND REGENERATION ACTIVITIES--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
PyA:						
Pyrmont	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
Qu:						
Quarries	Not rated		Not rated		Not rated	
RcA:						
Randolph	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
ReB:						
Ritchey	Moderately suited		Well suited		Low	
	Rock fragment content	0.50			Texture/rock fragments	0.01
ReB2:						
Ritchey	Moderately suited		Well suited		Low	
	Rock fragment content	0.50			Texture/surface depth/rock fragments	0.30
ReC2:						
Ritchey	Moderately suited		Well suited		Low	
	Slope	0.50			Texture/surface depth/rock fragments	0.30
	Rock fragment content	0.50				
ReE2:						
Ritchey	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.30
	Rock fragment content	0.50				
ReF2:						
Ritchey	Unsuited		Unsuited		Moderate	
	Slope	1.00	Slope	1.00	Texture/slope/surface depth/rock fragments	0.50
	Rock fragment content	0.50	Depth to bedrock	1.00		
RfD3:						
Ritchey	Moderately suited		Unsuited		Moderate	
	Slope	0.50	Depth to bedrock	1.00	Texture/rock fragments	0.70
	Rock fragment content	0.50				
Rh:						
Riverwash	Not rated		Not rated		Not rated	

TABLE 13.--WOODLAND REGENERATION ACTIVITIES--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
RlE2:						
Rodman	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.30
	Rock fragment content	0.50				
Fox	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.30
RlF2:						
Rodman	Unsuited		Unsuited		Moderate	
	Slope	1.00	Slope	1.00	Texture/slope/surface depth/rock fragments	0.50
	Too sandy	0.50				
	Rock fragment content	0.50				
Fox	Unsuited		Poorly suited		Moderate	
	Slope	1.00	Slope	0.75	Texture/slope/surface depth/rock fragments	0.50
Rs:						
Ross	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Rt:						
Urban Land	Not rated		Not rated		Not rated	
Ross	Not rated		Not rated		Not rated	
RuB:						
Russell	Moderately suited		Well suited		Moderate	
	Stickiness	0.50			Texture/rock fragments	0.50
RvC2:						
Russell	Moderately suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50
	Stickiness	0.50				
Miamian	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
	Slope	0.50				
RvD2:						
Russell	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.50
	Stickiness	0.50				
Miamian	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.01
	Stickiness	0.50				

TABLE 13.--WOODLAND REGENERATION ACTIVITIES--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
Sh:						
Shoals	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
So:						
Sloan	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
ThA:						
Thackery	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
TpA:						
Tippecanoe	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Ua:						
Urban Land	Not rated		Not rated		Not rated	
Ud:						
Udorthents	Not rated		Not rated		Not rated	
Ug:						
Urban Land	Not rated		Not rated		Not rated	
Um:						
Urban Land	Not rated		Not rated		Not rated	
WaA:						
Warsaw	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
WaB:						
Warsaw	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
WeA:						
Wea	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
WeB:						
Wea	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Ws:						
Westland	Well suited		Well suited		Low	
					Texture/rock fragments	0.30

TABLE 13.--WOODLAND REGENERATION ACTIVITIES--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
WyB2:						
Wynn	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
XeA:						
Xenia	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
XeB:						
Xenia	Moderately suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01

TABLE 14.--WOODLAND PRODUCTIVITY

(See text on page 164 for additional information.)

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
Ag:				
Algiers	black cherry	---	---	American sycamore, black cherry, black locust, eastern cottonwood, eastern white pine, green ash, northern red oak, red pine, tuliptree, white ash, white oak
	northern red oak	76	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
Bo:				
Borrow Pits	---	---	---	---
Bp:				
Brookston	northern red oak	78	57	baldcypress, eastern white pine, red maple, sweetgum, white ash
	pin oak	86	72	
	sweetgum	90	100	
	white oak	75	57	
Br:				
Brookston	northern red oak	78	57	baldcypress, eastern white pine, red maple, sweetgum, white ash
	pin oak	86	72	
	sweetgum	90	100	
	white oak	75	57	
Bs:				
Brookston	northern red oak	78	57	baldcypress, eastern white pine, red maple, sweetgum, white ash
	pin oak	86	72	
	sweetgum	90	100	
	white oak	75	57	
Bu:				
Brookston	northern red oak	78	57	baldcypress, eastern white pine, red maple, sweetgum, white ash
	pin oak	86	72	
	sweetgum	90	100	
	white oak	75	57	
Urban Land	---	---	---	---
Ca:				
Carlisle	black cherry	---	---	black willow, eastern cottonwood, green ash
	eastern cottonwood	80	86	
	green ash	---	---	
	swamp white oak	---	---	
	white ash	---	---	
CeA:				
Celina	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	90	72	
	sugar maple	---	---	
	tuliptree	110	129	
	white ash	---	---	
	white oak	---	---	

TABLE 14.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
CeB:				
Celina	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	90	72	
	sugar maple	---	---	
	tuliptree	110	129	
	white ash	---	---	
	white oak	---	---	
CeB2:				
Celina	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	90	72	
	sugar maple	---	---	
	tuliptree	110	129	
	white ash	---	---	
	white oak	---	---	
ClB:				
Celina	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	90	72	
	sugar maple	---	---	
	tuliptree	110	129	
	white ash	---	---	
	white oak	---	---	
CoA:				
Corwin	black cherry	---	---	black walnut, eastern white pine, tuliptree, white ash
	black walnut	---	---	
	northern red oak	90	---	
	sugar maple	---	---	
	tuliptree	110	72	
	white ash	---	---	
	white oak	---	129	
CoB:				
Corwin	black cherry	---	---	black walnut, eastern white pine, tuliptree, white ash
	black walnut	---	---	
	northern red oak	90	---	
	sugar maple	---	---	
	tuliptree	110	---	
	white ash	---	---	
	white oak	---	---	
CsA:				
Crosby	northern red oak	75	57	American sycamore, eastern white pine, northern red oak, red maple, tuliptree, white ash
	pin oak	85	72	
	tuliptree	85	86	
	white oak	75	57	

TABLE 14.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
CtB:				
Crosby	northern red oak	75	57	American sycamore, eastern white pine, northern red oak, red maple, tuliptree, white ash
	pin oak	85	72	
	tuliptree	85	86	
	white oak	75	57	
Celina	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	90	72	
	sugar maple	---	---	
	tuliptree	110	129	
	white ash	---	---	
	white oak	---	---	
Cu:				
Crosby	northern red oak	75	57	American sycamore, eastern white pine, northern red oak, red maple, tuliptree, white ash
	pin oak	85	72	
	tuliptree	85	86	
	white oak	75	57	
Urban Land	---	---	---	---
DaB:				
Dana	black cherry	---	---	black locust, black walnut, eastern white pine, red pine, tuliptree, white ash
	black walnut	---	---	
	northern red oak	90	72	
	sugar maple	---	---	
	tuliptree	110	129	
	white ash	---	---	
	white oak	---	---	
FaE2:				
Fairmount	black locust	---	---	Virginia pine, northern red oak, white oak
	black oak	65	43	
	black walnut	---	---	
	chinkapin oak	---	---	
	eastern redcedar	41	43	
	northern red oak	74	57	
	scarlet oak	60	43	
	white ash	---	---	
FaF2:				
Fairmount	black locust	---	---	Virginia pine, northern red oak, white oak
	black oak	65	43	
	black walnut	---	---	
	chinkapin oak	---	---	
	eastern redcedar	41	43	
	northern red oak	74	57	
	scarlet oak	60	43	
	white ash	---	---	
FcA:				
Fincastle	northern red oak	75	57	American sycamore, baldcypress, eastern white pine, red maple, tuliptree, white ash
	pin oak	85	72	
	sweetgum	80	86	
	tuliptree	85	86	
	white oak	75	57	

TABLE 14.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
FkA:				
Fox	northern red oak	80	57	black locust, eastern white pine, red pine, tuliptree, white ash
	sugar maple	---	---	
	white oak	---	---	
FkB:				
Fox	northern red oak	80	57	black locust, eastern white pine, red pine, tuliptree, white ash
	sugar maple	---	---	
	white oak	---	---	
FlA:				
Fox	northern red oak	80	57	black locust, eastern white pine, red pine, tuliptree, white ash
	sugar maple	---	---	
	white oak	---	---	
FlB:				
Fox	northern red oak	80	57	black locust, eastern white pine, red pine, tuliptree, white ash
	sugar maple	---	---	
	white oak	---	---	
FlC2:				
Fox	northern red oak	80	57	black locust, eastern white pine, red pine, tuliptree, white ash
	sugar maple	---	---	
	white oak	---	---	
FmA:				
Fox	northern red oak	80	57	black locust, eastern white pine, red pine, tuliptree, white ash
	sugar maple	---	---	
	white oak	---	---	
FmB:				
Fox	northern red oak	80	57	black locust, eastern white pine, red pine, tuliptree, white ash
	sugar maple	---	---	
	white oak	---	---	
FmC2:				
Fox	northern red oak	80	57	black locust, eastern white pine, red pine, tuliptree, white ash
	sugar maple	---	---	
	white oak	---	---	
FmD2:				
Fox	northern red oak	80	57	black locust, eastern white pine, red pine, tuliptree, white ash
	sugar maple	---	---	
	white oak	---	---	

TABLE 14.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
FsC3:				
Fox	northern red oak	80	57	black locust, eastern white pine, red pine, tuliptree, white ash
	sugar maple	---	---	
	white oak	---	---	
FuB:				
Fox	northern red oak	80	57	black locust, eastern white pine, red pine, tuliptree, white ash
	sugar maple	---	---	
	white oak	---	---	
Urban Land	---	---	---	---
FuC:				
Urban Land	---	---	---	---
Fox	northern red oak	80	57	black locust, eastern white pine, red pine, tuliptree, white ash
	sugar maple	---	---	
	white oak	---	---	
FuF:				
Urban Land	---	---	---	---
Fox	northern red oak	80	57	black locust, eastern white pine, red pine, tuliptree, white ash
	sugar maple	---	---	
	white oak	---	---	
Gp:				
Gravel Pits	---	---	---	---
HeE2:				
Hennepin	northern red oak	85	72	black walnut, eastern redcedar, eastern white pine, green ash, northern red oak, red pine, white oak
	white oak	---	---	
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	

TABLE 14.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
HeF2:				
Hennepin	northern red oak	85	72	black walnut, eastern redcedar, eastern white pine, green ash, northern red oak, red pine, white oak
	white oak	---	---	
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
HmF3:				
Hennepin	northern red oak	85	72	black walnut, eastern redcedar, eastern white pine, green ash, northern red oak, red pine, white oak
	white oak	---	---	
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
KeA:				
Kendallville	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	---	---	
KeB:				
Kendallville	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	---	---	
KeC2:				
Kendallville	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	---	---	

TABLE 14.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
Ld:				
Landes	American sycamore	---	---	American sycamore, black walnut, eastern cottonwood, eastern white pine, green ash, sugar maple, sweetgum, tuliptree
	eastern cottonwood	105	143	
	green ash	---	---	
	sweetgum	---	---	
	tuliptree	95	100	
Lg:				
Lanier	black oak	80	57	eastern white pine, green ash, red pine
	bur oak	---	---	
	green ash	---	---	
	northern red oak	80	57	
	quaking aspen	---	---	
	red maple	---	---	
	slippery elm	---	---	
LsB:				
Lewisburg	black cherry	---	---	American sycamore, black cherry, black locust, eastern cottonwood, eastern white pine, green ash, northern red oak, red pine, tuliptree, white ash, white oak
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	75	57	
LxC2:				
Lorenzo	---	---	---	---
Rodman	eastern white pine	85	200	eastern white pine, jack pine, red pine
	northern red oak	70	57	
	red pine	75	143	
	white oak	70	57	
LxD2:				
Lorenzo	---	---	---	---
Rodman	eastern white pine	85	200	eastern white pine, jack pine, red pine
	northern red oak	70	57	
	red pine	75	143	
	white oak	70	57	
Mb:				
Made Land	---	---	---	---
Md:				
Medway	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	86	72	
	sugar maple	---	---	
	tuliptree	96	100	
	white ash	---	---	
	white oak	---	---	

TABLE 14.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
MlA:				
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
MlB:				
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
MlB2:				
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
MlC2:				
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
MlD2:				
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
MmB:				
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
MnB3:				
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	

TABLE 14.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
MnC3:				
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
MnD3:				
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
MoB:				
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
Urban Land	---	---	---	---
MoC:				
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
Urban Land	---	---	---	---
MoE:				
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
Urban Land	---	---	---	---
MrA:				
Millsdale	black cherry	---	---	American sycamore, baldcypress, eastern cottonwood, green ash, pin oak, red maple, swamp white oak, sweetgum
	eastern cottonwood	---	---	
	green ash	---	---	
	pin oak	86	72	
	red maple	---	---	
	swamp white oak	---	---	

TABLE 14.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
MsA:				
Milton	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	---	---	
MsB:				
Milton	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	---	---	
MsB2:				
Milton	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	---	---	
MsC2:				
Milton	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	---	---	
MsD2:				
Milton	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	---	---	
MtD3:				
Milton	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	---	---	

TABLE 14.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
MuB:				
Milton	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	---	---	
Urban Land	---	---	---	---
MuC:				
Milton	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	---	---	
Urban Land	---	---	---	---
MuD:				
Milton	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	---	---	
Urban Land	---	---	---	---
Mv:				
Montgomery	pin oak	88	72	American sycamore, eastern cottonwood, green ash, pin oak, red maple, silver maple
	sweetgum	90	100	
	white oak	75	57	
OcA:				
Ockley	northern red oak	90	72	black walnut, eastern white pine, red pine, tuliptree, white ash
	sweetgum	76	72	
	tuliptree	98	100	
	white oak	90	72	
OcB:				
Ockley	northern red oak	90	72	black walnut, eastern white pine, red pine, tuliptree, white ash
	sweetgum	76	72	
	tuliptree	98	100	
	white oak	90	72	
PlB:				
Plattville	black cherry	---	---	Scotch pine, black walnut, eastern white pine, green ash, red pine
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	---	---	

TABLE 14.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
PlC:				
Plattville	black cherry	---	---	Scotch pine, black walnut, eastern white pine, green ash, red pine
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	---	---	
PyA:				
Pyrmont	black cherry	---	---	American sycamore, black cherry, black locust, eastern cottonwood, eastern white pine, green ash, northern red oak, red pine, tuliptree, white ash, white oak
	northern red oak	75	57	
	pin oak	85	72	
	sugar maple	---	---	
	tuliptree	85	86	
	white ash	---	---	
	white oak	75	57	
Qu:				
Quarries	---	---	---	---
RcA:				
Randolph	American beech	---	---	eastern white pine, red maple, tuliptree, white ash
	northern red oak	75	57	
	pin oak	85	---	
	red maple	55	---	
	sugar maple	90	---	
	swamp white oak	---	---	
	tuliptree	85	86	
	white ash	55	---	
ReB:				
Ritchey	bur oak	---	---	eastern redcedar, shortleaf pine, white oak
	eastern redcedar	---	---	
	northern red oak	50	29	
	white oak	50	29	
ReB2:				
Ritchey	bur oak	---	---	eastern redcedar, shortleaf pine, white oak
	eastern redcedar	---	---	
	northern red oak	50	29	
	white oak	50	29	
ReC2:				
Ritchey	bur oak	---	---	eastern redcedar, shortleaf pine, white oak
	eastern redcedar	---	---	
	northern red oak	50	29	
	white oak	50	29	
ReE2:				
Ritchey	bur oak	---	---	eastern redcedar, shortleaf pine, white oak
	eastern redcedar	---	---	
	northern red oak	50	29	
	white oak	50	29	
ReF2:				
Ritchey	bur oak	---	---	eastern redcedar, shortleaf pine, white oak
	eastern redcedar	---	---	
	northern red oak	50	29	
	white oak	50	29	

TABLE 14.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
RfD3:				
Ritchey	bur oak	---	---	eastern redcedar, shortleaf pine, white oak
	eastern redcedar	---	---	
	northern red oak	50	29	
	white oak	50	29	
Rh:				
Riverwash	---	---	---	---
RlE2:				
Rodman	eastern white pine	85	200	eastern white pine, jack pine, red pine
	northern red oak	70	57	
	red pine	75	143	
	white oak	70	57	
Fox	northern red oak	80	57	black locust, eastern white pine, red pine, tuliptree, white ash
	sugar maple	---	---	
	white oak	---	---	
RlF2:				
Rodman	eastern white pine	85	200	eastern white pine, jack pine, red pine
	northern red oak	70	57	
	red pine	75	143	
	white oak	70	57	
Fox	northern red oak	80	57	black locust, eastern white pine, red pine, tuliptree, white ash
	sugar maple	---	---	
	white oak	---	---	
Rs:				
Ross	black cherry	---	---	Norway spruce, black walnut, eastern white pine, tuliptree, white ash
	black walnut	---	---	
	northern red oak	86	72	
	sugar maple	85	57	
	tuliptree	96	100	
	white ash	---	---	
	white oak	---	---	
Rt:				
Urban Land	---	---	---	---
Ross	black cherry	---	---	Norway spruce, black walnut, eastern white pine, tuliptree, white ash
	black walnut	---	---	
	northern red oak	86	72	
	sugar maple	85	57	
	tuliptree	96	100	
	white ash	---	---	
	white oak	---	---	
RuB:				
Russell	northern red oak	90	72	black cherry, black locust, black walnut, eastern white pine, green ash, northern red oak, red pine, tuliptree, white ash, white oak
	sweetgum	76	72	
	tuliptree	98	100	
	white oak	90	72	

TABLE 14.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
RvC2:				
Russell	northern red oak	90	72	black cherry, black locust, black walnut, eastern white pine, green ash, northern red oak, red pine, tuliptree, white ash, white oak
	sweetgum	76	72	
	tuliptree	98	100	
	white oak	90	72	
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
RvD2:				
Russell	northern red oak	90	72	black cherry, black locust, black walnut, eastern white pine, green ash, northern red oak, red pine, tuliptree, white ash, white oak
	sweetgum	76	72	
	tuliptree	98	100	
	white oak	90	72	
Miamian	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	87	72	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	---	---	
Sh:				
Shoals	Virginia pine	90	129	pin oak, red maple, swamp chestnut oak, sweetgum, tuliptree
	eastern cottonwood	---	---	
	pin oak	90	72	
	sweetgum	86	100	
	tuliptree	90	86	
	white ash	---	---	
So:				
Sloan	eastern cottonwood	---	---	American sycamore, eastern cottonwood, green ash, pin oak, red maple, silver maple, swamp white oak, sweetgum
	green ash	---	---	
	pin oak	86	72	
	red maple	---	---	
	swamp white oak	---	---	

TABLE 14.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
ThA:				
Thackery	black cherry	---	---	American sycamore, black cherry, black locust, black walnut, eastern cottonwood, eastern white pine, green ash, northern red oak, red pine, white ash, white oak, yellow poplar
	black walnut	---	---	
	northern red oak	90	72	
	sugar maple	---	---	
	tuliptree	98	100	
	white ash	---	---	
	white oak	90	72	
TpA:				
Tippecanoe	black cherry	---	---	black locust, black walnut, eastern white pine, red pine, white ash, yellow poplar
	black walnut	---	---	
	northern red oak	90	72	
	sugar maple	---	---	
	tuliptree	98	100	
	white ash	---	---	
	white oak	90	72	
Ua:				
Urban Land	---	---	---	---
Ud:				
Udorthents	---	---	---	---
Ug:				
Urban Land	---	---	---	---
Um:				
Urban Land	---	---	---	---
WaA:				
Warsaw	northern red oak	90	72	Norway spruce, black walnut, eastern white pine, red pine, white ash
	sweetgum	76	72	
	tuliptree	98	100	
	white oak	90	72	
WaB:				
Warsaw	northern red oak	90	72	Norway spruce, black walnut, eastern white pine, red pine, white ash
	sweetgum	76	72	
	tuliptree	98	100	
	white oak	90	72	
WeA:				
Wea	northern red oak	90	72	black locust, black walnut, eastern white pine, red pine, tuliptree, white ash
	sweetgum	76	72	
	tuliptree	98	100	
	white oak	90	72	

TABLE 14.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
WeB:				
Wea	northern red oak	90	72	black locust, black walnut, eastern white pine, red pine, tuliptree, white ash
	sweetgum	76	72	
	tuliptree	98	100	
	white oak	90	72	
Ws:				
Westland	pin oak	85	72	baldcypress, eastern white pine, red maple, sweetgum, white ash
	sweetgum	90	100	
	white oak	75	57	
WyB2:				
Wynn	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	85	72	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	85	72	
XeA:				
Xenia	sweetgum	76	72	black walnut, eastern white pine, red pine, tuliptree, white ash
	tuliptree	98	100	
	white oak	90	72	
XeB:				
Xenia	sweetgum	76	72	black walnut, eastern white pine, red pine, tuliptree, white ash
	tuliptree	98	100	
	white oak	90	72	

TABLE 15.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS

(Absence of an entry indicates that trees generally do not grow to the given height. See text on page 165 for additional information.)

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
Ag:					
Algiers	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
Bo:					
Borrow pits	---	---	---	---	---
Bp:					
Brookston	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	pin oak
Br:					
Brookston	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	pin oak
Bs:					
Brookston	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	pin oak
Bu:					
Brookston	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	pin oak
Urban land	---	---	---	---	---
Ca:					
Carlisle	---	---	---	---	---
CeA:					
Celina	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
CeB:					
Celina	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
CeB2:					
Celina	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
ClB:					
Celina	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
CoA:					
Corwin	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
CoB:					
Corwin	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak

TABLE 15.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
CsA:					
Crosby	American cranberrybush	southern arrowwood	Austrian pine; eastern redcedar; green ash; osageorange; Washington hawthorn	eastern white pine; pin oak	---
CtB:					
Crosby	American cranberrybush	southern arrowwood	Austrian pine; eastern redcedar; green ash; osageorange; Washington hawthorn	eastern white pine; pin oak	---
Celina	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
Cu:					
Crosby	American cranberrybush	southern arrowwood	Austrian pine; eastern redcedar; green ash; osageorange; Washington hawthorn	eastern white pine; pin oak	---
Urban land	---	---	---	---	---
DaB:					
Dana	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
FaE2:					
Fairmount	---	---	---	---	---
FaF2:					
Fairmount	---	---	---	---	---
FcA:					
Fincastle	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
FkA:					
Fox	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
FkB:					
Fox	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
FlA:					
Fox	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
FlB:					
Fox	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
FlC2:					
Fox	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
FmA:					
Fox	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
FmB:					
Fox	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---

TABLE 15.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
FmC2:					
Fox	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
FmD2:					
Fox	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
FsC3:					
Fox	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
FuB:					
Fox	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
Urban land	---	---	---	---	---
FuC:					
Urban land	---	---	---	---	---
Fox	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
FuF:					
Urban land	---	---	---	---	---
Fox	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
Gp:					
Gravel pits	---	---	---	---	---
HeE2:					
Hennepin	gray dogwood; Siberian peashrub; silky dogwood	American cranberrybush; eastern redcedar; jack pine; osageorange; Russian olive; Washington hawthorn	honeylocust; northern catalpa	---	---
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
HeF2:					
Hennepin	gray dogwood; Siberian peashrub; silky dogwood	American cranberrybush; eastern redcedar; jack pine; osageorange; Russian olive; Washington hawthorn	honeylocust; northern catalpa	---	---
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
HmF3:					
Hennepin	gray dogwood; Siberian peashrub; silky dogwood	American cranberrybush; eastern redcedar; jack pine; osageorange; Russian olive; Washington hawthorn	honeylocust; northern catalpa	---	---
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak

TABLE 15.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
KeA: Kendallville	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
KeB: Kendallville	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
KeC2: Kendallville	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
Ld: Landes	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Lg: Lanier	---	Siberian peashrub	eastern redcedar; green ash; nannyberry; northern white-cedar; osageorange; Washington hawthorn; white spruce	black willow	---
LsB: Lewisburg	Siberian peashrub	eastern redcedar; jack pine; osageorange; Russian olive; Washington hawthorn	honeylocust; northern catalpa	---	---
LxC2: Lorenzo	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
Rodman	gray dogwood; Siberian peashrub; silky dogwood	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; black locust; jack pine; Virginia pine	---	---
LxD2: Lorenzo	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
Rodman	gray dogwood; Siberian peashrub; silky dogwood	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; black locust; jack pine; Virginia pine	---	---
Mb: Made land	---	---	---	---	---
Md: Medway	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine
MlA: Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
MlB: Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak

TABLE 15.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
MlB2:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
MlC2:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
MlD2:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
MmB:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
MnB3:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
MnC3:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
MnD3:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
MoB:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
Urban land	---	---	---	---	---
MoC:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
Urban land	---	---	---	---	---
MoE:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
Urban land	---	---	---	---	---
MrA:					
Millsdale	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	---
MsA:					
Milton	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
MsB:					
Milton	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---

TABLE 15.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
MsB2:					
Milton	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
MsC2:					
Milton	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
MsD2:					
Milton	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
MtD3:					
Milton	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
MuB:					
Milton	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
Urban land	---	---	---	---	---
MuC:					
Milton	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
Urban land	---	---	---	---	---
MuD:					
Milton	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
Urban land	---	---	---	---	---
Mv:					
Montgomery	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	pin oak
OcA:					
Ockley	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
OcB:					
Ockley	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
PlB:					
Plattville	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
PlC:					
Plattville	common lilac; Siberian peashrub; silky dogwood	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
PyA:					
Pyrmont	---	Siberian peashrub	eastern redcedar; green ash; nannyberry; northern white-cedar; osageorange; Washington hawthorn; white spruce	black willow	---
Qu:					
Quarries	---	---	---	---	---

TABLE 15.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
RcA:					
Randolph	silky dogwood	American cranberrybush; American cranberrybush; baldcypress; blackhaw; European alder; southern arrowwood; Washington hawthorn	arborvitae; Austrian pine; baldcypress; eastern redcedar	Norway spruce; pin oak	green ash
ReB:					
Ritchey	---	---	---	---	---
ReB2:					
Ritchey	---	---	---	---	---
ReC2:					
Ritchey	---	---	---	---	---
ReE2:					
Ritchey	---	---	---	---	---
ReF2:					
Ritchey	---	---	---	---	---
RfD3:					
Ritchey	---	---	---	---	---
Rh:					
Riverwash	---	---	---	---	---
RlE2:					
Rodman	gray dogwood; Siberian peashrub; silky dogwood	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; black locust; jack pine; Virginia pine	---	---
Fox	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
RlF2:					
Rodman	gray dogwood; Siberian peashrub; silky dogwood	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; black locust; jack pine; Virginia pine	---	---
Fox	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
Rs:					
Ross	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
Rt:					
Urban land	---	---	---	---	---
Ross	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
RuB:					
Russell	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
RvC2:					
Russell	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak

TABLE 15.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
RvD2:					
Russell	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
Sh:					
Shoals	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
So:					
Sloan	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	pin oak
ThA:					
Thackery	silky dogwood	American cranberrybush; European alder; Washington hawthorn	arborvitae; baldcypress; blue spruce; eastern redcedar; white fir	Austrian pine; green ash; Norway spruce; pin oak	eastern white pine
TpA:					
Tippecanoe	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
Ua:					
Urban land	---	---	---	---	---
Ud:					
Udorthents	---	---	---	---	---
Ug:					
Urban land	---	---	---	---	---
Um:					
Urban land	---	---	---	---	---
W:					
Water	---	---	---	---	---
WaA:					
Warsaw	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
WaB:					
Warsaw	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
WeA:					
Wea	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
WeB:					
Wea	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
Ws:					
Westland	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	pin oak

TABLE 15.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
WyB2:					
Wynn	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
XeA:					
Xenia	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak
XeB:					
Xenia	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine, pin oak

TABLE 16.—RECREATION PART 1

(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 potential limitation. See text on page 165 for further explanation of ratings in this table.)

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ag:						
Algiers	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	Restricted permeability	0.10	Flooding	0.60
	Restricted permeability	0.10			Restricted permeability	0.10
Bo:						
Borrow Pits	Not Rated		Not Rated		Not Rated	
Bp:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
Br:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
Bs:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
Bu:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
Ca:						
Carlisle	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Gravel content	1.00
	Gravel content	1.00	Content of organic matter	1.00	Depth to saturated zone	1.00
	Content of organic matter	1.00	Gravel content	1.00	Content of organic matter	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
CeA:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10

TABLE 16.—RECREATION PART 1--Continued

Map symbol and soil name	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
CeB:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Restricted permeability	0.21
					Depth to saturated zone	0.10
CeB2:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Restricted permeability	0.21
					Depth to saturated zone	0.10
ClB:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Content of large stones	0.32
					Restricted permeability	0.21
					Depth to saturated zone	0.10
CoA:						
Corwin	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10
CoB:						
Corwin	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Restricted permeability	0.21
					Depth to saturated zone	0.10
CsA:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.11	Restricted permeability	0.11	Restricted permeability	0.11

TABLE 16.—RECREATION PART 1--Continued

Map symbol and soil name	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
CtB:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Restricted permeability	0.21
					Depth to saturated zone	0.10
Cu:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
Urban Land	Not Rated		Not Rated		Not Rated	
DaB:						
Dana	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Restricted permeability	0.21
					Depth to saturated zone	0.10
FaE2:						
Fairmount	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
					Content of large stones	0.01
FaF2:						
Fairmount	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
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
					Content of large stones	0.01
FcA:						
Fincastle	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
FkA:						
Fox	Not limited		Not limited		Somewhat limited	
					Gravel content	0.06

TABLE 16.—RECREATION PART 1--Continued

Map symbol and soil name	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
FkB:						
Fox	Not limited		Not limited		Somewhat limited	
					Slope	0.50
					Gravel content	0.06
FlA:						
Fox	Not limited		Not limited		Somewhat limited	
					Gravel content	0.06
FlB:						
Fox	Not limited		Not limited		Somewhat limited	
					Slope	0.50
					Gravel content	0.08
FlC2:						
Fox	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
					Gravel content	0.08
FmA:						
Fox	Not limited		Not limited		Somewhat limited	
					Gravel content	0.08
FmB:						
Fox	Not limited		Not limited		Somewhat limited	
					Slope	0.50
					Gravel content	0.08
FmC2:						
Fox	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
					Gravel content	0.08
FmD2:						
Fox	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Gravel content	0.08
FsC3:						
Fox	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
					Gravel content	0.08
FuB:						
Fox	Not limited		Not limited		Somewhat limited	
					Slope	0.13
					Gravel content	0.08
Urban Land	Not Rated		Not Rated		Not Rated	
FuC:						
Urban Land	Not Rated		Not Rated		Not Rated	
Fox	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
					Gravel content	0.08
FuF:						
Urban Land	Not Rated		Not Rated		Not Rated	
Fox	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Gravel content	0.08

TABLE 16.—RECREATION PART 1--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
Gp:						
Gravel Pits	Not Rated		Not Rated		Not Rated	
HeE2:						
Hennepin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
HeF2:						
Hennepin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
HmF3:						
Hennepin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
KeA:						
Kendallville	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
KeB:						
Kendallville	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
KeC2:						
Kendallville	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Ld:						
Landes	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
					Gravel content	0.56
Lg:						
Lanier	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
					Gravel content	0.56

TABLE 16.—RECREATION PART 1--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
LsB:						
Lewisburg	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Restricted permeability	0.21
					Depth to saturated zone	0.10
LxC2:						
Lorenzo	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.18	Slope	0.18	Slope	1.00
Rodman	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.18	Slope	0.18	Slope	1.00
LxD2:						
Lorenzo	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Mb:						
Made Land	Not Rated		Not Rated		Not Rated	
Md:						
Medway	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	0.05	Flooding	0.60
	Depth to saturated zone	0.10			Depth to saturated zone	0.10
MlA:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
MlB:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
MlB2:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
MlC2:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
MlD2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21

TABLE 16.—RECREATION PART 1--Continued

Map symbol and soil name	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
MmB:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Content of large stones	0.32
					Restricted permeability	0.21
MnB3:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
MnC3:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
MnD3:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
MoB:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
Urban Land	Not Rated		Not Rated		Not Rated	
MoC:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Urban Land	Not Rated		Not Rated		Not Rated	
MoE:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Urban Land	Not Rated		Not Rated		Not Rated	
MrA:						
Millsdale	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
MsA:						
Milton	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21

TABLE 16.—RECREATION PART 1--Continued

Map symbol and soil name	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
MsB:						
Milton	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Depth to bedrock	0.65
					Slope	0.50
					Restricted permeability	0.21
MsB2:						
Milton	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.84
					Slope	0.50
MsC2:						
Milton	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Depth to bedrock	0.84
					Restricted permeability	0.21
MsD2:						
Milton	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Depth to bedrock	0.90
					Restricted permeability	0.21
MtD3:						
Milton	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.82	Slope	0.82	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Depth to bedrock	0.95
					Restricted permeability	0.21
MuB:						
Milton	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Depth to bedrock	0.65
					Slope	0.50
					Restricted permeability	0.21
Urban Land	Not Rated		Not Rated		Not Rated	
MuC:						
Milton	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Depth to bedrock	0.65
					Restricted permeability	0.21
Urban Land	Not Rated		Not Rated		Not Rated	

TABLE 16.—RECREATION PART 1--Continued

Map symbol and soil name	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
MuD:						
Milton---------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Depth to bedrock	0.65
					Restricted permeability	0.21
Urban Land----------	Not Rated		Not Rated		Not Rated	
Mv:						
Montgomery----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
OcA:						
Ockley--------------	Not limited		Not limited		Not limited	
OcB:						
Ockley--------------	Not limited		Not limited		Somewhat limited	
					Slope	0.50
PlB:						
Plattville----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Depth to bedrock	0.71
					Slope	0.50
					Restricted permeability	0.21
PlC:						
Plattville----------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Depth to bedrock	0.71
					Restricted permeability	0.21
PyA:						
Pyrmont-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Qu:						
Quarries------------	Not Rated		Not Rated		Not Rated	
RcA:						
Randolph------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
ReB:						
Ritchey-------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
					Slope	0.50

TABLE 16.—RECREATION PART 1--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
ReB2:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
					Slope	0.50
ReC2:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Slope	0.32	Slope	0.32	Depth to bedrock	1.00
ReE2:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
ReF2:						
Ritchey	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
RfD3:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Slope	0.82	Slope	0.82	Depth to bedrock	1.00
					Content of large stones	0.03
Rh:						
Riverwash	Not Rated		Not Rated		Not Rated	
RlE2:						
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Fox	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Gravel content	0.08
RlF2:						
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Fox	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Gravel content	0.08
Rs:						
Ross	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
Rt:						
Urban Land	Not Rated		Not Rated		Not Rated	
Ross	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
RuB:						
Russell	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21

TABLE 16.—RECREATION PART 1--Continued

Map symbol and soil name	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
RvC2:						
Russell-------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Miamian-------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
RvD2:						
Russell-------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Miamian-------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Sh:						
Shoals--------------	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	0.60
So:						
Sloan---------------	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	Ponding	1.00	Flooding	1.00
	Ponding	1.00	Flooding	0.40	Ponding	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
ThA:						
Thackery------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10
TpA:						
Tippecanoe----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10
Ua:						
Urban Land----------	Not Rated		Not Rated		Not Rated	
Ud:						
Udorthents----------	Not Rated		Not Rated		Not Rated	
Ug:						
Urban Land----------	Not Rated		Not Rated		Not Rated	
Um:						
Urban Land----------	Not Rated		Not Rated		Not Rated	

TABLE 16.—RECREATION PART 1--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
WaA:						
Warsaw	Not limited		Not limited		Not limited	
WaB:						
Warsaw	Not limited		Not limited		Somewhat limited	
					Slope	0.50
WeA:						
Wea	Not limited		Not limited		Not limited	
WeB:						
Wea	Not limited		Not limited		Somewhat limited	
					Slope	0.50
Ws:						
Westland	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
WyB2:						
Wynn	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Depth to bedrock	0.54
					Slope	0.50
					Restricted permeability	0.21
XeA:						
Xenia	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10
XeB:						
Xenia	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Restricted permeability	0.21
					Depth to saturated zone	0.10

TABLE 17.—RECREATION PART 2

(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 potential limitation. See text on page 165 for further explanation of ratings in this table.)

Map symbol and soil name	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
Ag:						
Algiers	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	0.60
Bo:						
Borrow Pits	Not Rated		Not Rated		Not Rated	
Bp:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
Br:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
Bs:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
Bu:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
Ca:						
Carlisle	Very limited		Very limited		Very limited	
	Gravel content	1.00	Gravel content	1.00	Content of organic matter	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Gravel content	1.00
	Content of organic matter	1.00	Content of organic matter	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
CeA:						
Celina	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
CeB:						
Celina	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03

TABLE 17.—RECREATION PART 2--Continued

Map symbol and soil name	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
CeB2:						
Celina	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
ClB:						
Celina	Not limited		Not limited		Somewhat limited	
					Content of large stones	0.32
					Depth to saturated zone	0.03
CoA:						
Corwin	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
CoB:						
Corwin	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
CsA:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
CtB:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Celina	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
Cu:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
DaB:						
Dana	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
FaE2:						
Fairmount	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to bedrock	1.00
	Slope	0.57			Slope	1.00
					Droughty	0.73
					Content of large stones	0.01
FaF2:						
Fairmount	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to bedrock	1.00
	Slope	1.00	Slope	0.96	Slope	1.00
					Droughty	0.86
					Content of large stones	0.01

TABLE 17.—RECREATION PART 2--Continued

Map symbol and soil name	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
FcA:						
Fincastle	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
FkA:						
Fox	Not limited		Not limited		Not limited	
FkB:						
Fox	Not limited		Not limited		Not limited	
FlA:						
Fox	Not limited		Not limited		Not limited	
FlB:						
Fox	Not limited		Not limited		Not limited	
FlC2:						
Fox	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Droughty	0.06
					Slope	0.04
FmA:						
Fox	Not limited		Not limited		Not limited	
FmB:						
Fox	Not limited		Not limited		Not limited	
FmC2:						
Fox	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Droughty	0.06
					Slope	0.04
FmD2:						
Fox	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11			Droughty	0.06
FsC3:						
Fox	Not limited		Not limited		Somewhat limited	
					Droughty	0.54
					Slope	0.04
FuB:						
Fox	Not limited		Not limited		Not limited	
Urban Land	Not Rated		Not Rated		Not Rated	
FuC:						
Urban Land	Not Rated		Not Rated		Not Rated	
Fox	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Droughty	0.06
					Slope	0.04
FuF:						
Urban Land	Not Rated		Not Rated		Not Rated	
Fox	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	1.00	Slope	0.22	Droughty	0.54

TABLE 17.—RECREATION PART 2--Continued

Map symbol and soil name	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
Gp:						
Gravel Pits	Not Rated		Not Rated		Not Rated	
HeE2:						
Hennepin	Somewhat limited		Not limited		Very limited	
	Slope	0.89			Slope	1.00
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.89				
HeF2:						
Hennepin	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Slope	0.96	Slope	1.00
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	1.00	Slope	0.96		
HmF3:						
Hennepin	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Slope	0.68	Slope	1.00
					Droughty	0.07
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	1.00	Slope	0.68		
KeA:						
Kendallville	Not limited		Not limited		Not limited	
KeB:						
Kendallville	Not limited		Not limited		Not limited	
KeC2:						
Kendallville	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.04
Ld:						
Landes	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
					Droughty	0.01
Lg:						
Lanier	Not limited		Not limited		Somewhat limited	
					Droughty	0.98
					Flooding	0.60
LsB:						
Lewisburg	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
LxC2:						
Lorenzo	Not limited		Not limited		Somewhat limited	
					Droughty	0.92
					Slope	0.01
Rodman	Not limited		Not limited		Very limited	
					Droughty	1.00
					Slope	0.01

TABLE 17.—RECREATION PART 2--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Paths and trails: Value	Off-road motorcycle trails: Rating class and limiting features	Off-road motorcycle trails: Value	Golf fairways: Rating class and limiting features	Golf fairways: Value
LxD2:						
Lorenzo	Somewhat limited		Not limited		Very limited	
	Slope	0.11			Slope	1.00
					Droughty	0.92
Rodman	Somewhat limited		Not limited		Very limited	
	Slope	0.11			Droughty	1.00
					Slope	1.00
Mb:						
Made Land	Not Rated		Not Rated		Not Rated	
Md:						
Medway	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
					Depth to saturated zone	0.03
MlA:						
Miamian	Not limited		Not limited		Not limited	
MlB:						
Miamian	Not limited		Not limited		Not limited	
MlB2:						
Miamian	Not limited		Not limited		Not limited	
MlC2:						
Miamian	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.04
MlD2:						
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11				
MmB:						
Miamian	Not limited		Not limited		Somewhat limited	
					Content of large stones	0.32
MnB3:						
Miamian	Not limited		Not limited		Not limited	
MnC3:						
Miamian	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.04
MnD3:						
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11				
MoB:						
Miamian	Not limited		Not limited		Not limited	
Urban Land	Not Rated		Not Rated		Not Rated	
MoC:						
Miamian	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.04
Urban Land	Not Rated		Not Rated		Not Rated	

TABLE 17.—RECREATION PART 2--Continued

Map symbol and soil name	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
MoE:						
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.89				
Urban Land	Not Rated		Not Rated		Not Rated	
MrA:						
Millsdale	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
					Depth to bedrock	0.06
MsA:						
Milton	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.65
MsB:						
Milton	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.65
MsB2:						
Milton	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.84
MsC2:						
Milton	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Depth to bedrock	0.84
					Slope	0.04
MsD2:						
Milton	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11			Depth to bedrock	0.90
MtD3:						
Milton	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Depth to bedrock	0.95
					Slope	0.63
					Droughty	0.02
MuB:						
Milton	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.65
Urban Land	Not Rated		Not Rated		Not Rated	
MuC:						
Milton	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Depth to bedrock	0.65
					Slope	0.04
Urban Land	Not Rated		Not Rated		Not Rated	
MuD:						
Milton	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11			Depth to bedrock	0.65
Urban Land	Not Rated		Not Rated		Not Rated	

TABLE 17.—RECREATION PART 2--Continued

Map symbol and soil name	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
Mv:						
Montgomery----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
OcA:						
Ockley--------------	Not limited		Not limited		Not limited	
OcB:						
Ockley--------------	Not limited		Not limited		Not limited	
PlB:						
Plattville----------	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.71
PlC:						
Plattville----------	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.71
					Slope	0.04
PyA:						
Pyrmont-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Qu:						
Quarries------------	Not Rated		Not Rated		Not Rated	
RcA:						
Randolph------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Depth to bedrock	0.35
ReB:						
Ritchey-------------	Not limited		Not limited		Very limited	
					Depth to bedrock	1.00
					Droughty	0.55
ReB2:						
Ritchey-------------	Not limited		Not limited		Very limited	
					Depth to bedrock	1.00
					Droughty	0.96
ReC2:						
Ritchey-------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to bedrock	1.00
					Droughty	0.96
					Slope	0.04
ReE2:						
Ritchey-------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to bedrock	1.00
	Slope	0.57			Droughty	1.00
					Slope	1.00
ReF2:						
Ritchey-------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to bedrock	1.00
	Slope	1.00	Slope	0.96	Slope	1.00
					Droughty	1.00

TABLE 17.—RECREATION PART 2--Continued

Map symbol and soil name	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
RfD3:						
Ritchey	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to bedrock	1.00
					Droughty	1.00
					Slope	0.63
					Content of large stones	0.03
Rh:						
Riverwash	Not Rated		Not Rated		Not Rated	
RlE2:						
Rodman	Somewhat limited		Not limited		Very limited	
	Slope	0.89			Slope	1.00
					Droughty	1.00
Fox	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.89			Droughty	0.06
RlF2:						
Rodman	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Slope	0.96	Slope	1.00
					Droughty	1.00
Fox	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	1.00	Slope	0.22	Droughty	0.06
Rs:						
Ross	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
Rt:						
Urban Land	Not Rated		Not Rated		Not Rated	
Ross	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
RuB:						
Russell	Not limited		Not limited		Not limited	
RvC2:						
Russell	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.04
Miamian	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.04
RvD2:						
Russell	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11				
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11				
Sh:						
Shoals	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	0.60

TABLE 17.—RECREATION PART 2--Continued

Map symbol and soil name	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
So:						
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Flooding	0.40	Flooding	0.40	Ponding	1.00
ThA:						
Thackery	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
TpA:						
Tippecanoe	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
Ua:						
Urban Land	Not Rated		Not Rated		Not Rated	
Ud:						
Udorthents	Not Rated		Not Rated		Not Rated	
Ug:						
Urban Land	Not Rated		Not Rated		Not Rated	
Um:						
Urban Land	Not Rated		Not Rated		Not Rated	
WaA:						
Warsaw	Not limited		Not limited		Not limited	
WaB:						
Warsaw	Not limited		Not limited		Not limited	
WeA:						
Wea	Not limited		Not limited		Not limited	
WeB:						
Wea	Not limited		Not limited		Not limited	
Ws:						
Westland	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
WyB2:						
Wynn	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.54
XeA:						
Xenia	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
XeB:						
Xenia	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03

TABLE 18.--WILDLIFE HABITAT

(See text on page 166 for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable.)

Map symbol and soil name	Potential for habitat elements							Potential as habitat for		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wild- life	Woodland wild- life	Wetlnd wild- life
Ag: Algiers	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Bo: Borrow pits	---	---	---	---	---	---	---	---	---	---
Bp: Brookston	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Br: Brookston	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Bs: Brookston	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Bu: Brookston	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Urban land	---	---	---	---	---	---	---	---	---	---
Ca: Carlisle	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
CeA: Celina	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
CeB: Celina	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CeB2: Celina	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ClB: Celina	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CoA: Corwin	Good	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor.
CoB: Corwin	Good	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor.
CsA: Crosby	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
CtB: Crosby	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Celina	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Cu: Crosby	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Urban land	---	---	---	---	---	---	---	---	---	---
DaB: Dana	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
FaE2: Fairmount	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.

TABLE 18.--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
FaF2:										
Fairmount	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
FcA:										
Fincastle	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
FkA:										
Fox	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FkB:										
Fox	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FlA:										
Fox	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FlB:										
Fox	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FlC2:										
Fox	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
FmA:										
Fox	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FmB:										
Fox	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FmC2:										
Fox	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
FmD2:										
Fox	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
FsC3:										
Fox	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
FuB:										
Fox	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Urban land	---	---	---	---	---	---	---	---	---	---
FuC:										
Urban land	---	---	---	---	---	---	---	---	---	---
Fox	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
FuF:										
Urban land	---	---	---	---	---	---	---	---	---	---
Fox	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Gp:										
Gravel pits	---	---	---	---	---	---	---	---	---	---

TABLE 18.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wild- life	Woodland wild- life	Wetlnd wild- life
HeE2:										
Hennepin----------	Poor	Fair	Good	Good	Fair	Very poor.	Very poor.	Fair	Good	Very poor.
Miamian-----------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
HeF2:										
Hennepin----------	Very poor.	Poor	Good	Good	Fair	Very poor.	Very poor.	Poor	Good	Very poor.
Miamian-----------	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
HmF3:										
Hennepin----------	Very poor.	Poor	Good	Good	Fair	Very poor.	Very poor.	Poor	Good	Very poor.
Miamian-----------	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
KeA:										
Kendallville------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
KeB:										
Kendallville------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
KeC2:										
Kendallville------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Ld:										
Landes------------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Lg:										
Lanier------------	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
LsB:										
Lewisburg---------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LxC2:										
Lorenzo-----------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Rodman------------	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
LxD2:										
Lorenzo-----------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Rodman------------	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Mb:										
Made land---------	---	---	---	---	---	---	---	---	---	---
Md:										
Medway------------	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
MlA:										
Miamian-----------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

TABLE 18.--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
MlB:										
Miamian	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MlB2:										
Miamian	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MlC2:										
Miamian	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MlD2:										
Miamian	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
MmB:										
Miamian	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MnB3:										
Miamian	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MnC3:										
Miamian	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MnD3:										
Miamian	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
MoB:										
Miamian	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Urban land	---	---	---	---	---	---	---	---	---	---
MoC:										
Miamian	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Urban land	---	---	---	---	---	---	---	---	---	---
MoE:										
Miamian	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Urban land	---	---	---	---	---	---	---	---	---	---
MrA:										
Millsdale	Fair	Fair	Fair	Fair	Poor	Good	Fair	Fair	Fair	Fair.
MsA:										
Milton	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
MsB:										
Milton	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
MsB2:										
Milton	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
MsC2:										
Milton	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

TABLE 18.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hardwood trees	Conif-erous plants	Wetland plants	Shallow water areas	Potential as habitat for: Openland wild-life	Woodland wild-life	Wetlnd wild-life
MsD2: Milton	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
MtD3: Milton	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MuB: Milton	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Urban land	---	---	---	---	---	---	---	---	---	---
MuC: Milton	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Urban land	---	---	---	---	---	---	---	---	---	---
MuD: Milton	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Urban land	---	---	---	---	---	---	---	---	---	---
Mv: Montgomery	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
OcA: Ockley	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
OcB: Ockley	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
PlB: Plattville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
PlC: Plattville	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
PyA: Pyrmont	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Qu: Quarries	---	---	---	---	---	---	---	---	---	---
RcA: Randolph	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
ReB: Ritchey	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
ReB2: Ritchey	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
ReC2: Ritchey	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.

TABLE 18.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Potential as habitat for: Openland wild- life	Woodland wild- life	Wetlnd wild- life
ReE2:										
Ritchey	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
ReF2:										
Ritchey	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
RfD3:										
Ritchey	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
Rh:										
Riverwash	---	---	---	---	---	---	---	---	---	---
RlE2:										
Rodman	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Fox	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
RlF2:										
Rodman	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Fox	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Rs:										
Ross	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Rt:										
Urban land	---	---	---	---	---	---	---	---	---	---
Ross	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RuB:										
Russell	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RvC2:										
Russell	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Miamian	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
RvD2:										
Russell	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Miamian	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Sh:										
Shoals	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
So:										
Sloan	Fair	Fair	Fair	Poor	Poor	Good	Good	Fair	Poor	Good.
ThA:										
Thackery	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Poor.

TABLE 18.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Potential as habitat for: Openland wild- life	Woodland wild- life	Wetlnd wild- life
TpA: Tippecanoe	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ua: Urban land	---	---	---	---	---	---	---	---	---	---
Ud: Udorthents	---	---	---	---	---	---	---	---	---	---
Ug: Urban land	---	---	---	---	---	---	---	---	---	---
Um: Urban land	---	---	---	---	---	---	---	---	---	---
WaA: Warsaw	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
WaB: Warsaw	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
WeA: Wea	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
WeB: Wea	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ws: Westland	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
WyB2: Wynn	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
XeA: Xenia	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
XeB: Xenia	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.

TABLE 19.--CONSTRUCTION MATERIALS PART 1

(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 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 on page 169 for further explanation of ratings in this table.)

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
Ag:				
Algiers	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Bo:				
Borrow Pits	Not rated		Not rated	
Bp:				
Brookston	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Br:				
Brookston	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Bs:				
Brookston	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Bu:				
Brookston	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
Ca:				
Carlisle	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CeA:				
Celina	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CeB:				
Celina	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CeB2:				
Celina	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
ClB:				
Celina	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

TABLE 19.--CONSTRUCTION MATERIALS PART 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
CoA:				
Corwin	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CoB:				
Corwin	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CsA:				
Crosby	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CtB:				
Crosby	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Celina	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Cu:				
Crosby	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
DaB:				
Dana	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
FaE2:				
Fairmount	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
FaF2:				
Fairmount	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
FcA:				
Fincastle	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
FkA:				
Fox	Fair		Fair	
	Thickest layer	0.64	Thickest layer	0.76
	Bottom layer	0.94	Bottom layer	0.90
FkB:				
Fox	Fair		Fair	
	Thickest layer	0.64	Thickest layer	0.76
	Bottom layer	0.95	Bottom layer	0.91

TABLE 19.--CONSTRUCTION MATERIALS PART 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
FlA:				
Fox	Fair		Fair	
	Thickest layer	0.64	Thickest layer	0.76
	Bottom layer	0.95	Bottom layer	0.91
FlB:				
Fox	Fair		Fair	
	Thickest layer	0.00	Bottom layer	0.41
	Bottom layer	0.50	Thickest layer	0.45
FlC2:				
Fox	Fair		Fair	
	Thickest layer	0.00	Bottom layer	0.41
	Bottom layer	0.50	Thickest layer	0.45
FmA:				
Fox	Fair		Fair	
	Thickest layer	0.00	Bottom layer	0.40
	Bottom layer	0.50	Thickest layer	0.45
FmB:				
Fox	Fair		Fair	
	Thickest layer	0.00	Bottom layer	0.41
	Bottom layer	0.50	Thickest layer	0.45
FmC2:				
Fox	Fair		Fair	
	Thickest layer	0.64	Bottom layer	0.90
	Bottom layer	0.94	Thickest layer	0.95
FmD2:				
Fox	Fair		Fair	
	Thickest layer	0.64	Bottom layer	0.90
	Bottom layer	0.94	Thickest layer	0.95
FsC3:				
Fox	Fair		Fair	
	Thickest layer	0.00	Bottom layer	0.41
	Bottom layer	0.50	Thickest layer	0.45
FuB:				
Fox	Fair		Fair	
	Thickest layer	0.00	Bottom layer	0.41
	Bottom layer	0.50	Thickest layer	0.45
Urban Land	Not rated		Not rated	
FuC:				
Urban Land	Not rated		Not rated	
Fox	Fair		Fair	
	Thickest layer	0.00	Bottom layer	0.41
	Bottom layer	0.50	Thickest layer	0.45
FuF:				
Urban Land	Not rated		Not rated	
Fox	Fair		Fair	
	Thickest layer	0.00	Bottom layer	0.41
	Bottom layer	0.50	Thickest layer	0.45

TABLE 19.--CONSTRUCTION MATERIALS PART 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
Gp:				
Gravel Pits	Not rated		Not rated	
HeE2:				
Hennepin	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HeF2:				
Hennepin	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
HmF3:				
Hennepin	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
KeA:				
Kendallville	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
KeB:				
Kendallville	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
KeC2:				
Kendallville	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Ld:				
Landes	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.40	Bottom layer	0.50
Lg:				
Lanier	Fair		Fair	
	Thickest layer	0.06	Bottom layer	0.86
	Bottom layer	0.90	Thickest layer	0.95
LsB:				
Lewisburg	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

TABLE 19.--CONSTRUCTION MATERIALS PART 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
LxC2:				
Lorenzo	Fair		Fair	
	Thickest layer	0.00	Bottom layer	0.36
	Bottom layer	0.50	Thickest layer	0.45
Rodman	Fair		Fair	
	Thickest layer	0.00	Bottom layer	0.36
	Bottom layer	0.50	Thickest layer	0.41
LxD2:				
Lorenzo	Fair		Fair	
	Thickest layer	0.00	Bottom layer	0.36
	Bottom layer	0.50	Thickest layer	0.45
Rodman	Fair		Fair	
	Thickest layer	0.00	Bottom layer	0.36
	Bottom layer	0.50	Thickest layer	0.41
Mb:				
Made Land	Not rated		Not rated	
Md:				
Medway	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.50
MlA:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MlB:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MlB2:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MlC2:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MlD2:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MmB:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MnB3:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

TABLE 19.--CONSTRUCTION MATERIALS PART 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
MnC3:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MnD3:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MoB:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
MoC:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
MoE:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
MrA:				
Millsdale	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MsA:				
Milton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MsB:				
Milton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MsB2:				
Milton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MsC2:				
Milton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MsD2:				
Milton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

TABLE 19.--CONSTRUCTION MATERIALS PART 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
MtD3:				
Milton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MuB:				
Milton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
MuC:				
Milton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
MuD:				
Milton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Urban Land	Not rated		Not rated	
Mv:				
Montgomery	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
OcA:				
Ockley	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.50	Bottom layer	0.36
OcB:				
Ockley	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.50	Bottom layer	0.36
PlB:				
Plattville	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
PlC:				
Plattville	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
PyA:				
Pyrmont	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Qu:				
Quarries	Not rated		Not rated	

TABLE 19.--CONSTRUCTION MATERIALS PART 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
RcA:				
Randolph	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
ReB:				
Ritchey	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
ReB2:				
Ritchey	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
ReC2:				
Ritchey	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
ReE2:				
Ritchey	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
ReF2:				
Ritchey	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RfD3:				
Ritchey	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Rh:				
Riverwash	Not rated		Not rated	
RlE2:				
Rodman	Fair		Fair	
	Thickest layer	0.00	Bottom layer	0.36
	Bottom layer	0.50	Thickest layer	0.41
Fox	Fair		Fair	
	Thickest layer	0.00	Bottom layer	0.41
	Bottom layer	0.50	Thickest layer	0.44
RlF2:				
Rodman	Fair		Fair	
	Thickest layer	0.00	Bottom layer	0.36
	Bottom layer	0.50	Thickest layer	0.41
Fox	Fair		Fair	
	Thickest layer	0.64	Bottom layer	0.91
	Bottom layer	0.95	Thickest layer	0.94
Rs:				
Ross	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

TABLE 19.--CONSTRUCTION MATERIALS PART 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
Rt:				
Urban Land----------	Not rated		Not rated	
Ross----------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RuB:				
Russell-------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RvC2:				
Russell-------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Miamian-------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RvD2:				
Russell-------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Miamian-------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Sh:				
Shoals--------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
So:				
Sloan---------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
ThA:				
Thackery------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
TpA:				
Tippecanoe----------	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.50	Bottom layer	0.36
Ua:				
Urban Land----------	Not rated		Not rated	
Ud:				
Udorthents----------	Not rated		Not rated	
Ug:				
Urban Land----------	Not rated		Not rated	

TABLE 19.--CONSTRUCTION MATERIALS PART 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
Um:				
Urban Land	Not rated		Not rated	
WaA:				
Warsaw	Fair		Fair	
	Thickest layer	0.00	Bottom layer	0.36
	Bottom layer	0.50	Thickest layer	0.42
WaB:				
Warsaw	Fair		Fair	
	Thickest layer	0.00	Bottom layer	0.36
	Bottom layer	0.50	Thickest layer	0.42
WeA:				
Wea	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.50	Bottom layer	0.36
WeB:				
Wea	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.50	Bottom layer	0.36
Ws:				
Westland	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.50	Bottom layer	0.36
WyB2:				
Wynn	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
XeA:				
Xenia	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
XeB:				
Xenia	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

TABLE 20.--CONSTRUCTION MATERIALS PART 2

(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 on page 169 for further explanation of ratings in this table.)

Map symbol and soil name	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
Ag:						
Algiers	Fair		Poor		Poor	
	Low content of organic matter	0.68	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Water erosion	0.99	Low strength	0.00		
			Shrink-swell	0.87		
Bo:						
Borrow Pits	Not rated		Not rated		Not rated	
Bp:						
Brookston	Fair		Poor		Poor	
	Carbonate content	0.92	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.00		
Br:						
Brookston	Fair		Poor		Poor	
	Carbonate content	0.92	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.00		
			Shrink-swell	0.98		
Bs:						
Brookston	Fair		Poor		Poor	
	Carbonate content	0.92	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.00		
Bu:						
Brookston	Fair		Poor		Poor	
	Carbonate content	0.92	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.00		
Urban Land	Not rated		Not rated		Not rated	
Ca:						
Carlisle	Poor		Poor		Poor	
	Wind erosion	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.00	Hard to reclaim	0.00
					Content of organic matter	0.00
CeA:						
Celina	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Carbonate content	0.08	Depth to saturated zone	0.76	Hard to reclaim	0.54
	Low content of organic matter	0.32			Depth to saturated zone	0.76
	Water erosion	0.99				

TABLE 20.--CONSTRUCTION MATERIALS PART 2--Continued

Map symbol and soil name	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
CeB:						
Celina--------------	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Carbonate content	0.08	Depth to saturated zone	0.76	Hard to reclaim	0.54
	Low content of organic matter	0.32			Depth to saturated zone	0.76
	Water erosion	0.99				
CeB2:						
Celina--------------	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Carbonate content	0.08	Depth to saturated zone	0.76	Hard to reclaim	0.54
	Low content of organic matter	0.32			Depth to saturated zone	0.76
	Water erosion	0.99				
ClB:						
Celina--------------	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Carbonate content	0.08	Depth to saturated zone	0.76	Hard to reclaim	0.54
	Low content of organic matter	0.32			Depth to saturated zone	0.76
	Water erosion	0.99				
CoA:						
Corwin--------------	Fair		Poor		Fair	
	Low content of organic matter	0.50	Low strength	0.00	Depth to saturated zone	0.76
	Carbonate content	0.92	Depth to saturated zone	0.76	Hard to reclaim	0.94
	Water erosion	0.99				
CoB:						
Corwin--------------	Fair		Poor		Fair	
	Low content of organic matter	0.50	Low strength	0.00	Depth to saturated zone	0.76
	Carbonate content	0.92	Depth to saturated zone	0.76	Hard to reclaim	0.94
	Water erosion	0.99				
CsA:						
Crosby--------------	Fair		Poor		Poor	
	Too clayey	0.02	Low strength	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Too clayey	0.01
	Carbonate content	0.68	Shrink-swell	0.99	Hard to reclaim	0.20
	Water erosion	0.90				

TABLE 20.--CONSTRUCTION MATERIALS PART 2--Continued

Map symbol and soil name	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
CtB:						
Crosby	Fair		Poor		Poor	
	Too clayey	0.02	Low strength	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Too clayey	0.01
	Carbonate content	0.68	Shrink-swell	0.99	Hard to reclaim	0.20
	Water erosion	0.90				
Celina	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Carbonate content	0.08	Depth to saturated zone	0.76	Hard to reclaim	0.54
	Low content of organic matter	0.32			Depth to saturated zone	0.76
	Water erosion	0.99				
Cu:						
Crosby	Fair		Poor		Poor	
	Too clayey	0.02	Low strength	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Too clayey	0.01
	Carbonate content	0.68	Shrink-swell	0.99	Hard to reclaim	0.20
	Water erosion	0.90				
Urban Land	Not rated		Not rated		Not rated	
DaB:						
Dana	Fair		Poor		Fair	
	Low content of organic matter	0.24	Low strength	0.00	Hard to reclaim	0.35
	Water erosion	0.90	Depth to saturated zone	0.76	Too clayey	0.70
	Carbonate content	0.92			Depth to saturated zone	0.76
	Too clayey	0.98				
FaE2:						
Fairmount	Poor		Poor		Poor	
	Depth to bedrock	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
	Droughty	0.00	Low strength	0.00	Slope	0.00
	Too clayey	0.00	Slope	0.68	Too clayey	0.00
	Low content of organic matter	0.88	Shrink-swell	0.87	Rock fragments	0.88
	Water erosion	0.99				
FaF2:						
Fairmount	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
	Depth to bedrock	0.00	Slope	0.00	Depth to bedrock	0.00
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Low content of organic matter	0.88	Shrink-swell	0.87	Rock fragments	0.88
	Water erosion	0.99				
FcA:						
Fincastle	Fair		Poor		Poor	
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Carbonate content	0.68	Depth to saturated zone	0.00	Hard to reclaim	0.99
	Water erosion	0.99				

TABLE 20.--CONSTRUCTION MATERIALS PART 2--Continued

Map symbol and soil name	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
FkA:						
Fox	Fair		Poor		Fair	
	Low content of organic matter	0.12	Low strength	0.00	Rock fragments	0.50
	Carbonate content	0.68	Shrink-swell	0.90	Carbonate content	0.80
	Droughty	0.76				
FkB:						
Fox	Fair		Poor		Fair	
	Low content of organic matter	0.12	Low strength	0.00	Rock fragments	0.50
	Carbonate content	0.68	Shrink-swell	0.90	Carbonate content	0.80
	Droughty	0.76				
FlA:						
Fox	Fair		Poor		Fair	
	Low content of organic matter	0.12	Low strength	0.00	Rock fragments	0.50
	Carbonate content	0.68	Shrink-swell	0.90	Too clayey	0.55
	Droughty	0.76			Carbonate content	0.80
	Too clayey	0.95				
	Water erosion	0.99				
FlB:						
Fox	Fair		Poor		Fair	
	Low content of organic matter	0.12	Low strength	0.00	Rock fragments	0.50
	Carbonate content	0.68	Shrink-swell	0.90	Too clayey	0.55
	Droughty	0.76			Carbonate content	0.80
	Too clayey	0.95				
	Water erosion	0.99				
FlC2:						
Fox	Fair		Poor		Fair	
	Droughty	0.11	Low strength	0.00	Rock fragments	0.50
	Low content of organic matter	0.12			Too clayey	0.55
	Carbonate content	0.68			Carbonate content	0.80
	Too clayey	0.95			Slope	0.96
	Water erosion	0.99				
FmA:						
Fox	Fair		Poor		Fair	
	Low content of organic matter	0.12	Low strength	0.00	Rock fragments	0.50
	Carbonate content	0.68	Shrink-swell	0.90	Too clayey	0.55
	Droughty	0.76			Carbonate content	0.80
	Too clayey	0.95				
	Water erosion	0.99				
FmB:						
Fox	Fair		Poor		Fair	
	Low content of organic matter	0.12	Low strength	0.00	Rock fragments	0.50
	Carbonate content	0.68	Shrink-swell	0.90	Too clayey	0.55
	Droughty	0.76			Carbonate content	0.80
	Too clayey	0.95				
	Water erosion	0.99				

TABLE 20.--CONSTRUCTION MATERIALS PART 2--Continued

Map symbol and soil name	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
FmC2:						
Fox	Fair		Poor		Fair	
	Droughty	0.11	Low strength	0.00	Rock fragments	0.50
	Low content of organic matter	0.12			Too clayey	0.55
	Carbonate content	0.68			Carbonate content	0.80
	Too clayey	0.95			Slope	0.96
	Water erosion	0.99				
FmD2:						
Fox	Fair		Poor		Poor	
	Droughty	0.11	Low strength	0.00	Slope	0.00
	Low content of organic matter	0.12			Rock fragments	0.50
	Carbonate content	0.68			Too clayey	0.55
	Too clayey	0.95			Carbonate content	0.80
	Water erosion	0.99				
FsC3:						
Fox	Poor		Poor		Fair	
	Droughty	0.00	Low strength	0.00	Rock fragments	0.50
	Low content of organic matter	0.12	Shrink-swell	0.87	Too clayey	0.55
	Carbonate content	0.68			Carbonate content	0.80
	Too clayey	0.95			Slope	0.96
FuB:						
Fox	Fair		Poor		Fair	
	Low content of organic matter	0.12	Low strength	0.00	Rock fragments	0.50
	Carbonate content	0.68	Shrink-swell	0.90	Too clayey	0.55
	Droughty	0.76			Carbonate content	0.80
	Too clayey	0.95				
	Water erosion	0.99				
Urban Land	Not rated		Not rated		Not rated	
FuC:						
Urban Land	Not rated		Not rated		Not rated	
Fox	Fair		Poor		Fair	
	Droughty	0.11	Low strength	0.00	Rock fragments	0.50
	Low content of organic matter	0.12			Too clayey	0.55
	Carbonate content	0.68			Carbonate content	0.80
	Too clayey	0.95			Slope	0.96
	Water erosion	0.99				
FuF:						
Urban Land	Not rated		Not rated		Not rated	
Fox	Poor		Poor		Poor	
	Droughty	0.00	Low strength	0.00	Slope	0.00
	Low content of organic matter	0.12	Slope	0.00	Rock fragments	0.50
	Carbonate content	0.68	Shrink-swell	0.87	Too clayey	0.55
	Too clayey	0.95			Carbonate content	0.80
	Water erosion	0.99				

TABLE 20.--CONSTRUCTION MATERIALS PART 2--Continued

Map symbol and soil name	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Gp:						
Gravel Pits	Not rated		Not rated		Not rated	
HeE2:						
Hennepin	Fair		Poor		Poor	
	Low content of organic matter	0.12	Low strength	0.00	Slope	0.00
	Carbonate content	0.46	Slope	0.18	Hard to reclaim	0.00
	Droughty	0.99			Carbonate content	0.46
					Rock fragments	0.88
Miamian	Fair		Poor		Poor	
	Too clayey	0.02	Low strength	0.00	Slope	0.00
	Carbonate content	0.08	Slope	0.18	Too clayey	0.01
	Low content of organic matter	0.18			Hard to reclaim	0.16
	Water erosion	0.99				
HeF2:						
Hennepin	Fair		Poor		Poor	
	Low content of organic matter	0.12	Slope	0.00	Slope	0.00
	Carbonate content	0.46	Low strength	0.00	Hard to reclaim	0.00
	Droughty	0.99			Carbonate content	0.46
					Rock fragments	0.88
Miamian	Fair		Poor		Poor	
	Too clayey	0.02	Slope	0.00	Slope	0.00
	Carbonate content	0.08	Low strength	0.00	Too clayey	0.01
	Low content of organic matter	0.18			Hard to reclaim	0.16
	Water erosion	0.99				
HmF3:						
Hennepin	Fair		Poor		Poor	
	Low content of organic matter	0.12	Low strength	0.00	Slope	0.00
	Carbonate content	0.46	Slope	0.00	Hard to reclaim	0.00
	Droughty	0.91			Carbonate content	0.46
					Rock fragments	0.88
Miamian	Fair		Poor		Poor	
	Too clayey	0.02	Low strength	0.00	Slope	0.00
	Carbonate content	0.08	Slope	0.00	Hard to reclaim	0.01
	Low content of organic matter	0.75			Too clayey	0.02
	Water erosion	0.99				
KeA:						
Kendallville	Fair		Poor		Good	
	Low content of organic matter	0.05	Low strength	0.00		
	Carbonate content	0.16				
	Water erosion	0.99				
KeB:						
Kendallville	Fair		Poor		Fair	
	Low content of organic matter	0.05	Low strength	0.00	Too acid	0.98
	Carbonate content	0.16				
	Water erosion	0.99				

TABLE 20.--CONSTRUCTION MATERIALS PART 2--Continued

Map symbol and soil name	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
KeC2:						
Kendallville	Fair		Poor		Fair	
	Low content of organic matter	0.05	Low strength	0.00	Slope	0.96
	Carbonate content	0.16				
	Water erosion	0.99				
Ld:						
Landes	Fair		Poor		Poor	
	Low content of organic matter	0.50	Low strength	0.00	Hard to reclaim	0.00
	Droughty	0.69			Rock fragments	0.68
Lg:						
Lanier	Poor		Poor		Fair	
	Droughty	0.00	Low strength	0.00	Rock fragments	0.68
	Carbonate content	0.54				
LsB:						
Lewisburg	Poor		Poor		Poor	
	Carbonate content	0.00	Low strength	0.00	Hard to reclaim	0.00
	Low content of organic matter	0.18	Depth to saturated zone	0.76	Carbonate content	0.00
	Water erosion	0.90			Depth to saturated zone	0.76
					Rock fragments	0.95
LxC2:						
Lorenzo	Poor		Poor		Fair	
	Droughty	0.00	Low strength	0.00	Rock fragments	0.41
	Carbonate content	0.46	Shrink-swell	0.87		
	Low content of organic matter	0.50				
Rodman	Poor		Poor		Poor	
	Droughty	0.00	Low strength	0.00	Rock fragments	0.00
	Carbonate content	0.46				
LxD2:						
Lorenzo	Poor		Poor		Poor	
	Droughty	0.00	Low strength	0.00	Slope	0.00
	Carbonate content	0.46	Shrink-swell	0.87	Rock fragments	0.41
	Low content of organic matter	0.50				
Rodman	Poor		Poor		Poor	
	Droughty	0.00	Low strength	0.00	Rock fragments	0.00
	Carbonate content	0.46			Slope	0.00
Mb:						
Made Land	Not rated		Not rated		Not rated	
Md:						
Medway	Good		Poor		Fair	
			Low strength	0.00	Hard to reclaim	0.68
			Depth to saturated zone	0.76	Depth to saturated zone	0.76

TABLE 20.--CONSTRUCTION MATERIALS PART 2--Continued

Map symbol and soil name	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
MlA:						
Miamian	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Carbonate content	0.08			Hard to reclaim	0.10
	Low content of organic matter	0.18				
	Water erosion	0.99				
MlB:						
Miamian	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Carbonate content	0.08			Hard to reclaim	0.10
	Low content of organic matter	0.18				
	Water erosion	0.99				
MlB2:						
Miamian	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Carbonate content	0.08			Hard to reclaim	0.10
	Low content of organic matter	0.18				
	Water erosion	0.99				
MlC2:						
Miamian	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Carbonate content	0.08			Hard to reclaim	0.10
	Low content of organic matter	0.18			Slope	0.96
	Water erosion	0.99				
MlD2:						
Miamian	Fair		Poor		Poor	
	Carbonate content	0.08	Low strength	0.00	Slope	0.00
	Low content of organic matter	0.18			Hard to reclaim	0.01
	Water erosion	0.99			Carbonate content	0.08
					Rock fragments	0.72
MmB:						
Miamian	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Carbonate content	0.08			Hard to reclaim	0.10
	Low content of organic matter	0.18				
	Water erosion	0.99				
MnB3:						
Miamian	Fair		Poor		Fair	
	Carbonate content	0.08	Low strength	0.00	Hard to reclaim	0.03
	Low content of organic matter	0.18			Carbonate content	0.08
	Water erosion	0.99			Rock fragments	0.72
MnC3:						
Miamian	Fair		Poor		Fair	
	Carbonate content	0.08	Low strength	0.00	Hard to reclaim	0.03
	Low content of organic matter	0.18			Carbonate content	0.08
	Water erosion	0.99			Rock fragments	0.72
					Slope	0.96

TABLE 20.--CONSTRUCTION MATERIALS PART 2--Continued

Map symbol and soil name	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
MnD3:						
Miamian	Fair		Poor		Poor	
	Carbonate content	0.08	Low strength	0.00	Slope	0.00
	Low content of organic matter	0.18			Hard to reclaim	0.01
	Water erosion	0.99			Carbonate content	0.08
					Rock fragments	0.72
MoB:						
Miamian	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Carbonate content	0.08			Hard to reclaim	0.10
	Low content of organic matter	0.18				
	Water erosion	0.99				
Urban Land	Not rated		Not rated		Not rated	
MoC:						
Miamian	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Carbonate content	0.08			Hard to reclaim	0.10
	Low content of organic matter	0.18			Slope	0.96
	Water erosion	0.99				
Urban Land	Not rated		Not rated		Not rated	
MoE:						
Miamian	Fair		Poor		Poor	
	Too clayey	0.02	Low strength	0.00	Slope	0.00
	Carbonate content	0.08	Slope	0.18	Too clayey	0.01
	Low content of organic matter	0.18			Hard to reclaim	0.05
	Water erosion	0.99				
Urban Land	Not rated		Not rated		Not rated	
MrA:						
Millsdale	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Depth to bedrock	0.93	Depth to saturated zone	0.00	Too clayey	0.00
	Droughty	0.98	Low strength	0.00	Depth to bedrock	0.93
			Shrink-swell	0.22		
MsA:						
Milton	Fair		Poor		Fair	
	Too clayey	0.02	Depth to bedrock	0.00	Too clayey	0.01
	Depth to bedrock	0.35	Low strength	0.00	Depth to bedrock	0.35
	Droughty	0.76	Shrink-swell	0.79		
	Low content of organic matter	0.88				
	Water erosion	0.99				

TABLE 20.--CONSTRUCTION MATERIALS PART 2--Continued

Map symbol and soil name	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
MsB:						
Milton	Fair		Poor		Fair	
	Too clayey	0.02	Depth to bedrock	0.00	Too clayey	0.01
	Depth to bedrock	0.35	Low strength	0.00	Depth to bedrock	0.35
	Droughty	0.76	Shrink-swell	0.79		
	Low content of organic matter	0.88				
	Water erosion	0.99				
MsB2:						
Milton	Fair		Poor		Fair	
	Too clayey	0.02	Depth to bedrock	0.00	Too clayey	0.01
	Depth to bedrock	0.16	Low strength	0.00	Depth to bedrock	0.16
	Droughty	0.52	Shrink-swell	0.87		
	Low content of organic matter	0.82				
	Water erosion	0.99				
MsC2:						
Milton	Fair		Poor		Fair	
	Too clayey	0.02	Depth to bedrock	0.00	Too clayey	0.01
	Depth to bedrock	0.16	Low strength	0.00	Depth to bedrock	0.16
	Droughty	0.48	Shrink-swell	0.75	Slope	0.96
	Low content of organic matter	0.82				
	Water erosion	0.99				
MsD2:						
Milton	Fair		Poor		Poor	
	Too clayey	0.02	Depth to bedrock	0.00	Slope	0.00
	Depth to bedrock	0.10	Low strength	0.00	Too clayey	0.01
	Droughty	0.40	Shrink-swell	0.74	Depth to bedrock	0.10
	Low content of organic matter	0.75				
	Water erosion	0.99				
MtD3:						
Milton	Fair		Poor		Fair	
	Too clayey	0.02	Depth to bedrock	0.00	Too clayey	0.01
	Depth to bedrock	0.05	Low strength	0.00	Depth to bedrock	0.05
	Droughty	0.17	Shrink-swell	0.74	Slope	0.37
	Low content of organic matter	0.75				
	Water erosion	0.99				
MuB:						
Milton	Fair		Poor		Fair	
	Too clayey	0.02	Depth to bedrock	0.00	Too clayey	0.01
	Depth to bedrock	0.35	Low strength	0.00	Depth to bedrock	0.35
	Low content of organic matter	0.82	Shrink-swell	0.79		
	Droughty	0.83				
	Water erosion	0.99				
Urban Land	Not rated		Not rated		Not rated	

TABLE 20.--CONSTRUCTION MATERIALS PART 2--Continued

Map symbol and soil name	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
MuC:						
Milton	Fair		Poor		Fair	
	Too clayey	0.02	Depth to bedrock	0.00	Too clayey	0.01
	Depth to bedrock	0.35	Low strength	0.00	Depth to bedrock	0.35
	Droughty	0.82	Shrink-swell	0.79	Slope	0.96
	Low content of organic matter	0.82				
	Water erosion	0.99				
Urban Land	Not rated		Not rated		Not rated	
MuD:						
Milton	Fair		Poor		Poor	
	Too clayey	0.02	Depth to bedrock	0.00	Slope	0.00
	Depth to bedrock	0.35	Low strength	0.00	Too clayey	0.01
	Droughty	0.76	Shrink-swell	0.87	Depth to bedrock	0.35
	Low content of organic matter	0.82				
	Water erosion	0.99				
Urban Land	Not rated		Not rated		Not rated	
Mv:						
Montgomery	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92	Shrink-swell	0.12		
	Water erosion	0.99				
OcA:						
Ockley	Fair		Poor		Good	
	Low content of organic matter	0.12	Low strength	0.00		
	Carbonate content	0.68	Shrink-swell	0.91		
	Water erosion	0.99				
OcB:						
Ockley	Fair		Poor		Good	
	Low content of organic matter	0.12	Low strength	0.00		
	Carbonate content	0.68	Shrink-swell	0.91		
	Water erosion	0.99				
PlB:						
Plattville	Fair		Poor		Fair	
	Depth to bedrock	0.29	Depth to bedrock	0.00	Depth to bedrock	0.29
	Droughty	0.75	Low strength	0.00		
	Low content of organic matter	0.88	Shrink-swell	0.72		
PlC:						
Plattville	Fair		Poor		Fair	
	Depth to bedrock	0.29	Depth to bedrock	0.00	Depth to bedrock	0.29
	Low content of organic matter	0.50	Low strength	0.00	Slope	0.96
	Droughty	0.81	Shrink-swell	0.72		

TABLE 20.--CONSTRUCTION MATERIALS PART 2--Continued

Map symbol and soil name	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
PyA:						
Pyrmont	Fair		Poor		Poor	
	Low content of organic matter	0.12	Low strength	0.00	Hard to reclaim	0.00
	Carbonate content	0.68	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Water erosion	0.90			Carbonate content	0.68
					Rock fragments	0.97
Qu:						
Quarries	Not rated		Not rated		Not rated	
RcA:						
Randolph	Fair		Poor		Poor	
	Depth to bedrock	0.65	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Carbonate content	0.80	Low strength	0.00	Depth to bedrock	0.65
	Droughty	0.92	Depth to saturated zone	0.00		
	Water erosion	0.99	Shrink-swell	0.59		
ReB:						
Ritchey	Poor		Poor		Poor	
	Depth to bedrock	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
	Droughty	0.00	Low strength	0.00	Too clayey	0.00
	Too clayey	0.00	Shrink-swell	0.87		
	Low content of organic matter	0.88				
	Water erosion	0.99				
ReB2:						
Ritchey	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
	Depth to bedrock	0.00	Low strength	0.00	Too clayey	0.00
	Too clayey	0.00	Shrink-swell	0.87		
	Low content of organic matter	0.88				
	Water erosion	0.99				
ReC2:						
Ritchey	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
	Depth to bedrock	0.00	Low strength	0.00	Too clayey	0.00
	Too clayey	0.00	Shrink-swell	0.87	Slope	0.96
	Low content of organic matter	0.88				
	Water erosion	0.99				
ReE2:						
Ritchey	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
	Depth to bedrock	0.00	Low strength	0.00	Slope	0.00
	Too clayey	0.00	Slope	0.68	Too clayey	0.00
	Low content of organic matter	0.88	Shrink-swell	0.87		
	Water erosion	0.99				

TABLE 20.--CONSTRUCTION MATERIALS PART 2--Continued

Map symbol and soil name	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
ReF2:						
Ritchey	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
	Depth to bedrock	0.00	Slope	0.00	Depth to bedrock	0.00
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Low content of organic matter	0.88	Shrink-swell	0.87		
	Water erosion	0.99				
RfD3:						
Ritchey	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
	Depth to bedrock	0.00	Low strength	0.00	Too clayey	0.23
	Too clayey	0.32			Slope	0.37
	Low content of organic matter	0.88				
	Water erosion	0.99				
Rh:						
Riverwash	Not rated		Not rated		Not rated	
RlE2:						
Rodman	Poor		Poor		Poor	
	Droughty	0.00	Low strength	0.00	Slope	0.00
	Carbonate content	0.46	Slope	0.18	Rock fragments	0.00
Fox	Fair		Poor		Poor	
	Droughty	0.11	Low strength	0.00	Slope	0.00
	Low content of organic matter	0.12	Slope	0.18	Rock fragments	0.50
	Carbonate content	0.68			Carbonate content	0.80
	Water erosion	0.90				
RlF2:						
Rodman	Poor		Poor		Poor	
	Droughty	0.00	Slope	0.00	Slope	0.00
	Carbonate content	0.46	Low strength	0.00	Rock fragments	0.00
Fox	Fair		Poor		Poor	
	Droughty	0.11	Slope	0.00	Slope	0.00
	Low content of organic matter	0.12	Low strength	0.00	Rock fragments	0.50
	Carbonate content	0.68			Carbonate content	0.80
	Water erosion	0.90				
Rs:						
Ross	Good		Poor		Good	
			Low strength	0.00		
Rt:						
Urban Land	Not rated		Not rated		Not rated	
Ross	Good		Poor		Good	
			Low strength	0.00		
RuB:						
Russell	Fair		Poor		Good	
	Low content of organic matter	0.12	Low strength	0.00		
	Carbonate content	0.80				
	Water erosion	0.99				

TABLE 20.--CONSTRUCTION MATERIALS PART 2--Continued

Map symbol and soil name	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
RvC2:						
Russell	Fair		Poor		Fair	
	Low content of organic matter	0.12	Low strength	0.00	Slope	0.96
	Carbonate content	0.80				
	Water erosion	0.99				
Miamian	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Carbonate content	0.08			Hard to reclaim	0.10
	Low content of organic matter	0.18			Slope	0.96
	Water erosion	0.99				
RvD2:						
Russell	Fair		Poor		Poor	
	Low content of organic matter	0.12	Low strength	0.00	Slope	0.00
	Carbonate content	0.80				
	Water erosion	0.99				
Miamian	Fair		Poor		Poor	
	Too clayey	0.02	Low strength	0.00	Slope	0.00
	Carbonate content	0.08			Too clayey	0.01
	Low content of organic matter	0.18			Hard to reclaim	0.10
	Water erosion	0.99				
Sh:						
Shoals	Fair		Poor		Poor	
	Low content of organic matter	0.88	Low strength	0.00	Depth to saturated zone	0.00
	Water erosion	0.99	Depth to saturated zone	0.00		
So:						
Sloan	Fair		Poor		Poor	
	Low content of organic matter	0.18	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.92	Low strength	0.00	Rock fragments	0.00
	Water erosion	0.99			Hard to reclaim	0.08
					Carbonate content	0.92
ThA:						
Thackery	Fair		Poor		Fair	
	Carbonate content	0.01	Low strength	0.00	Depth to saturated zone	0.76
	Water erosion	0.99	Depth to saturated zone	0.76		
			Shrink-swell	0.99		
TpA:						
Tippecanoe	Fair		Poor		Poor	
	Low content of organic matter	0.88	Low strength	0.00	Hard to reclaim	0.00
			Depth to saturated zone	0.76	Depth to saturated zone	0.76
Ua:						
Urban Land	Not rated		Not rated		Not rated	

TABLE 20.--CONSTRUCTION MATERIALS PART 2--Continued

Map symbol and soil name	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
Ud:						
Udorthents	Not rated		Not rated		Not rated	
Ug:						
Urban Land	Not rated		Not rated		Not rated	
Um:						
Urban Land	Not rated		Not rated		Not rated	
WaA:						
Warsaw	Fair		Poor		Fair	
	Droughty	0.78	Low strength	0.00	Rock fragments	0.95
	Carbonate content	0.92	Shrink-swell	0.98		
WaB:						
Warsaw	Fair		Poor		Fair	
	Droughty	0.78	Low strength	0.00	Rock fragments	0.95
	Carbonate content	0.92	Shrink-swell	0.98		
WeA:						
Wea	Fair		Poor		Good	
	Carbonate content	0.97	Low strength	0.00		
			Shrink-swell	0.93		
WeB:						
Wea	Fair		Poor		Good	
	Carbonate content	0.97	Low strength	0.00		
			Shrink-swell	0.93		
Ws:						
Westland	Fair		Poor		Poor	
	Carbonate content	0.92	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.00		
WyB2:						
Wynn	Fair		Poor		Fair	
	Low content of organic matter	0.32	Depth to bedrock	0.00	Depth to bedrock	0.46
	Depth to bedrock	0.46	Low strength	0.00	Too clayey	0.57
	Droughty	0.90	Shrink-swell	0.96	Rock fragments	0.98
	Too clayey	0.92				
	Water erosion	0.99				
XeA:						
Xenia	Fair		Poor		Fair	
	Low content of organic matter	0.12	Low strength	0.00	Too clayey	0.67
	Carbonate content	0.16	Depth to saturated zone	0.76	Depth to saturated zone	0.76
	Too clayey	0.98	Shrink-swell	0.98	Hard to reclaim	0.90
	Water erosion	0.99				

TABLE 20.--CONSTRUCTION MATERIALS PART 2--Continued

Map symbol and soil name	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
XeB:						
Xenia---------------	Fair		Poor		Fair	
	Low content of organic matter	0.12	Low strength	0.00	Too clayey	0.67
	Carbonate content	0.16	Depth to saturated zone	0.76	Depth to saturated zone	0.76
	Too clayey	0.98	Shrink-swell	0.98	Hard to reclaim	0.90
	Water erosion	0.99				

TABLE 21.--BUILDING SITE DEVELOPMENT PART 1

(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 potential limitation. See text on page 170 for further explanation of ratings in this table.)

Map symbol and soil name	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
Ag:						
Algiers	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
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Bo:						
Borrow Pits	Not Rated		Not Rated		Not Rated	
Bp:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Br:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Bs:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Bu:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Urban Land	Not Rated		Not Rated		Not Rated	
Ca:						
Carlisle	Very limited		Very limited		Very limited	
	Subsidence	1.00	Subsidence	1.00	Subsidence	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Content of organic matter	1.00	Ponding	1.00	Content of organic matter	1.00
	Ponding	1.00			Ponding	1.00
CeA:						
Celina	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10			Depth to saturated zone	0.10

TABLE 21.--BUILDING SITE DEVELOPMENT PART 1--Continued

Map symbol and soil name	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
CeB:						
Celina	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10			Slope	0.10
					Depth to saturated zone	0.10
CeB2:						
Celina	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10			Slope	0.10
					Depth to saturated zone	0.10
ClB:						
Celina	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10			Slope	0.10
					Depth to saturated zone	0.10
CoA:						
Corwin	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10	Shrink-swell	0.50	Depth to saturated zone	0.10
CoB:						
Corwin	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10	Shrink-swell	0.50	Slope	0.10
					Depth to saturated zone	0.10
CsA:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	1.00			Shrink-swell	1.00
CtB:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	1.00			Shrink-swell	1.00
Celina	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.10	Depth to saturated zone	1.00	Slope	0.10
					Depth to saturated zone	0.10

TABLE 21.--BUILDING SITE DEVELOPMENT PART 1--Continued

Map symbol and soil name	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
Cu:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	1.00			Shrink-swell	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
DaB:						
Dana	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10			Slope	0.10
					Depth to saturated zone	0.10
FaE2:						
Fairmount	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Slippage	1.00	Slippage	1.00	Depth to bedrock	1.00
	Slope	1.00	Slope	1.00	Slippage	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
FaF2:						
Fairmount	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
	Slippage	1.00	Slippage	1.00	Slippage	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
FcA:						
Fincastle	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50			Shrink-swell	0.50
FkA:						
Fox	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
FkB:						
Fox	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
FlA:						
Fox	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
FlB:						
Fox	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
FlC2:						
Fox	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
FmA:						
Fox	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50

TABLE 21.--BUILDING SITE DEVELOPMENT PART 1--Continued

Map symbol and soil name	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
FmB:						
Fox	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
FmC2:						
Fox	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
FmD2:						
Fox	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
FsC3:						
Fox	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
FuB:						
Fox	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Urban Land	Not Rated		Not Rated		Not Rated	
FuC:						
Urban Land	Not Rated		Not Rated		Not Rated	
Fox	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
FuF:						
Urban Land	Not Rated		Not Rated		Not Rated	
Fox	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
Gp:						
Gravel Pits	Not Rated		Not Rated		Not Rated	
HeE2:						
Hennepin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50			Shrink-swell	0.50
HeF2:						
Hennepin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50			Shrink-swell	0.50

TABLE 21.--BUILDING SITE DEVELOPMENT PART 1--Continued

Map symbol and soil name	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
HmF3:						
Hennepin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
KeA:						
Kendallville	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
KeB:						
Kendallville	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
					Slope	0.10
KeC2:						
Kendallville	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.50	Slope	0.04	Slope	1.00
	Slope	0.04			Shrink-swell	0.50
Ld:						
Landes	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
Lg:						
Lanier	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
LsB:						
Lewisburg	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.10	Depth to saturated zone	1.00	Slope	0.10
					Depth to saturated zone	0.10
LxC2:						
Lorenzo	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Slope	0.99
	Slope	0.01	Slope	0.01	Shrink-swell	0.50
Rodman	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.01	Slope	0.01	Slope	0.99
LxD2:						
Lorenzo	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
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Mb:						
Made Land	Not Rated		Not Rated		Not Rated	
Md:						
Medway	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.10	Depth to saturated zone	1.00	Depth to saturated zone	0.10
MlA:						
Miamian	Not limited		Not limited		Not limited	

TABLE 21.--BUILDING SITE DEVELOPMENT PART 1--Continued

Map symbol and soil name	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
MlB:						
Miamian	Not limited		Not limited		Somewhat limited	
					Slope	0.10
MlB2:						
Miamian	Not limited		Not limited		Somewhat limited	
					Slope	0.10
MlC2:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.04	Slope	0.04	Slope	1.00
MlD2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
MmB:						
Miamian	Not limited		Not limited		Somewhat limited	
					Slope	0.10
MnB3:						
Miamian	Not limited		Not limited		Somewhat limited	
					Slope	0.10
MnC3:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.04	Slope	0.04	Slope	1.00
MnD3:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
MoB:						
Miamian	Not limited		Not limited		Somewhat limited	
					Slope	0.10
Urban Land	Not Rated		Not Rated		Not Rated	
MoC:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.04	Slope	0.04	Slope	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
MoE:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
MrA:						
Millsdale	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
	Ponding	1.00	Depth to bedrock	1.00	Ponding	1.00
	Depth to bedrock	0.06	Ponding	1.00	Depth to bedrock	0.06
MsA:						
Milton	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.64	Depth to bedrock	1.00	Depth to bedrock	0.64
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50

TABLE 21.--BUILDING SITE DEVELOPMENT PART 1--Continued

Map symbol and soil name	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
MsB:						
Milton--------------	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.64	Depth to bedrock	1.00	Depth to bedrock	0.64
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
MsB2:						
Milton--------------	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.84	Depth to bedrock	1.00	Depth to bedrock	0.84
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
MsC2:						
Milton--------------	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.84	Depth to bedrock	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Depth to bedrock	0.84
	Slope	0.04	Slope	0.04	Shrink-swell	0.50
MsD2:						
Milton--------------	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00	Slope	1.00
	Depth to bedrock	0.90	Slope	1.00	Depth to bedrock	0.90
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
MtD3:						
Milton--------------	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.95	Depth to bedrock	1.00	Slope	1.00
	Slope	0.63	Slope	0.63	Depth to bedrock	0.95
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
MuB:						
Milton--------------	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.64	Depth to bedrock	1.00	Depth to bedrock	0.64
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
Urban Land----------	Not Rated		Not Rated		Not Rated	
MuC:						
Milton--------------	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.64	Depth to bedrock	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Depth to bedrock	0.64
	Slope	0.04	Slope	0.04	Shrink-swell	0.50
Urban Land----------	Not Rated		Not Rated		Not Rated	
MuD:						
Milton--------------	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00	Slope	1.00
	Depth to bedrock	0.64	Slope	1.00	Depth to bedrock	0.64
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Urban Land----------	Not Rated		Not Rated		Not Rated	
Mv:						
Montgomery----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00

TABLE 21.--BUILDING SITE DEVELOPMENT PART 1--Continued

Map symbol and soil name	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
OcA:						
Ockley	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
OcB:						
Ockley	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
PlB:						
Plattville	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.71	Depth to bedrock	1.00	Depth to bedrock	0.71
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
PlC:						
Plattville	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.71	Depth to bedrock	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Depth to bedrock	0.71
	Slope	0.04	Slope	0.04	Shrink-swell	0.50
PyA:						
Pyrmont	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Qu:						
Quarries	Not Rated		Not Rated		Not Rated	
RcA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
	Depth to bedrock	0.35	Depth to bedrock	1.00	Depth to bedrock	0.35
ReB:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
ReB2:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
ReC2:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
	Slope	0.04	Slope	0.04	Shrink-swell	0.50
ReE2:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Depth to bedrock	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50

TABLE 21.--BUILDING SITE DEVELOPMENT PART 1--Continued

Map symbol and soil name	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
ReF2:						
Ritchey	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
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
RfD3:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	0.63	Slope	0.63	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Rh:						
Riverwash	Not Rated		Not Rated		Not Rated	
RlE2:						
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Fox	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
RlF2:						
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Fox	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
Rs:						
Ross	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
Rt:						
Urban Land	Not Rated		Not Rated		Not Rated	
Ross	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
RuB:						
Russell	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
					Slope	0.10
RvC2:						
Russell	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.50	Slope	0.04	Slope	1.00
	Slope	0.04			Shrink-swell	0.50
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.04	Slope	0.04	Slope	1.00
RvD2:						
Russell	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50			Shrink-swell	0.50
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00

TABLE 21.--BUILDING SITE DEVELOPMENT PART 1--Continued

Map symbol and soil name	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
Sh:						
Shoals	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
So:						
Sloan	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
	Ponding	1.00	Ponding	1.00	Ponding	1.00
ThA:						
Thackery	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10	Shrink-swell	0.50	Depth to saturated zone	0.10
TpA:						
Tippecanoe	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10	Shrink-swell	0.50	Depth to saturated zone	0.10
Ua:						
Urban Land	Not Rated		Not Rated		Not Rated	
Ud:						
Udorthents	Not Rated		Not Rated		Not Rated	
Ug:						
Urban Land	Not Rated		Not Rated		Not Rated	
Um:						
Urban Land	Not Rated		Not Rated		Not Rated	
WaA:						
Warsaw	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
WaB:						
Warsaw	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
WeA:						
Wea	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
WeB:						
Wea	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10

TABLE 21.--BUILDING SITE DEVELOPMENT PART 1--Continued

Map symbol and soil name	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
Ws:						
Westland	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
WyB2:						
Wynn	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.54	Depth to bedrock	1.00	Depth to bedrock	0.54
	Shrink-swell	0.50	Depth to saturated zone	0.95	Shrink-swell	0.50
			Shrink-swell	0.50	Slope	0.10
XeA:						
Xenia	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10			Depth to saturated zone	0.10
XeB:						
Xenia	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.10			Slope	0.10
					Depth to saturated zone	0.10

TABLE 22.--BUILDING SITE DEVELOPMENT PART 2

(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 potential limitation. See text on page 170 for further explanation of ratings in this table.)

Map symbol and soil name	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
Ag:						
Algiers	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	0.60	Flooding	0.60
	Frost action	1.00				
	Low strength	1.00				
	Shrink-swell	0.50				
Bo:						
Borrow Pits	Not Rated		Not Rated		Not Rated	
Bp:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Ponding	1.00	Ponding	1.00
	Low strength	1.00				
	Ponding	1.00				
	Shrink-swell	0.50				
Br:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Ponding	1.00	Ponding	1.00
	Low strength	1.00				
	Ponding	1.00				
	Shrink-swell	0.50				
Bs:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Ponding	1.00	Ponding	1.00
	Low strength	1.00				
	Ponding	1.00				
	Shrink-swell	0.50				
Bu:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Ponding	1.00	Ponding	1.00
	Low strength	1.00				
	Ponding	1.00				
	Shrink-swell	0.50				
Urban Land	Not Rated		Not Rated		Not Rated	

TABLE 22.--BUILDING SITE DEVELOPMENT PART 2--Continued

Map symbol and soil name	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
Ca:						
Carlisle------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Content of organic matter	1.00
	Subsidence	1.00	Content of organic matter	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00				
CeA:						
Celina--------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Low strength	1.00				
	Shrink-swell	0.50				
	Depth to saturated zone	0.03				
CeB:						
Celina--------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Low strength	1.00				
	Shrink-swell	0.50				
	Depth to saturated zone	0.03				
CeB2:						
Celina--------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Low strength	1.00				
	Shrink-swell	0.50				
	Depth to saturated zone	0.03				
ClB:						
Celina--------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Content of large stones	0.32
	Low strength	1.00			Depth to saturated zone	0.03
	Shrink-swell	0.50				
	Depth to saturated zone	0.03				
CoA:						
Corwin--------------	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Shrink-swell	0.50				
	Frost action	0.50				
	Depth to saturated zone	0.03				

TABLE 22.--BUILDING SITE DEVELOPMENT PART 2--Continued

Map symbol and soil name	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
CoB:						
Corwin	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Shrink-swell	0.50				
	Frost action	0.50				
	Depth to saturated zone	0.03				
CsA:						
Crosby	Very limited		Very limited		Very limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to dense layer	0.50		
	Shrink-swell	1.00				
	Depth to saturated zone	1.00				
CtB:						
Crosby	Very limited		Very limited		Very limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to dense layer	0.50		
	Shrink-swell	1.00				
	Depth to saturated zone	1.00				
Celina	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Low strength	1.00				
	Depth to saturated zone	0.03				
Cu:						
Crosby	Very limited		Very limited		Very limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to dense layer	0.50		
	Shrink-swell	1.00				
	Depth to saturated zone	1.00				
Urban Land	Not Rated		Not Rated		Not Rated	
DaB:						
Dana	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Frost action	1.00				
	Shrink-swell	0.50				
	Depth to saturated zone	0.03				

TABLE 22.--BUILDING SITE DEVELOPMENT PART 2--Continued

Map symbol and soil name	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
FaE2:						
Fairmount-----------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slippage	1.00	Slippage	1.00	Slope	1.00
	Low strength	1.00	Slope	1.00	Droughty	0.70
	Slope	1.00			Content of large stones	0.01
	Shrink-swell	0.50				
FaF2:						
Fairmount-----------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slippage	1.00	Slippage	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Droughty	0.85
	Low strength	1.00			Content of large stones	0.01
	Shrink-swell	0.50				
FcA:						
Fincastle-----------	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00				
	Depth to saturated zone	1.00				
	Shrink-swell	0.50				
FkA:						
Fox-----------------	Somewhat limited		Very limited		Not limited	
	Low strength	0.50	Cutbanks cave	1.00		
	Shrink-swell	0.50				
	Frost action	0.50				
FkB:						
Fox-----------------	Somewhat limited		Very limited		Not limited	
	Low strength	0.50	Cutbanks cave	1.00		
	Shrink-swell	0.50				
	Frost action	0.50				
FlA:						
Fox-----------------	Somewhat limited		Very limited		Not limited	
	Low strength	0.50	Cutbanks cave	1.00		
	Shrink-swell	0.50				
	Frost action	0.50				
FlB:						
Fox-----------------	Somewhat limited		Very limited		Not limited	
	Low strength	0.50	Cutbanks cave	1.00		
	Shrink-swell	0.50				
	Frost action	0.50				
FlC2:						
Fox-----------------	Somewhat limited		Very limited		Somewhat limited	
	Low strength	0.50	Cutbanks cave	1.00	Droughty	0.05
	Shrink-swell	0.50	Slope	0.04	Slope	0.04
	Frost action	0.50				
	Slope	0.04				
FmA:						
Fox-----------------	Somewhat limited		Very limited		Not limited	
	Low strength	0.50	Cutbanks cave	1.00		
	Shrink-swell	0.50				
	Frost action	0.50				

TABLE 22.--BUILDING SITE DEVELOPMENT PART 2--Continued

Map symbol and soil name	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
FmB:						
Fox-----------------	Somewhat limited		Very limited		Not limited	
	Low strength	0.50	Cutbanks cave	1.00		
	Shrink-swell	0.50				
	Frost action	0.50				
FmC2:						
Fox-----------------	Somewhat limited		Very limited		Somewhat limited	
	Low strength	0.50	Cutbanks cave	1.00	Droughty	0.05
	Shrink-swell	0.50	Slope	0.04	Slope	0.04
	Frost action	0.50				
	Slope	0.04				
FmD2:						
Fox-----------------	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
	Low strength	0.50	Slope	1.00	Droughty	0.05
	Shrink-swell	0.50				
	Frost action	0.50				
FsC3:						
Fox-----------------	Somewhat limited		Very limited		Somewhat limited	
	Low strength	0.50	Cutbanks cave	1.00	Droughty	0.51
	Shrink-swell	0.50	Slope	0.04	Slope	0.04
	Frost action	0.50				
	Slope	0.04				
FuB:						
Fox-----------------	Somewhat limited		Very limited		Not limited	
	Low strength	0.50	Cutbanks cave	1.00		
	Shrink-swell	0.50				
	Frost action	0.50				
Urban Land----------	Not Rated		Not Rated		Not Rated	
FuC:						
Urban Land----------	Not Rated		Not Rated		Not Rated	
Fox-----------------	Somewhat limited		Very limited		Somewhat limited	
	Low strength	0.50	Cutbanks cave	1.00	Droughty	0.05
	Shrink-swell	0.50	Slope	0.04	Slope	0.04
	Frost action	0.50				
	Slope	0.04				
FuF:						
Urban Land----------	Not Rated		Not Rated		Not Rated	
Fox-----------------	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
	Low strength	0.50	Slope	1.00	Droughty	0.51
	Shrink-swell	0.50				
	Frost action	0.50				
Gp:						
Gravel Pits---------	Not Rated		Not Rated		Not Rated	

TABLE 22.--BUILDING SITE DEVELOPMENT PART 2--Continued

Map symbol and soil name	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
HeE2:						
Hennepin------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50				
	Low strength	0.28				
Miamian-------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
HeF2:						
Hennepin------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50				
	Low strength	0.28				
Miamian-------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
HmF3:						
Hennepin------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50			Droughty	0.06
	Low strength	0.28				
Miamian-------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50				
KeA:						
Kendallville--------	Somewhat limited		Not limited		Not limited	
	Shrink-swell	0.50				
	Frost action	0.50				
	Low strength	0.28				
KeB:						
Kendallville--------	Somewhat limited		Not limited		Not limited	
	Shrink-swell	0.50				
	Frost action	0.50				
	Low strength	0.28				
KeC2:						
Kendallville--------	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Slope	0.04	Slope	0.04
	Frost action	0.50				
	Slope	0.04				
Ld:						
Landes--------------	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
	Frost action	0.50	Flooding	0.60	Droughty	0.01
Lg:						
Lanier--------------	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Cutbanks cave	1.00	Droughty	0.97
	Frost action	0.50	Flooding	0.60	Flooding	0.60

TABLE 22.--BUILDING SITE DEVELOPMENT PART 2--Continued

Map symbol and soil name	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
LsB:						
Lewisburg----------	Somewhat limited		Very limited		Somewhat limited	
	Frost action	0.50	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Depth to saturated zone	0.03	Depth to dense layer	0.50		
LxC2:						
Lorenzo------------	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Cutbanks cave	1.00	Droughty	0.91
	Slope	0.01	Slope	0.01		
Rodman-------------	Somewhat limited		Very limited		Very limited	
	Slope	0.01	Cutbanks cave	1.00	Droughty	1.00
			Slope	0.01		
LxD2:						
Lorenzo------------	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
	Shrink-swell	0.50	Slope	1.00	Droughty	0.91
Rodman-------------	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Droughty	1.00
			Slope	1.00	Slope	1.00
Mb:						
Made Land----------	Not Rated		Not Rated		Not Rated	
Md:						
Medway-------------	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Low strength	0.05	Flooding	0.60		
	Depth to saturated zone	0.03				
MlA:						
Miamian------------	Somewhat limited		Not limited		Not limited	
	Frost action	0.50				
MlB:						
Miamian------------	Somewhat limited		Not limited		Not limited	
	Frost action	0.50				
MlB2:						
Miamian------------	Somewhat limited		Not limited		Not limited	
	Frost action	0.50				
MlC2:						
Miamian------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Frost action	0.50	Slope	0.04	Slope	0.04
	Slope	0.04				
MlD2:						
Miamian------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50				
MmB:						
Miamian------------	Somewhat limited		Not limited		Somewhat limited	
	Frost action	0.50			Content of large stones	0.32

TABLE 22.--BUILDING SITE DEVELOPMENT PART 2--Continued

Map symbol and soil name	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
MnB3:						
Miamian	Somewhat limited		Not limited		Not limited	
	Frost action	0.50				
MnC3:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Frost action	0.50	Slope	0.04	Slope	0.04
	Slope	0.04				
MnD3:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50				
MoB:						
Miamian	Somewhat limited		Not limited		Not limited	
	Frost action	0.50				
Urban Land	Not Rated		Not Rated		Not Rated	
MoC:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Frost action	0.50	Slope	0.04	Slope	0.04
	Slope	0.04				
Urban Land	Not Rated		Not Rated		Not Rated	
MoE:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50				
Urban Land	Not Rated		Not Rated		Not Rated	
MrA:						
Millsdale	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Frost action	1.00	Ponding	1.00	Depth to bedrock	0.06
	Shrink-swell	1.00	Too clayey	0.50		
	Ponding	1.00				
MsA:						
Milton	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to bedrock	0.65
	Depth to bedrock	0.64	Too clayey	0.50		
	Shrink-swell	0.50				
	Frost action	0.50				
MsB:						
Milton	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to bedrock	0.65
	Depth to bedrock	0.64	Too clayey	0.50		
	Shrink-swell	0.50				
	Frost action	0.50				
MsB2:						
Milton	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to bedrock	0.84
	Depth to bedrock	0.84	Too clayey	0.50		
	Shrink-swell	0.50				
	Frost action	0.50				

TABLE 22.--BUILDING SITE DEVELOPMENT PART 2--Continued

Map symbol and soil name	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
MsC2:						
Milton	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to bedrock	0.84
	Depth to bedrock	0.84	Too clayey	0.50	Slope	0.04
	Shrink-swell	0.50	Slope	0.04		
	Frost action	0.50				
	Slope	0.04				
MsD2:						
Milton	Very limited		Very limited		Very limited	
	Low strength	1.00	Depth to bedrock	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Depth to bedrock	0.90
	Depth to bedrock	0.90	Too clayey	0.50		
	Shrink-swell	0.50				
	Frost action	0.50				
MtD3:						
Milton	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to bedrock	0.95
	Depth to bedrock	0.95	Slope	0.63	Slope	0.63
	Slope	0.63	Too clayey	0.50	Droughty	0.01
	Shrink-swell	0.50				
	Frost action	0.50				
MuB:						
Milton	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to bedrock	0.65
	Depth to bedrock	0.64	Too clayey	0.50		
	Shrink-swell	0.50				
	Frost action	0.50				
Urban Land	Not Rated		Not Rated		Not Rated	
MuC:						
Milton	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to bedrock	0.65
	Depth to bedrock	0.64	Too clayey	0.50	Slope	0.04
	Shrink-swell	0.50	Slope	0.04		
	Frost action	0.50				
	Slope	0.04				
Urban Land	Not Rated		Not Rated		Not Rated	
MuD:						
Milton	Very limited		Very limited		Very limited	
	Low strength	1.00	Depth to bedrock	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Depth to bedrock	0.65
	Depth to bedrock	0.64	Too clayey	0.50		
	Shrink-swell	0.50				
	Frost action	0.50				
Urban Land	Not Rated		Not Rated		Not Rated	
Mv:						
Montgomery	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Low strength	1.00	Ponding	1.00	Ponding	1.00
	Frost action	1.00	Too clayey	0.50		
	Shrink-swell	1.00				
	Ponding	1.00				

TABLE 22.--BUILDING SITE DEVELOPMENT PART 2--Continued

Map symbol and soil name	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
OcA:						
Ockley--------------	Somewhat limited		Very limited		Not limited	
	Low strength	0.90	Cutbanks cave	1.00		
	Shrink-swell	0.50				
	Frost action	0.50				
OcB:						
Ockley--------------	Somewhat limited		Very limited		Not limited	
	Low strength	0.90	Cutbanks cave	1.00		
	Shrink-swell	0.50				
	Frost action	0.50				
PlB:						
Plattville----------	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to bedrock	0.71
	Depth to bedrock	0.71				
	Shrink-swell	0.50				
	Frost action	0.50				
PlC:						
Plattville----------	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to bedrock	0.71
	Depth to bedrock	0.71	Slope	0.04	Slope	0.04
	Shrink-swell	0.50				
	Frost action	0.50				
	Slope	0.04				
PyA:						
Pyrmont-------------	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to dense layer	0.50		
Qu:						
Quarries------------	Not Rated		Not Rated		Not Rated	
RcA:						
Randolph------------	Very limited		Very limited		Very limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.35
	Shrink-swell	1.00	Too clayey	0.50		
	Depth to saturated zone	1.00				
	Depth to bedrock	0.35				
ReB:						
Ritchey-------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Low strength	1.00			Droughty	0.52
	Shrink-swell	0.50				
	Frost action	0.50				
ReB2:						
Ritchey-------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Low strength	1.00			Droughty	0.95
	Shrink-swell	0.50				
	Frost action	0.50				

TABLE 22.--BUILDING SITE DEVELOPMENT PART 2--Continued

Map symbol and soil name	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
ReC2:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Low strength	1.00	Slope	0.04	Droughty	0.95
	Shrink-swell	0.50			Slope	0.04
	Frost action	0.50				
	Slope	0.04				
ReE2:						
Ritchey	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	Droughty	1.00
	Low strength	1.00			Slope	1.00
	Shrink-swell	0.50				
	Frost action	0.50				
ReF2:						
Ritchey	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
	Low strength	1.00			Droughty	1.00
	Shrink-swell	0.50				
	Frost action	0.50				
RfD3:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Low strength	1.00	Slope	0.63	Droughty	1.00
	Slope	0.63			Slope	0.63
	Shrink-swell	0.50			Content of large stones	0.03
	Frost action	0.50				
Rh:						
Riverwash	Not Rated		Not Rated		Not Rated	
RlE2:						
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
			Slope	1.00	Droughty	1.00
Fox	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
	Low strength	0.50	Slope	1.00	Droughty	0.05
	Shrink-swell	0.50				
	Frost action	0.50				
RlF2:						
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
			Slope	1.00	Droughty	1.00
Fox	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
	Low strength	0.50	Slope	1.00	Droughty	0.05
	Shrink-swell	0.50				
	Frost action	0.50				
Rs:						
Ross	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Flooding	0.60	Flooding	0.60
	Frost action	0.50				

TABLE 22.--BUILDING SITE DEVELOPMENT PART 2--Continued

Map symbol and soil name	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
Rt:						
Urban Land	Not Rated		Not Rated		Not Rated	
Ross	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Flooding	0.60	Flooding	0.60
	Frost action	0.50				
RuB:						
Russell	Very limited		Not limited		Not limited	
	Frost action	1.00				
	Low strength	1.00				
	Shrink-swell	0.50				
RvC2:						
Russell	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Slope	0.04	Slope	0.04
	Low strength	1.00				
	Shrink-swell	0.50				
	Slope	0.04				
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Frost action	0.50	Slope	0.04	Slope	0.04
	Slope	0.04				
RvD2:						
Russell	Very limited		Very limited		Very limited	
	Frost action	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00				
	Slope	1.00				
	Shrink-swell	0.50				
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50				
Sh:						
Shoals	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Flooding	0.60	Flooding	0.60
	Depth to saturated zone	1.00				
So:						
Sloan	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Flooding	0.80	Ponding	1.00
	Ponding	1.00				
ThA:						
Thackery	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Shrink-swell	0.50				
	Frost action	0.50				
	Depth to saturated zone	0.03				

TABLE 22.--BUILDING SITE DEVELOPMENT PART 2--Continued

Map symbol and soil name	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
TpA:						
Tippecanoe	Somewhat limited		Very limited		Somewhat limited	
	Low strength	0.90	Cutbanks cave	1.00	Depth to saturated zone	0.03
	Shrink-swell	0.50	Depth to saturated zone	1.00		
	Frost action	0.50				
	Depth to saturated zone	0.03				
Ua:						
Urban Land	Not Rated		Not Rated		Not Rated	
Ud:						
Udorthents	Not Rated		Not Rated		Not Rated	
Ug:						
Urban Land	Not Rated		Not Rated		Not Rated	
Um:						
Urban Land	Not Rated		Not Rated		Not Rated	
WaA:						
Warsaw	Somewhat limited		Very limited		Not limited	
	Shrink-swell	0.50	Cutbanks cave	1.00		
	Frost action	0.50				
	Low strength	0.05				
WaB:						
Warsaw	Somewhat limited		Very limited		Not limited	
	Shrink-swell	0.50	Cutbanks cave	1.00		
	Frost action	0.50				
	Low strength	0.05				
WeA:						
Wea	Very limited		Very limited		Not limited	
	Low strength	1.00	Cutbanks cave	1.00		
	Shrink-swell	0.50				
	Frost action	0.50				
WeB:						
Wea	Very limited		Very limited		Not limited	
	Low strength	1.00	Cutbanks cave	1.00		
	Shrink-swell	0.50				
	Frost action	0.50				
Ws:						
Westland	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Low strength	1.00	Ponding	1.00		
	Ponding	1.00				
	Shrink-swell	0.50				

TABLE 22.--BUILDING SITE DEVELOPMENT PART 2--Continued

Map symbol and soil name	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
WyB2:						
Wynn----------------	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to bedrock	0.54
	Depth to bedrock	0.54	Depth to saturated zone	0.95		
	Shrink-swell	0.50				
	Frost action	0.50				
XeA:						
Xenia---------------	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Frost action	1.00				
	Shrink-swell	0.50				
	Depth to saturated zone	0.03				
XeB:						
Xenia---------------	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Frost action	1.00				
	Shrink-swell	0.50				
	Depth to saturated zone	0.03				

TABLE 23.--SANITARY FACILITIES PART 1

(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 potential limitation. See text on page 171 for further explanation of ratings in this table.)

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Septic tank absorption fields: Value	Sewage lagoons: Rating class and limiting features	Sewage lagoons: Value
Ag:				
Algiers	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	1.00		
Bo:				
Borrow Pits	Not Rated		Not Rated	
Bp:				
Brookston	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00
	Restricted permeability	0.46	Seepage	0.53
Br:				
Brookston	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00
	Restricted permeability	0.46	Seepage	0.53
Bs:				
Brookston	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00
	Restricted permeability	0.46	Seepage	0.53
Bu:				
Brookston	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00
	Restricted permeability	0.46	Seepage	0.53
Urban Land	Not Rated		Not Rated	
Ca:				
Carlisle	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Subsidence	1.00	Ponding	1.00
	Ponding	1.00	Content of organic matter	1.00

TABLE 23.--SANITARY FACILITIES PART 1--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
CeA:				
Celina	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
CeB:				
Celina	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.32
CeB2:				
Celina	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.32
ClB:				
Celina	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.32
CoA:				
Corwin	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
CoB:				
Corwin	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.32
CsA:				
Crosby	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		

TABLE 23.--SANITARY FACILITIES PART 1--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
CtB:				
Crosby	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Slope	0.01
Celina	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.32
Cu:				
Crosby	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
Urban Land	Not Rated		Not Rated	
DaB:				
Dana	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.32
FaE2:				
Fairmount	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slippage	1.00	Slope	1.00
	Slope	1.00		
FaF2:				
Fairmount	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	1.00	Slope	1.00
	Slippage	1.00		
FcA:				
Fincastle	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Slope	0.01
FkA:				
Fox	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
FkB:				
Fox	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46	Slope	0.32

TABLE 23.--SANITARY FACILITIES PART 1--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
FlA:				
Fox	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
FlB:				
Fox	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46	Slope	0.32
FlC2:				
Fox	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Slope	0.04	Slope	1.00
FmA:				
Fox	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
FmB:				
Fox	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46	Slope	0.32
FmC2:				
Fox	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Slope	0.04	Slope	1.00
FmD2:				
Fox	Very limited		Very limited	
	Filtering capacity	1.00	Slope	1.00
	Slope	1.00	Seepage	1.00
FsC3:				
Fox	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Slope	0.04	Slope	1.00
FuB:				
Fox	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46	Slope	0.08
Urban Land	Not Rated		Not Rated	

TABLE 23.--SANITARY FACILITIES PART 1--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
FuC:				
Urban Land	Not Rated		Not Rated	
Fox	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Slope	0.04	Slope	1.00
FuF:				
Urban Land	Not Rated		Not Rated	
Fox	Very limited		Very limited	
	Filtering capacity	1.00	Slope	1.00
	Slope	1.00	Seepage	1.00
Gp:				
Gravel Pits	Not Rated		Not Rated	
HeE2:				
Hennepin	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	1.00		
Miamian	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	1.00		
HeF2:				
Hennepin	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	1.00		
Miamian	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	1.00		
HmF3:				
Hennepin	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	1.00		
Miamian	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	1.00		
KeA:				
Kendallville	Very limited		Somewhat limited	
	Restricted permeability	1.00	Seepage	0.53
KeB:				
Kendallville	Very limited		Somewhat limited	
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.32

TABLE 23.--SANITARY FACILITIES PART 1--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
KeC2:				
Kendallville	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	0.04	Seepage	0.53
Ld:				
Landes	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Filtering capacity	1.00	Seepage	1.00
Lg:				
Lanier	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Filtering capacity	1.00	Seepage	1.00
LsB:				
Lewisburg	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Slope	0.32
LxC2:				
Lorenzo	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Slope	0.01	Slope	1.00
Rodman	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Slope	0.01	Slope	1.00
LxD2:				
Lorenzo	Very limited		Very limited	
	Filtering capacity	1.00	Slope	1.00
	Slope	1.00	Seepage	1.00
Rodman	Very limited		Very limited	
	Filtering capacity	1.00	Slope	1.00
	Slope	1.00	Seepage	1.00
Mb:				
Made Land	Not Rated		Not Rated	
Md:				
Medway	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	1.00
MlA:				
Miamian	Very limited		Not limited	
	Restricted permeability	1.00		

TABLE 23.--SANITARY FACILITIES PART 1--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
MlB:				
Miamian	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.32
MlB2:				
Miamian	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.32
MlC2:				
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	0.04		
MlD2:				
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	1.00		
MmB:				
Miamian	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.32
MnB3:				
Miamian	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.32
MnC3:				
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	0.04		
MnD3:				
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	1.00		
MoB:				
Miamian	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.32
Urban Land	Not Rated		Not Rated	
MoC:				
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	0.04		
Urban Land	Not Rated		Not Rated	

TABLE 23.--SANITARY FACILITIES PART 1--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
MoE:				
Miamian	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	1.00		
Urban Land	Not Rated		Not Rated	
MrA:				
Millsdale	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00
	Restricted permeability	0.46	Seepage	0.53
			Slope	0.01
MsA:				
Milton	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	1.00	Seepage	0.53
MsB:				
Milton	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.32
MsB2:				
Milton	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	0.46	Seepage	0.53
			Slope	0.32
MsC2:				
Milton	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	1.00	Slope	1.00
	Slope	0.04	Seepage	0.53
MsD2:				
Milton	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	1.00	Slope	1.00
	Slope	1.00	Seepage	0.53
MtD3:				
Milton	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	0.63	Slope	1.00
			Seepage	0.53

TABLE 23.--SANITARY FACILITIES PART 1--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
MuB:				
Milton	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.32
Urban Land	Not Rated		Not Rated	
MuC:				
Milton	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	1.00	Slope	1.00
	Slope	0.04	Seepage	0.53
Urban Land	Not Rated		Not Rated	
MuD:				
Milton	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	1.00	Slope	1.00
	Slope	1.00	Seepage	0.53
Urban Land	Not Rated		Not Rated	
Mv:				
Montgomery	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00		
OcA:				
Ockley	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
OcB:				
Ockley	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46	Slope	0.32
PlB:				
Plattville	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	1.00	Slope	0.32
PlC:				
Plattville	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	1.00	Slope	1.00
	Slope	0.04		

TABLE 23.--SANITARY FACILITIES PART 1--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
PyA:				
Pyrmont	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
Qu:				
Quarries	Not Rated		Not Rated	
RcA:				
Randolph	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
ReB:				
Ritchey	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
			Seepage	0.53
			Slope	0.32
ReB2:				
Ritchey	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
			Seepage	0.53
			Slope	0.32
ReC2:				
Ritchey	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	0.04	Slope	1.00
			Seepage	0.53
ReE2:				
Ritchey	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	1.00	Slope	1.00
ReF2:				
Ritchey	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	1.00	Slope	1.00
RfD3:				
Ritchey	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	0.63	Slope	1.00
Rh:				
Riverwash	Not Rated		Not Rated	
RlE2:				
Rodman	Very limited		Very limited	
	Filtering capacity	1.00	Slope	1.00
	Slope	1.00	Seepage	1.00
Fox	Very limited		Very limited	
	Filtering capacity	1.00	Slope	1.00
	Slope	1.00	Seepage	1.00

TABLE 23.--SANITARY FACILITIES PART 1--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
RlF2:				
Rodman	Very limited		Very limited	
	Filtering capacity	1.00	Slope	1.00
	Slope	1.00	Seepage	1.00
Fox	Very limited		Very limited	
	Filtering capacity	1.00	Slope	1.00
	Slope	1.00	Seepage	1.00
Rs:				
Ross	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	0.53
Rt:				
Urban Land	Not Rated		Not Rated	
Ross	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	0.53
RuB:				
Russell	Very limited		Somewhat limited	
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.32
RvC2:				
Russell	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	0.04	Seepage	0.53
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	0.04		
RvD2:				
Russell	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	1.00	Seepage	0.53
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	1.00		
Sh:				
Shoals	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	0.53

TABLE 23.--SANITARY FACILITIES PART 1--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
So:				
Sloan---------------	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Seepage	0.53
ThA:				
Thackery------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.40
TpA:				
Tippecanoe----------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
Ua:				
Urban Land----------	Not Rated		Not Rated	
Ud:				
Udorthents----------	Not Rated		Not Rated	
Ug:				
Urban Land----------	Not Rated		Not Rated	
Um:				
Urban Land----------	Not Rated		Not Rated	
WaA:				
Warsaw--------------	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
WaB:				
Warsaw--------------	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46	Slope	0.32
WeA:				
Wea-----------------	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		

TABLE 23.--SANITARY FACILITIES PART 1--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
WeB:				
Wea	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46	Slope	0.32
Ws:				
Westland	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	1.00
	Ponding	1.00	Ponding	1.00
	Restricted permeability	0.46		
WyB2:				
Wynn	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Slope	0.32
XeA:				
Xenia	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
XeB:				
Xenia	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
			Slope	0.32

TABLE 24.--SANITARY FACILITIES PART 2

(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 potential limitation. See text on page 171 for further explanation of ratings in this table.)

Map symbol and soil name	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
Ag:						
Algiers	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				
Bo:						
Borrow Pits	Not Rated		Not Rated		Not Rated	
Bp:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Too clayey	0.50			Too clayey	0.50
Br:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Too clayey	0.50			Too clayey	0.50
Bs:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Too clayey	0.50			Too clayey	0.50
Bu:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Too clayey	0.50			Too clayey	0.50
Urban Land	Not Rated		Not Rated		Not Rated	
Ca:						
Carlisle	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Content of organic matter	1.00
	Content of organic matter	1.00	Seepage	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
CeA:						
Celina	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.68
CeB:						
Celina	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.68

TABLE 24.--SANITARY FACILITIES PART 2--Continued

Map symbol and soil name	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
CeB2:						
Celina	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.68
ClB:						
Celina	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.68
CoA:						
Corwin	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.68
	Too clayey	0.50			Too clayey	0.50
CoB:						
Corwin	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.68
	Too clayey	0.50			Too clayey	0.50
CsA:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
CtB:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Celina	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.68
Cu:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
DaB:						
Dana	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.68
FaE2:						
Fairmount	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Slippage	1.00	Depth to bedrock	1.00
	Too clayey	1.00	Depth to bedrock	1.00	Too clayey	1.00
	Slope	1.00	Slope	1.00	Hard to compact	1.00
					Slope	1.00
FaF2:						
Fairmount	Very limited		Very limited		Very limited	
	Slope	1.00	Slippage	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Slope	1.00	Slope	1.00
	Too clayey	1.00	Depth to bedrock	1.00	Too clayey	1.00
					Hard to compact	1.00

TABLE 24.--SANITARY FACILITIES PART 2--Continued

Map symbol and soil name	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
FcA:						
Fincastle	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
FkA:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
FkB:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
FlA:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too clayey	0.50			Too clayey	0.50
FlB:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too clayey	0.50			Too clayey	0.50
FlC2:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too clayey	0.50	Slope	0.04	Too clayey	0.50
	Slope	0.04			Gravel content	0.23
					Slope	0.04
FmA:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too clayey	0.50			Too clayey	0.50
FmB:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too clayey	0.50			Too clayey	0.50
FmC2:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too clayey	0.50	Slope	0.04	Too clayey	0.50
	Slope	0.04			Gravel content	0.21
					Slope	0.04
FmD2:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50
					Gravel content	0.21
FsC3:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too clayey	0.50	Slope	0.04	Too clayey	0.50
	Slope	0.04			Slope	0.04

TABLE 24.--SANITARY FACILITIES PART 2--Continued

Map symbol and soil name	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
FuB:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too clayey	0.50			Too clayey	0.50
Urban Land	Not Rated		Not Rated		Not Rated	
FuC:						
Urban Land	Not Rated		Not Rated		Not Rated	
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too clayey	0.50	Slope	0.04	Too clayey	0.50
	Slope	0.04			Gravel content	0.23
					Slope	0.04
FuF:						
Urban Land	Not Rated		Not Rated		Not Rated	
Fox	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too clayey	0.50			Too clayey	0.50
Gp:						
Gravel Pits	Not Rated		Not Rated		Not Rated	
HeE2:						
Hennepin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
HeF2:						
Hennepin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
HmF3:						
Hennepin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
KeA:						
Kendallville	Not limited		Not limited		Not limited	
KeB:						
Kendallville	Not limited		Not limited		Not limited	
KeC2:						
Kendallville	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.04	Slope	0.04	Slope	0.04
Ld:						
Landes	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Gravel content	0.06
	Seepage	1.00	Seepage	1.00		

TABLE 24.--SANITARY FACILITIES PART 2--Continued

Map symbol and soil name	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
Lg:						
Lanier	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Seepage	1.00
	Seepage	1.00	Seepage	1.00		
LsB:						
Lewisburg	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.68
LxC2:						
Lorenzo	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too clayey	0.50	Slope	0.01	Too clayey	0.50
	Slope	0.01			Slope	0.01
Rodman	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Slope	0.01	Slope	0.01	Slope	0.01
LxD2:						
Lorenzo	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50
Rodman	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Slope	1.00	Slope	1.00	Slope	1.00
					Gravel content	0.05
Mb:						
Made Land	Not Rated		Not Rated		Not Rated	
Md:						
Medway	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.68
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Seepage	1.00	Seepage	1.00		
MlA:						
Miamian	Not limited		Not limited		Not limited	
MlB:						
Miamian	Not limited		Not limited		Not limited	
MlB2:						
Miamian	Not limited		Not limited		Not limited	
MlC2:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.04	Slope	0.04	Slope	0.04
MlD2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
MmB:						
Miamian	Not limited		Not limited		Not limited	

TABLE 24.--SANITARY FACILITIES PART 2--Continued

Map symbol and soil name	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
MnB3:						
Miamian	Not limited		Not limited		Not limited	
MnC3:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.04	Slope	0.04	Slope	0.04
MnD3:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
MoB:						
Miamian	Not limited		Not limited		Not limited	
Urban Land	Not Rated		Not Rated		Not Rated	
MoC:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.04	Slope	0.04	Slope	0.04
Urban Land	Not Rated		Not Rated		Not Rated	
MoE:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
MrA:						
Millsdale	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Too clayey	1.00	Ponding	1.00	Too clayey	1.00
	Ponding	1.00			Ponding	1.00
MsA:						
Milton	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50			Too clayey	0.50
MsB:						
Milton	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50			Too clayey	0.50
MsB2:						
Milton	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50			Too clayey	0.50
MsC2:						
Milton	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
MsD2:						
Milton	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

TABLE 24.--SANITARY FACILITIES PART 2--Continued

Map symbol and soil name	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
MtD3:						
Milton	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	0.63	Slope	0.63	Slope	0.63
	Too clayey	0.50			Too clayey	0.50
MuB:						
Milton	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50			Too clayey	0.50
Urban Land	Not Rated		Not Rated		Not Rated	
MuC:						
Milton	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
Urban Land	Not Rated		Not Rated		Not Rated	
MuD:						
Milton	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
Urban Land	Not Rated		Not Rated		Not Rated	
Mv:						
Montgomery	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	1.00	Ponding	1.00	Too clayey	1.00
	Ponding	1.00			Ponding	1.00
OcA:						
Ockley	Very limited		Not limited		Somewhat limited	
	Seepage	1.00			Too clayey	0.50
	Too clayey	0.50				
OcB:						
Ockley	Very limited		Not limited		Somewhat limited	
	Seepage	1.00			Too clayey	0.50
	Too clayey	0.50				
PlB:						
Plattville	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50			Too clayey	0.50
PlC:						
Plattville	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
PyA:						
Pyrmont	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

TABLE 24.--SANITARY FACILITIES PART 2--Continued

Map symbol and soil name	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
Qu:						
Quarries	Not Rated		Not Rated		Not Rated	
RcA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
ReB:						
Ritchey	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
ReB2:						
Ritchey	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
ReC2:						
Ritchey	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			Slope	0.04
ReE2:						
Ritchey	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	1.00	Too clayey	1.00
	Slope	1.00			Slope	1.00
ReF2:						
Ritchey	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
RfD3:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	0.63	Slope	0.63	Slope	0.63
	Too clayey	0.50			Too clayey	0.50
Rh:						
Riverwash	Not Rated		Not Rated		Not Rated	
RlE2:						
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
Fox	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too clayey	0.50			Too clayey	0.50
					Gravel content	0.20

TABLE 24.--SANITARY FACILITIES PART 2--Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Trench: Value	Area sanitary landfill: Rating class and limiting features	Area: Value	Daily cover for landfill: Rating class and limiting features	Daily cover: Value
RlF2:						
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
					Gravel content	0.01
Fox	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too clayey	0.50			Too clayey	0.50
					Gravel content	0.20
Rs:						
Ross	Very limited		Very limited		Not limited	
	Flooding	1.00	Flooding	1.00		
Rt:						
Urban Land	Not Rated		Not Rated		Not Rated	
Ross	Very limited		Very limited		Not limited	
	Flooding	1.00	Flooding	1.00		
RuB:						
Russell	Not limited		Not limited		Not limited	
RvC2:						
Russell	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.04	Slope	0.04	Slope	0.04
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.04	Slope	0.04	Slope	0.04
RvD2:						
Russell	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Sh:						
Shoals	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		
So:						
Sloan	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	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Gravel content	0.07
ThA:						
Thackery	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.68
	Too clayey	0.50			Too clayey	0.50

TABLE 24.--SANITARY FACILITIES PART 2--Continued

Map symbol and soil name	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
TpA:						
Tippecanoe----------	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.68
	Seepage	1.00			Too clayey	0.50
	Too clayey	0.50				
Ua:						
Urban Land----------	Not Rated		Not Rated		Not Rated	
Ud:						
Udorthents----------	Not Rated		Not Rated		Not Rated	
Ug:						
Urban Land----------	Not Rated		Not Rated		Not Rated	
Um:						
Urban Land----------	Not Rated		Not Rated		Not Rated	
WaA:						
Warsaw--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too clayey	0.50			Too clayey	0.50
WaB:						
Warsaw--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too clayey	0.50			Too clayey	0.50
WeA:						
Wea-----------------	Very limited		Not limited		Somewhat limited	
	Seepage	1.00			Too clayey	0.50
	Too clayey	0.50				
WeB:						
Wea-----------------	Very limited		Not limited		Somewhat limited	
	Seepage	1.00			Too clayey	0.50
	Too clayey	0.50				
Ws:						
Westland------------	Very limited		Very limited		Very limited	
	saturated zone		saturated zone		saturated zone	
	Seepage	1.00	Seepage	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Too clayey	0.50
	Too clayey	0.50				
WyB2:						
Wynn----------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Too clayey	0.50
	Too clayey	0.50			Depth to saturated zone	0.11
XeA:						
Xenia---------------	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.68
					Too clayey	0.50

TABLE 24.--SANITARY FACILITIES PART 2--Continued

Map symbol and soil name	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
XeB:						
Xenia	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.68
					Too clayey	0.50

TABLE 25.--AGRICULTURAL WASTE 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 on page 173 for further explanation of ratings in this table.)

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
Ag:						
Algiers	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	1.00	Flooding	0.60
	Leaching limitation	0.50	Restricted permeability	0.14	Restricted permeability	0.14
	Restricted permeability	0.18				
Bo:						
Borrow Pits	Not rated		Not rated		Not rated	
Bp:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Leaching limitation	0.70				
Br:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Leaching limitation	0.70				
Bs:						
Brookston	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Leaching limitation	0.70				
Bu:						
Brookston	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
Ca:						
Carlisle	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Leaching limitation	0.90				

TABLE 25.--AGRICULTURAL WASTE MANAGEMENT--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
CeA:						
Celina--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Restricted permeability	0.41	Too acid	0.42	Too acid	0.42
	Too acid	0.11	Restricted permeability	0.31	Restricted permeability	0.31
CeB:						
Celina--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Restricted permeability	0.41	Too acid	0.42	Too acid	0.42
	Too acid	0.11	Restricted permeability	0.31	Restricted permeability	0.31
					Too steep for surface application	0.08
CeB2:						
Celina--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Restricted permeability	0.41	Too acid	0.31	Too acid	0.31
	Too acid	0.08	Restricted permeability	0.31	Restricted permeability	0.31
					Too steep for surface application	0.08
ClB:						
Celina--------------	Very limited		Very limited		Very limited	
	Large stones on the surface	1.00	Large stones on the surface	1.00	Large stones on the surface	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Restricted permeability	0.41	Too acid	0.31	Too acid	0.31
	Too acid	0.08	Restricted permeability	0.31	Restricted permeability	0.31
					Too steep for surface application	0.08
CoA:						
Corwin--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Restricted permeability	0.41	Too acid	0.31	Too acid	0.31
	Too acid	0.08	Restricted permeability	0.31	Restricted permeability	0.31

TABLE 25.--AGRICULTURAL WASTE MANAGEMENT--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
CoB:						
Corwin	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Restricted permeability	0.41	Too acid	0.31	Too acid	0.31
	Too acid	0.08	Restricted permeability	0.31	Restricted permeability	0.31
					Too steep for surface application	0.08
CsA:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.20	Too acid	0.31	Too acid	0.31
	Too acid	0.08	Restricted permeability	0.15	Restricted permeability	0.15
CtB:						
Crosby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60
	Too acid	0.08	Too acid	0.31	Too acid	0.31
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Restricted permeability	0.41	Too acid	0.31	Too acid	0.31
	Too acid	0.08	Restricted permeability	0.31	Restricted permeability	0.31
					Too steep for surface application	0.08
Cu:						
Crosby	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
DaB:						
Dana	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.05	Too acid	0.21	Too acid	0.21
					Too steep for surface application	0.08

TABLE 25.--AGRICULTURAL WASTE MANAGEMENT--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
FaE2:						
Fairmount-----------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Droughty	1.00	Droughty	1.00	Too steep for surface application	1.00
	Slope	1.00	Slope	1.00	Droughty	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Too steep for sprinkler application	1.00
	Runoff limitation	0.40			Restricted permeability	0.31
FaF2:						
Fairmount-----------	Very limited		Very limited		Very limited	
	Slope	1.00	Droughty	1.00	Droughty	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Droughty	1.00	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Too steep for sprinkler application	1.00
	Runoff limitation	0.40			Restricted permeability	0.31
FcA:						
Fincastle-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.05	Too acid	0.21	Too acid	0.21
FkA:						
Fox-----------------	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Shallow to Discontinuity	0.54	Shallow to Discontinuity	0.54	Droughty	0.24
	Droughty	0.24	Droughty	0.24	Too acid	0.07
	Too acid	0.02	Too acid	0.07		
FkB:						
Fox-----------------	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Shallow to Discontinuity	0.54	Shallow to Discontinuity	0.54	Droughty	0.24
	Droughty	0.24	Droughty	0.24	Too steep for surface application	0.08
	Too acid	0.02	Too acid	0.07	Too acid	0.07
FlA:						
Fox-----------------	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Shallow to Discontinuity	0.54	Shallow to Discontinuity	0.54	Droughty	0.24
	Droughty	0.24	Droughty	0.24	Too acid	0.07
	Too acid	0.02	Too acid	0.07		

TABLE 25.--AGRICULTURAL WASTE MANAGEMENT--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
FlB:						
Fox	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Shallow to Discontinuity	0.54	Shallow to Discontinuity	0.54	Droughty	0.24
	Droughty	0.24	Droughty	0.24	Too steep for surface application	0.08
	Too acid	0.02	Too acid	0.07	Too acid	0.07
FlC2:						
Fox	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.89	Droughty	0.89	Too steep for surface application	1.00
	Shallow to Discontinuity	0.54	Shallow to Discontinuity	0.54	Droughty	0.89
	Slope	0.04	Too acid	0.07	Too steep for sprinkler application	0.22
	Too acid	0.02	Slope	0.04	Too acid	0.07
FmA:						
Fox	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Shallow to Discontinuity	0.54	Shallow to Discontinuity	0.54	Droughty	0.24
	Droughty	0.24	Droughty	0.24	Too acid	0.21
	Too acid	0.05	Too acid	0.21		
FmB:						
Fox	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Shallow to Discontinuity	0.54	Shallow to Discontinuity	0.54	Droughty	0.24
	Droughty	0.24	Droughty	0.24	Too steep for surface application	0.08
	Too acid	0.02	Too acid	0.07	Too acid	0.07
FmC2:						
Fox	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.89	Droughty	0.89	Too steep for surface application	1.00
	Shallow to Discontinuity	0.54	Shallow to Discontinuity	0.54	Droughty	0.89
	Slope	0.04	Too acid	0.07	Too steep for sprinkler application	0.22
	Too acid	0.02	Slope	0.04	Too acid	0.07

TABLE 25.--AGRICULTURAL WASTE MANAGEMENT--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
FmD2:						
Fox	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Droughty	0.89	Droughty	0.89	Too steep for sprinkler application	1.00
	Shallow to Discontinuity	0.54	Shallow to Discontinuity	0.54	Droughty	0.89
	Too acid	0.02	Too acid	0.07	Too acid	0.07
FsC3:						
Fox	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Shallow to Discontinuity	1.00	Shallow to Discontinuity	1.00	Too steep for surface application	1.00
	Droughty	1.00	Droughty	1.00	Droughty	1.00
	Slope	0.04	Too acid	0.07	Too steep for sprinkler application	0.22
	Too acid	0.02	Slope	0.04	Too acid	0.07
FuB:						
Fox	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
FuC:						
Urban Land	Not rated		Not rated		Not rated	
Fox	Not rated		Not rated		Not rated	
FuF:						
Urban Land	Not rated		Not rated		Not rated	
Fox	Not rated		Not rated		Not rated	
Gp:						
Gravel Pits	Not rated		Not rated		Not rated	

TABLE 25.--AGRICULTURAL WASTE MANAGEMENT--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
HeE2:						
Hennepin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Dense layer	1.00	Restricted permeability	0.31	Too steep for sprinkler application	1.00
	Restricted permeability	0.41	Too acid	0.03	Restricted permeability	0.31
	Too acid	0.01	Droughty	0.01	Too acid	0.03
	Droughty	0.01			Droughty	0.01
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Too steep for sprinkler application	1.00
	Too acid	0.05	Too acid	0.21	Restricted permeability	0.31
					Too acid	0.21
HeF2:						
Hennepin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Dense layer	1.00	Restricted permeability	0.31	Too steep for sprinkler application	1.00
	Restricted permeability	0.41	Too acid	0.03	Restricted permeability	0.31
	Too acid	0.01	Droughty	0.01	Too acid	0.03
	Droughty	0.01			Droughty	0.01
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Too steep for sprinkler application	1.00
	Too acid	0.05	Too acid	0.21	Restricted permeability	0.31
					Too acid	0.21

TABLE 25.--AGRICULTURAL WASTE MANAGEMENT--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HmF3:						
Hennepin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Dense layer	1.00	Restricted permeability	0.31	Too steep for sprinkler application	1.00
	Restricted permeability	0.41	Droughty	0.09	Restricted permeability	0.31
	Droughty	0.09			Droughty	0.09
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Dense layer	1.00	Restricted permeability	0.31	Too steep for sprinkler application	1.00
	Restricted permeability	0.41	Too acid	0.21	Restricted permeability	0.31
	Too acid	0.05			Too acid	0.21
KeA:						
Kendallville	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.05	Too acid	0.21	Too acid	0.21
KeB:						
Kendallville	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.05	Too acid	0.21	Too acid	0.21
					Too steep for surface application	0.08
KeC2:						
Kendallville	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.41	Restricted permeability	0.31	Too steep for surface application	1.00
	Slope	0.04	Too acid	0.07	Restricted permeability	0.31
	Too acid	0.02	Slope	0.04	Too steep for sprinkler application	0.22
					Too acid	0.07
Ld:						
Landes	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Flooding	1.00	Flooding	1.00	Flooding	0.60
	Droughty	0.31	Droughty	0.31	Droughty	0.31

TABLE 25.--AGRICULTURAL WASTE MANAGEMENT--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
Lg:						
Lanier	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Droughty	1.00	Droughty	1.00
	Flooding	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	1.00	Flooding	1.00	Flooding	0.60
	Shallow to Discontinuity	1.00	Shallow to Discontinuity	1.00		
	Leaching limitation	0.45				
LsB:						
Lewisburg	Very limited		Somewhat limited		Somewhat limited	
	Dense layer	1.00	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Depth to saturated zone	0.95	Restricted permeability	0.31	Restricted permeability	0.31
	Restricted permeability	0.41			Too steep for surface application	0.08
LxC2:						
Lorenzo	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Droughty	1.00	Droughty	1.00
	Shallow to Discontinuity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	1.00	Shallow to Discontinuity	1.00	Too steep for surface application	1.00
	Slope	0.01	Slope	0.01	Too steep for sprinkler application	0.10
Rodman	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Droughty	1.00	Droughty	1.00
	Shallow to Discontinuity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	1.00	Shallow to Discontinuity	1.00	Too steep for surface application	1.00
	Leaching limitation	0.45	Slope	0.01	Too steep for sprinkler application	0.10
	Slope	0.01				

TABLE 25.--AGRICULTURAL WASTE MANAGEMENT--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
LxD2:						
Lorenzo	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Droughty	1.00	Droughty	1.00
	Shallow to Discontinuity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	1.00	Shallow to Discontinuity	1.00	Too steep for surface application	1.00
	Slope	1.00	Slope	1.00	Too steep for sprinkler application	1.00
Rodman	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Droughty	1.00	Droughty	1.00
	Shallow to Discontinuity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	1.00	Shallow to Discontinuity	1.00	Too steep for surface application	1.00
	Slope	1.00	Slope	1.00	Too steep for sprinkler application	1.00
	Leaching limitation	0.45				
Mb:						
Made Land	Not rated		Not rated		Not rated	
Md:						
Medway	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.95
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Flooding	0.60
MlA:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.05	Too acid	0.21	Too acid	0.21
MlB:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.05	Too acid	0.21	Too acid	0.21
					Too steep for surface application	0.08
MlB2:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.05	Too acid	0.21	Too acid	0.21
					Too steep for surface application	0.08

TABLE 25.--AGRICULTURAL WASTE MANAGEMENT--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MlC2:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.41	Restricted permeability	0.31	Too steep for surface application	1.00
	Too acid	0.05	Too acid	0.21	Restricted permeability	0.31
	Slope	0.04	Slope	0.04	Too steep for sprinkler application	0.22
					Too acid	0.21
MlD2:						
Miamian	Very limited		Very limited		Very limited	
	Dense layer	1.00	Slope	1.00	Too steep for surface application	1.00
	Slope	1.00	Restricted permeability	0.31	Too steep for sprinkler application	1.00
	Restricted permeability	0.41	Too acid	0.21	Restricted permeability	0.31
	Too acid	0.05			Too acid	0.21
MmB:						
Miamian	Very limited		Very limited		Very limited	
	Large stones on the surface	1.00	Large stones on the surface	1.00	Large stones on the surface	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.05	Too acid	0.21	Too acid	0.21
					Too steep for surface application	0.08
MnB3:						
Miamian	Very limited		Somewhat limited		Somewhat limited	
	Dense layer	1.00	Restricted permeability	0.31	Restricted permeability	0.31
	Restricted permeability	0.41	Too acid	0.21	Too acid	0.21
	Too acid	0.05			Too steep for surface application	0.08
MnC3:						
Miamian	Very limited		Somewhat limited		Very limited	
	Dense layer	1.00	Restricted permeability	0.31	Too steep for surface application	1.00
	Restricted permeability	0.41	Too acid	0.21	Restricted permeability	0.31
	Too acid	0.05	Slope	0.04	Too steep for sprinkler application	0.22
	Slope	0.04			Too acid	0.21

TABLE 25.--AGRICULTURAL WASTE MANAGEMENT--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MnD3:						
Miamian	Very limited		Very limited		Very limited	
	Dense layer	1.00	Slope	1.00	Too steep for surface application	1.00
	Slope	1.00	Restricted permeability	0.31	Too steep for sprinkler application	1.00
	Restricted permeability	0.41	Too acid	0.21	Restricted permeability	0.31
	Too acid	0.05			Too acid	0.21
MoB:						
Miamian	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MoC:						
Miamian	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MoE:						
Miamian	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MrA:						
Millsdale	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Leaching limitation	0.70	Too acid	0.07	Too acid	0.07
	Depth to bedrock	0.06	Depth to bedrock	0.06	Depth to bedrock	0.06
	Droughty	0.02	Droughty	0.02	Droughty	0.02
MsA:						
Milton	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to bedrock	0.65	Depth to bedrock	0.65	Depth to bedrock	0.65
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Droughty	0.24	Droughty	0.24	Droughty	0.24
	Too acid	0.05	Too acid	0.21	Too acid	0.21
MsB:						
Milton	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to bedrock	0.65	Depth to bedrock	0.65	Depth to bedrock	0.65
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Droughty	0.24	Droughty	0.24	Droughty	0.24
	Too acid	0.05	Too acid	0.21	Too acid	0.21
					Too steep for surface application	0.08

TABLE 25.--AGRICULTURAL WASTE MANAGEMENT--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MsB2:						
Milton	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to bedrock	0.84	Depth to bedrock	0.84	Depth to bedrock	0.84
	Droughty	0.48	Droughty	0.48	Droughty	0.48
	Too acid	0.05	Too acid	0.21	Too acid	0.21
					Too steep for surface application	0.08
MsC2:						
Milton	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.84	Depth to bedrock	0.84	Too steep for surface application	1.00
	Droughty	0.52	Droughty	0.52	Depth to bedrock	0.84
	Restricted permeability	0.41	Restricted permeability	0.31	Droughty	0.52
	Too acid	0.05	Too acid	0.21	Restricted permeability	0.31
	Slope	0.04	Slope	0.04	Too steep for sprinkler application	0.22
MsD2:						
Milton	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Depth to bedrock	0.90	Depth to bedrock	0.90	Too steep for sprinkler application	1.00
	Droughty	0.60	Droughty	0.60	Depth to bedrock	0.90
	Restricted permeability	0.41	Too acid	0.31	Droughty	0.60
	Too acid	0.08	Restricted permeability	0.31	Too acid	0.31
MtD3:						
Milton	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.95	Depth to bedrock	0.95	Too steep for surface application	1.00
	Droughty	0.83	Droughty	0.83	Depth to bedrock	0.95
	Slope	0.63	Slope	0.63	Droughty	0.83
	Restricted permeability	0.41	Restricted permeability	0.31	Too steep for sprinkler application	0.78
	Too acid	0.05	Too acid	0.21	Restricted permeability	0.31
MuB:						
Milton	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
MuC:						
Milton	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	

TABLE 25.--AGRICULTURAL WASTE MANAGEMENT--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MuD:						
Milton	Not rated		Not rated		Not rated	
Urban Land	Not rated		Not rated		Not rated	
Mv:						
Montgomery	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Runoff limitation	0.40				
OcA:						
Ockley	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Too acid	0.03	Too acid	0.14	Too acid	0.14
OcB:						
Ockley	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Too acid	0.03	Too acid	0.14	Too acid	0.14
					Too steep for surface application	0.08
PlB:						
Plattville	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to bedrock	0.71	Depth to bedrock	0.71	Depth to bedrock	0.71
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Droughty	0.25	Droughty	0.25	Droughty	0.25
	Too acid	0.05	Too acid	0.21	Too acid	0.21
					Too steep for surface application	0.08
PlC:						
Plattville	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.71	Depth to bedrock	0.71	Too steep for surface application	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Depth to bedrock	0.71
	Droughty	0.19	Too acid	0.21	Restricted permeability	0.31
	Too acid	0.05	Droughty	0.19	Too steep for sprinkler application	0.22
	Slope	0.04	Slope	0.04	Too acid	0.21

TABLE 25.--AGRICULTURAL WASTE MANAGEMENT--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
PyA:						
Pyrmont	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Dense layer	1.00	Restricted permeability	0.31	Restricted permeability	0.31
	Restricted permeability	0.41	Too acid	0.21	Too acid	0.21
	Runoff limitation	0.40				
	Too acid	0.05				
Qu:						
Quarries	Not rated		Not rated		Not rated	
RcA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Depth to bedrock	0.35	Depth to bedrock	0.35
	Depth to bedrock	0.35	Restricted permeability	0.31	Restricted permeability	0.31
	Droughty	0.08	Droughty	0.08	Droughty	0.08
	Too acid	0.02	Too acid	0.07	Too acid	0.07
ReB:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Droughty	1.00	Droughty	1.00	Droughty	1.00
	Runoff limitation	0.40			Too steep for surface application	0.08
ReB2:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
	Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Runoff limitation	0.40			Too steep for surface application	0.08
ReC2:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
	Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Runoff limitation	0.40	Too acid	0.07	Too steep for surface application	1.00
	Slope	0.04	Slope	0.04	Too steep for sprinkler application	0.22
	Too acid	0.02			Too acid	0.07
ReE2:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
	Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Runoff limitation	0.40			Too steep for sprinkler application	1.00

TABLE 25.--AGRICULTURAL WASTE MANAGEMENT--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ReF2:						
Ritchey	Very limited		Very limited		Very limited	
	Slope	1.00	Droughty	1.00	Droughty	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Droughty	1.00	Slope	1.00	Too steep for surface application	1.00
	Runoff limitation	0.40			Too steep for sprinkler application	1.00
RfD3:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
	Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	0.63	Slope	0.63	Too steep for surface application	1.00
	Runoff limitation	0.40			Too steep for sprinkler application	0.78
Rh:						
Riverwash	Not rated		Not rated		Not rated	
RlE2:						
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Droughty	1.00	Droughty	1.00
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Shallow to Discontinuity	1.00	Shallow to Discontinuity	1.00	Too steep for surface application	1.00
	Droughty	1.00	Slope	1.00	Too steep for sprinkler application	1.00
	Leaching limitation	0.45				
Fox	Very limited		Very limited		Very limited	
	Slope	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Filtering capacity	1.00	Slope	1.00	Too steep for surface application	1.00
	Droughty	0.89	Droughty	0.89	Too steep for sprinkler application	1.00
	Shallow to Discontinuity	0.54	Shallow to Discontinuity	0.54	Droughty	0.89
	Too acid	0.02	Too acid	0.07	Too acid	0.07

TABLE 25.--AGRICULTURAL WASTE MANAGEMENT--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
RlF2:						
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Droughty	1.00	Droughty	1.00
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Shallow to Discontinuity	1.00	Shallow to Discontinuity	1.00	Too steep for surface application	1.00
	Droughty	1.00	Slope	1.00	Too steep for sprinkler application	1.00
	Leaching limitation	0.45				
Fox	Very limited		Very limited		Very limited	
	Slope	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Filtering capacity	1.00	Slope	1.00	Too steep for surface application	1.00
	Droughty	0.89	Droughty	0.89	Too steep for sprinkler application	1.00
	Shallow to Discontinuity	0.54	Shallow to Discontinuity	0.54	Droughty	0.89
	Too acid	0.05	Too acid	0.21	Too acid	0.21
Rs:						
Ross	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Flooding	0.60
Rt:						
Urban Land	Not rated		Not rated		Not rated	
Ross	Not rated		Not rated		Not rated	
RuB:						
Russell	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.05	Too acid	0.21	Too acid	0.21
					Too steep for surface application	0.08

TABLE 25.--AGRICULTURAL WASTE MANAGEMENT--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RvC2:						
Russell	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.41	Restricted permeability	0.31	Too steep for surface application	1.00
	Too acid	0.05	Too acid	0.21	Restricted permeability	0.31
	Slope	0.04	Slope	0.04	Too steep for sprinkler application	0.22
					Too acid	0.21
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.41	Too acid	0.55	Too steep for surface application	1.00
	Too acid	0.14	Restricted permeability	0.31	Too acid	0.55
	Slope	0.04	Slope	0.04	Restricted permeability	0.31
					Too steep for sprinkler application	0.22
RvD2:						
Russell	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Too steep for sprinkler application	1.00
	Too acid	0.05	Too acid	0.21	Restricted permeability	0.31
					Too acid	0.21
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Too steep for sprinkler application	1.00
	Too acid	0.05	Too acid	0.21	Restricted permeability	0.31
					Too acid	0.21
Sh:						
Shoals	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	1.00	Flooding	0.60
So:						
Sloan	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	1.00	Flooding	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Leaching limitation	0.70	Restricted permeability	0.31	Restricted permeability	0.31
	Restricted permeability	0.41				

TABLE 25.--AGRICULTURAL WASTE MANAGEMENT--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ThA:						
Thackery	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.05	Too acid	0.21	Too acid	0.21
TpA:						
Tippecanoe	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Too acid	0.05	Too acid	0.21	Too acid	0.21
Ua:						
Urban Land	Not rated		Not rated		Not rated	
Ud:						
Udorthents	Not rated		Not rated		Not rated	
Ug:						
Urban Land	Not rated		Not rated		Not rated	
Um:						
Urban Land	Not rated		Not rated		Not rated	
WaA:						
Warsaw	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Shallow to Discontinuity	0.29	Shallow to Discontinuity	0.29	Droughty	0.22
	Droughty	0.22	Droughty	0.22		
WaB:						
Warsaw	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Shallow to Discontinuity	0.29	Shallow to Discontinuity	0.29	Droughty	0.22
	Droughty	0.22	Droughty	0.22	Too steep for surface application	0.08
WeA:						
Wea	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
WeB:						
Wea	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
					Too steep for surface application	0.08

TABLE 25.--AGRICULTURAL WASTE MANAGEMENT--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
Ws:						
Westland	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Leaching limitation	0.70	Too acid	0.21	Too acid	0.21
	Too acid	0.05				
WyB2:						
Wynn	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to bedrock	0.54	Depth to bedrock	0.54	Depth to bedrock	0.54
	Depth to saturated zone	0.46	Depth to saturated zone	0.46	Depth to saturated zone	0.46
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Droughty	0.10	Too acid	0.21	Too acid	0.21
	Too acid	0.05	Droughty	0.10	Droughty	0.10
XeA:						
Xenia	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.05	Too acid	0.21	Too acid	0.21
XeB:						
Xenia	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.05	Too acid	0.21	Too acid	0.21
					Too steep for surface application	0.08

TABLE 26.--WATER MANAGEMENT PART 1

(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 on page 174 for further explanation of ratings in this table.)

Map symbol and soil name	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
Ag:						
Algiers	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Depth to saturated zone	1.00	Slow refill	0.28
			Piping	0.50	Cutbanks cave	0.10
Bo:						
Borrow Pits	Not Rated		Not Rated		Not Rated	
Bp:						
Brookston	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
Br:						
Brookston	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
Bs:						
Brookston	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
Bu:						
Brookston	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
Urban Land	Not Rated		Not Rated		Not Rated	
Ca:						
Carlisle	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Ponding	1.00	Cutbanks cave	0.10
			Depth to saturated zone	1.00		
			Content of organic matter	1.00		
CeA:						
Celina	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Piping	1.00	Slow refill	0.28
			Depth to saturated zone	0.95	Cutbanks cave	0.10
					Depth to water	0.02

TABLE 26.--WATER MANAGEMENT PART 1--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CeB:						
Celina	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Piping	1.00	Slow refill	0.28
			Depth to saturated zone	0.95	Cutbanks cave	0.10
					Depth to water	0.02
CeB2:						
Celina	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Piping	1.00	Slow refill	0.28
			Depth to saturated zone	0.95	Cutbanks cave	0.10
					Depth to water	0.02
ClB:						
Celina	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Piping	1.00	Slow refill	0.28
			Depth to saturated zone	0.95	Cutbanks cave	0.10
					Depth to water	0.02
CoA:						
Corwin	Somewhat limited		Somewhat limited		Somewhat limited	
	Seepage	0.50	Depth to saturated zone	0.95	Slow refill	0.28
			Piping	0.50	Cutbanks cave	0.10
					Depth to water	0.02
CoB:						
Corwin	Somewhat limited		Somewhat limited		Somewhat limited	
	Seepage	0.50	Depth to saturated zone	0.95	Slow refill	0.28
			Piping	0.50	Cutbanks cave	0.10
					Depth to water	0.02
CsA:						
Crosby	Not limited		Very limited		Somewhat limited	
			Depth to saturated zone	1.00	Slow refill	0.94
			Piping	1.00	Cutbanks cave	0.10
CtB:						
Crosby	Not limited		Very limited		Somewhat limited	
			Depth to saturated zone	1.00	Slow refill	0.98
			Piping	1.00	Cutbanks cave	0.10
Celina	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Piping	1.00	Slow refill	0.28
			Depth to saturated zone	0.95	Cutbanks cave	0.10
					Depth to water	0.02
Cu:						
Crosby	Not limited		Very limited		Somewhat limited	
			Depth to saturated zone	1.00	Slow refill	0.98
			Piping	1.00	Cutbanks cave	0.10
Urban Land	Not Rated		Not Rated		Not Rated	

TABLE 26.--WATER MANAGEMENT PART 1--Continued

Map symbol and soil name	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
DaB:						
Dana	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Piping	1.00	Slow refill	0.28
			Depth to saturated zone	0.95	Cutbanks cave	0.10
					Depth to water	0.02
FaE2:						
Fairmount	Very limited		Very limited		Very limited	
	Slippage	1.00	Thin layer	1.00	Depth to water	1.00
	Depth to bedrock	1.00	Hard to compact	1.00		
	Slope	0.10				
FaF2:						
Fairmount	Very limited		Very limited		Very limited	
	Slippage	1.00	Thin layer	1.00	Depth to water	1.00
	Depth to bedrock	1.00	Hard to compact	1.00		
	Slope	0.82				
FcA:						
Fincastle	Not limited		Very limited		Somewhat limited	
			Depth to saturated zone	1.00	Slow refill	0.28
			Piping	1.00	Cutbanks cave	0.10
			Thin layer	0.17		
FkA:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
FkB:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
FlA:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
FlB:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
FlC2:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
FmA:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
FmB:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
FmC2:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
FmD2:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Slope	0.03				

TABLE 26.--WATER MANAGEMENT PART 1--Continued

Map symbol and soil name	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
FsC3:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
FuB:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
FuC:						
Urban Land	Not Rated		Not Rated		Not Rated	
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
FuF:						
Urban Land	Not Rated		Not Rated		Not Rated	
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Slope	0.50				
Gp:						
Gravel Pits	Not Rated		Not Rated		Not Rated	
HeE2:						
Hennepin	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.18	Piping	0.50	Depth to water	1.00
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.18	Piping	0.50	Depth to water	1.00
HeF2:						
Hennepin	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.82	Piping	0.50	Depth to water	1.00
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.82	Piping	0.50	Depth to water	1.00
HmF3:						
Hennepin	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.68	Piping	0.50	Depth to water	1.00
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.68	Piping	0.50	Depth to water	1.00
KeA:						
Kendallville	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Piping	1.00	Depth to water	1.00
KeB:						
Kendallville	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Piping	1.00	Depth to water	1.00
KeC2:						
Kendallville	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Piping	1.00	Depth to water	1.00
Ld:						
Landes	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
			Thin layer	0.03		

TABLE 26.--WATER MANAGEMENT PART 1--Continued

Map symbol and soil name	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
Lg:						
Lanier	Very limited		Very limited		Very limited	
	Slippage	1.00	Seepage	1.00	Depth to water	1.00
LsB:						
Lewisburg	Not limited		Very limited		Somewhat limited	
			Piping	1.00	Slow refill	0.96
			Depth to saturated zone	0.95	Cutbanks cave	0.10
					Depth to water	0.02
LxC2:						
Lorenzo	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
Rodman	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
LxD2:						
Lorenzo	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Slope	0.03				
Rodman	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Slope	0.03				
Mb:						
Made Land	Not Rated		Not Rated		Not Rated	
Md:						
Medway	Very limited		Very limited		Very limited	
	Slippage	1.00	Seepage	1.00	Cutbanks cave	1.00
			Piping	1.00	Depth to water	0.02
			Depth to saturated zone	0.95		
			Thin layer	0.67		
MlA:						
Miamian	Not limited		Very limited		Very limited	
			Piping	1.00	Depth to water	1.00
MlB:						
Miamian	Not limited		Very limited		Very limited	
			Piping	1.00	Depth to water	1.00
MlB2:						
Miamian	Not limited		Somewhat limited		Very limited	
			Piping	0.50	Depth to water	1.00
MlC2:						
Miamian	Not limited		Very limited		Very limited	
			Piping	1.00	Depth to water	1.00
MlD2:						
Miamian	Somewhat limited		Very limited		Very limited	
	Slope	0.03	Piping	1.00	Depth to water	1.00
MmB:						
Miamian	Not limited		Very limited		Very limited	
			Piping	1.00	Depth to water	1.00

TABLE 26.--WATER MANAGEMENT PART 1--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MnB3:						
Miamian	Not limited		Very limited		Very limited	
			Piping	1.00	Depth to water	1.00
MnC3:						
Miamian	Not limited		Very limited		Very limited	
			Piping	1.00	Depth to water	1.00
MnD3:						
Miamian	Somewhat limited		Very limited		Very limited	
	Slope	0.03	Piping	1.00	Depth to water	1.00
MoB:						
Miamian	Not limited		Very limited		Very limited	
			Piping	1.00	Depth to water	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
MoC:						
Miamian	Not limited		Somewhat limited		Very limited	
			Piping	0.50	Depth to water	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
MoE:						
Miamian	Somewhat limited		Very limited		Very limited	
	Slope	0.18	Piping	1.00	Depth to water	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
MrA:						
Millsdale	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.66	Ponding	1.00	Depth to bedrock	1.00
	Seepage	0.50	Depth to saturated zone	1.00	Slow refill	0.28
			Piping	0.50	Cutbanks cave	0.10
			Thin layer	0.17		
MsA:						
Milton	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.91	Thin layer	0.70	Depth to water	1.00
	Seepage	0.50	Piping	0.50		
MsB:						
Milton	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.91	Thin layer	0.70	Depth to water	1.00
	Seepage	0.50	Piping	0.50		
MsB2:						
Milton	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.96	Thin layer	0.70	Depth to water	1.00
	Seepage	0.50	Piping	0.50		
MsC2:						
Milton	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.96	Thin layer	0.97	Depth to water	1.00
	Seepage	0.50	Piping	0.50		
MsD2:						
Milton	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.98	Thin layer	1.00	Depth to water	1.00
	Seepage	0.50	Piping	0.50		
	Slope	0.03				

TABLE 26.--WATER MANAGEMENT PART 1--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MtD3:						
Milton	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.99	Thin layer	1.00	Depth to water	1.00
	Seepage	0.50	Piping	0.50		
	Slope	0.01				
MuB:						
Milton	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.91	Thin layer	0.70	Depth to water	1.00
	Seepage	0.50	Piping	0.50		
Urban Land	Not Rated		Not Rated		Not Rated	
MuC:						
Milton	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.91	Thin layer	0.70	Depth to water	1.00
	Seepage	0.50	Piping	0.50		
Urban Land	Not Rated		Not Rated		Not Rated	
MuD:						
Milton	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.91	Thin layer	0.70	Depth to water	1.00
	Seepage	0.50	Piping	0.50		
	Slope	0.03				
Urban Land	Not Rated		Not Rated		Not Rated	
Mv:						
Montgomery	Not limited		Very limited		Somewhat limited	
			Ponding	1.00	Slow refill	0.36
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
OcA:						
Ockley	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Piping	0.50	Depth to water	1.00
OcB:						
Ockley	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Piping	0.50	Depth to water	1.00
PlB:						
Plattville	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.93	Thin layer	0.90	Depth to water	1.00
			Piping	0.50		
PlC:						
Plattville	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.93	Thin layer	0.90	Depth to water	1.00
			Piping	0.50		
PyA:						
Pyrmont	Not limited		Very limited		Somewhat limited	
			Depth to saturated zone	1.00	Slow refill	0.96
			Piping	1.00	Cutbanks cave	0.10
Qu:						
Quarries	Not Rated		Not Rated		Not Rated	

TABLE 26.--WATER MANAGEMENT PART 1--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RcA:						
Randolph	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.83	Thin layer	1.00	Depth to bedrock	1.00
			Depth to saturated zone	1.00	Slow refill	0.28
			Piping	0.50	Cutbanks cave	0.10
ReB:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
			Piping	0.50		
ReB2:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
			Piping	0.50		
ReC2:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
			Piping	0.50		
ReE2:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
	Slope	0.10	Piping	0.50		
ReF2:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
	Slope	0.82	Piping	0.50		
RfD3:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
	Slope	0.01	Piping	0.50		
Rh:						
Riverwash	Not Rated		Not Rated		Not Rated	
RlE2:						
Rodman	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Slope	0.18				
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Slope	0.18				
RlF2:						
Rodman	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Slope	0.82				
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Slope	0.50				
Rs:						
Ross	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Piping	1.00	Depth to water	1.00

TABLE 26.--WATER MANAGEMENT PART 1--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Rt:						
Urban Land	Not Rated		Not Rated		Not Rated	
Ross	Not Rated		Very limited		Very limited	
			Piping	1.00	Depth to water	1.00
RuB:						
Russell	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Piping	1.00	Depth to water	1.00
			Thin layer	0.23		
RvC2:						
Russell	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Piping	1.00	Depth to water	1.00
			Thin layer	0.23		
Miamian	Not limited		Very limited		Very limited	
			Piping	1.00	Depth to water	1.00
RvD2:						
Russell	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Piping	1.00	Depth to water	1.00
	Slope	0.03	Thin layer	0.23		
Miamian	Somewhat limited		Very limited		Very limited	
	Slope	0.03	Piping	1.00	Depth to water	1.00
Sh:						
Shoals	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Depth to saturated zone	1.00	Slow refill	0.28
			Piping	1.00	Cutbanks cave	0.10
So:						
Sloan	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00	Slow refill	0.28
			Piping	1.00		
ThA:						
Thackery	Somewhat limited		Very limited		Very limited	
	Seepage	0.37	Piping	1.00	Cutbanks cave	1.00
			Depth to saturated zone	0.95	Slow refill	0.36
			Thin layer	0.73	Depth to water	0.02
TpA:						
Tippecanoe	Very limited		Somewhat limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	0.95	Cutbanks cave	0.10
			Piping	0.50	Depth to water	0.02
Ua:						
Urban Land	Not Rated		Not Rated		Not Rated	
Ud:						
Udorthents	Not Rated		Not Rated		Not Rated	
Ug:						
Urban Land	Not Rated		Not Rated		Not Rated	

TABLE 26.--WATER MANAGEMENT PART 1--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Um:						
Urban Land----------	Not Rated		Not Rated		Not Rated	
WaA:						
Warsaw--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
WaB:						
Warsaw--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
WeA:						
Wea-----------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Piping	0.50	Depth to water	1.00
WeB:						
Wea-----------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Piping	0.50	Depth to water	1.00
Ws:						
Westland------------	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Ponding	1.00	Cutbanks cave	0.10
			Depth to saturated zone	1.00		
			Piping	0.50		
			Thin layer	0.47		
WyB2:						
Wynn----------------	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.88	Thin layer	0.73	Depth to bedrock	1.00
			Piping	0.50	Depth to water	0.24
			Depth to saturated zone	0.46	Cutbanks cave	0.10
XeA:						
Xenia---------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Piping	1.00	Slow refill	0.28
			Depth to saturated zone	0.95	Cutbanks cave	0.10
					Depth to water	0.02
XeB:						
Xenia---------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.50	Piping	1.00	Slow refill	0.28
			Depth to saturated zone	0.95	Cutbanks cave	0.10
					Depth to water	0.02

TABLE 27.--WATER MANAGEMENT PART 2

(The information in this table indicates the dominant soil condition but does not eliminate the need for on-site investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text on page 174 for further explanation of ratings in this table.)

Map symbol and soil name	Constructing Grassed Waterways		Constructing Terraces and Diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ag:						
Algiers	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.12	Restricted permeability	0.12	Restricted permeability	0.12
Bo:						
Borrow Pits	Not Rated		Not Rated		Not Rated	
Bp:						
Brookston	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
			Ponding	1.00	Frost action	1.00
Br:						
Brookston	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
			Ponding	1.00	Frost action	1.00
Bs:						
Brookston	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
			Ponding	1.00	Frost action	1.00
Bu:						
Brookston	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
			Ponding	1.00	Frost action	1.00
Urban Land	Not Rated		Not Rated		Not Rated	
Ca:						
Carlisle	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
			Ponding	1.00	Frost action	1.00
					Subsidence	1.00
CeA:						
Celina	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22		
CeB:						
Celina	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Slope	0.04

TABLE 27.--WATER MANAGEMENT PART 2--Continued

Map symbol and soil name	Constructing Grassed Waterways: Rating class and limiting features	Value	Constructing Terraces and Diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
CeB2:						
Celina--------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Slope	0.04
ClB:						
Celina--------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Slope	0.04
CoA:						
Corwin--------------	Very Limited		Very Limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Restricted permeability	0.22
	Depth to saturated zone	0.68	Depth to saturated zone	1.00		
	Restricted permeability	0.22	Restricted permeability	0.22		
CoB:						
Corwin--------------	Very Limited		Very Limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Restricted permeability	0.22
	Depth to saturated zone	0.68	Depth to saturated zone	1.00	Slope	0.04
	Restricted permeability	0.22	Restricted permeability	0.22		
CsA:						
Crosby--------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.13
	Restricted permeability	0.13	Restricted permeability	0.13		
CtB:						
Crosby--------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.40
	Restricted permeability	0.40	Restricted permeability	0.40		
Celina--------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Slope	0.04

TABLE 27.--WATER MANAGEMENT PART 2--Continued

Map symbol and soil name	Constructing Grassed Waterways		Constructing Terraces and Diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Cu:						
Crosby	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.40
	Restricted permeability	0.40	Restricted permeability	0.40		
Urban Land	Not Rated		Not Rated		Not Rated	
DaB:						
Dana	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Slope	0.04
FaE2:						
Fairmount	Very Limited		Very Limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	0.66
	Droughty	1.00	Content of large stones	0.28	Restricted permeability	0.22
	Content of large stones	0.28	Restricted permeability	0.22		
FaF2:						
Fairmount	Very Limited		Very Limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	0.71
	Droughty	1.00	Content of large stones	0.31	Restricted permeability	0.22
	Content of large stones	0.31	Restricted permeability	0.22		
FcA:						
Fincastle	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22		
FkA:						
Fox	Not Limited		Not Limited		Very limited	
					Depth to saturated zone	1.00
FkB:						
Fox	Not Limited		Not Limited		Very limited	
					Depth to saturated zone	1.00
					Slope	0.04
FlA:						
Fox	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00

TABLE 27.--WATER MANAGEMENT PART 2--Continued

Map symbol and soil name	Constructing Grassed Waterways		Constructing Terraces and Diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
FlB:						
Fox-----------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
					Slope	0.04
FlC2:						
Fox-----------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Slope	1.00	Slope	1.00	Slope	0.96
	Droughty	1.00				
FmA:						
Fox-----------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
FmB:						
Fox-----------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
					Slope	0.04
FmC2:						
Fox-----------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Slope	1.00	Slope	1.00	Slope	0.96
	Droughty	1.00				
FmD2:						
Fox-----------------	Very Limited		Very Limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Droughty	1.00				
FsC3:						
Fox-----------------	Very Limited		Very Limited		Very limited	
	Droughty	1.00	Slope	1.00	Depth to saturated zone	1.00
	Slope	1.00			Slope	0.96
FuB:						
Fox-----------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
Urban Land----------	Not Rated		Not Rated		Not Rated	
FuC:						
Urban Land----------	Not Rated		Not Rated		Not Rated	
Fox-----------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Slope	1.00	Slope	1.00	Slope	0.96
	Droughty	1.00				

TABLE 27.--WATER MANAGEMENT PART 2--Continued

Map symbol and soil name	Constructing Grassed Waterways		Constructing Terraces and Diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
FuF:						
Urban Land	Not Rated		Not Rated		Not Rated	
Fox	Very Limited		Very Limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Droughty	1.00				
Gp:						
Gravel Pits	Not Rated		Not Rated		Not Rated	
HeE2:						
Hennepin	Very Limited		Very Limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to saturated zone	1.00
					Restricted permeability	0.22
Miamian	Very Limited		Very Limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
HeF2:						
Hennepin	Very Limited		Very Limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to saturated zone	1.00
					Restricted permeability	0.22
Miamian	Very Limited		Very Limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
HmF3:						
Hennepin	Very Limited		Very Limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00	Restricted permeability	0.22	Depth to saturated zone	1.00
	Restricted permeability	0.22			Restricted permeability	0.22
Miamian	Very Limited		Very Limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
KeA:						
Kendallville	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22

TABLE 27.--WATER MANAGEMENT PART 2--Continued

Map symbol and soil name	Constructing Grassed Waterways		Constructing Terraces and Diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
KeB:						
Kendallville	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
					Slope	0.04
KeC2:						
Kendallville	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Slope	1.00	Slope	1.00	Slope	0.96
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
Ld:						
Landes	Not Limited		Not Limited		Very limited	
					Flooding	1.00
					Depth to saturated zone	1.00
Lg:						
Lanier	Very Limited		Not Limited		Very limited	
	Droughty	1.00			Flooding	1.00
					Depth to saturated zone	1.00
LsB:						
Lewisburg	Very Limited		Very Limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Restricted permeability	0.22
	Depth to saturated zone	0.68	Depth to saturated zone	1.00	Slope	0.04
	Restricted permeability	0.22	Restricted permeability	0.22		
LxC2:						
Lorenzo	Very Limited		Not Limited		Very limited	
	Droughty	1.00			Depth to saturated zone	1.00
					Slope	0.84
Rodman	Very Limited		Not Limited		Very limited	
	Droughty	1.00			Depth to saturated zone	1.00
					Slope	0.84
LxD2:						
Lorenzo	Very Limited		Very Limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00			Depth to saturated zone	1.00
Rodman	Very Limited		Very Limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00			Depth to saturated zone	1.00
Mb:						
Made Land	Not Rated		Not Rated		Not Rated	

TABLE 27.--WATER MANAGEMENT PART 2--Continued

Map symbol and soil name	Constructing Grassed Waterways		Constructing Terraces and Diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Md:						
Medway	Somewhat Limited		Very Limited		Very limited	
	Depth to saturated zone	0.68	Depth to saturated zone	1.00	Frost action	1.00
					Flooding	1.00
MlA:						
Miamian	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
MlB:						
Miamian	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
					Slope	0.04
MlB2:						
Miamian	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
					Slope	0.04
MlC2:						
Miamian	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Slope	1.00	Slope	1.00	Slope	0.96
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
MlD2:						
Miamian	Very Limited		Very Limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
MmB:						
Miamian	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
					Slope	0.04
MnB3:						
Miamian	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
					Slope	0.04

TABLE 27.--WATER MANAGEMENT PART 2--Continued

Map symbol and soil name	Constructing Grassed Waterways		Constructing Terraces and Diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MnC3:						
Miamian-------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Slope	1.00	Slope	1.00	Slope	0.96
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
MnD3:						
Miamian-------------	Very Limited		Very Limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
MoB:						
Miamian-------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
					Slope	0.04
Urban Land----------	Not Rated		Not Rated		Not Rated	
MoC:						
Miamian-------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Slope	1.00	Slope	1.00	Slope	0.96
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
Urban Land----------	Not Rated		Not Rated		Not Rated	
MoE:						
Miamian-------------	Very Limited		Very Limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
Urban Land----------	Not Rated		Not Rated		Not Rated	
MrA:						
Millsdale-----------	Very Limited		Very Limited		Very limited	
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Frost action	1.00
			Depth to bedrock	0.06	Depth to bedrock	0.02
MsA:						
Milton--------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	0.64	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to bedrock	0.17

TABLE 27.--WATER MANAGEMENT PART 2--Continued

Map symbol and soil name	Constructing Grassed Waterways: Rating class and limiting features	Value	Constructing Terraces and Diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
MsB:						
Milton--------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	0.64	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to bedrock	0.17
					Slope	0.04
MsB2:						
Milton--------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	0.84	Depth to bedrock	0.26
					Slope	0.04
MsC2:						
Milton--------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Slope	1.00	Slope	0.96
	Slope	1.00	Depth to bedrock	0.84	Depth to bedrock	0.26
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
MsD2:						
Milton--------------	Very Limited		Very Limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	0.90	Depth to bedrock	0.30
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
MtD3:						
Milton--------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Depth to bedrock	0.95	Depth to bedrock	0.35
	Droughty	1.00	Restricted permeability	0.22	Restricted permeability	0.22
	Restricted permeability	0.22				
MuB:						
Milton--------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	0.64	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to bedrock	0.17
					Slope	0.04
Urban Land----------	Not Rated		Not Rated		Not Rated	

TABLE 27.--WATER MANAGEMENT PART 2--Continued

Map symbol and soil name	Constructing Grassed Waterways		Constructing Terraces and Diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MuC:						
Milton--------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Slope	1.00	Slope	0.96
	Slope	1.00	Depth to bedrock	0.64	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to bedrock	0.17
Urban Land----------	Not Rated		Not Rated		Not Rated	
MuD:						
Milton--------------	Very Limited		Very Limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	0.64	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to bedrock	0.17
Urban Land----------	Not Rated		Not Rated		Not Rated	
Mv:						
Montgomery----------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	1.00	Ponding	1.00	Restricted permeability	1.00
			Restricted permeability	1.00		
OcA:						
Ockley--------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
OcB:						
Ockley--------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
					Slope	0.04
PlB:						
Plattville----------	Very Limited		Somewhat Limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	0.71	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
					Depth to bedrock	0.19
					Slope	0.04
PlC:						
Plattville----------	Very Limited		Very Limited		Very limited	
	Depth to bedrock	1.00	Slope	1.00	Depth to saturated zone	1.00
	Slope	1.00	Depth to bedrock	0.71	Slope	0.96
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
					Depth to bedrock	0.19

TABLE 27.--WATER MANAGEMENT PART 2--Continued

Map symbol and soil name	Constructing Grassed Waterways		Constructing Terraces and Diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
PyA:						
Pyrmont	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22		
Qu:						
Quarries	Not Rated		Not Rated		Not Rated	
RcA:						
Randolph	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Restricted permeability	0.22
	Depth to saturated zone	1.00	Depth to bedrock	0.35	Depth to bedrock	0.09
	Restricted permeability	0.22	Restricted permeability	0.22		
ReB:						
Ritchey	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	0.58
	Droughty	1.00	Content of large stones	0.01	Slope	0.04
	Content of large stones	0.01				
ReB2:						
Ritchey	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	0.74
	Droughty	1.00	Content of large stones	0.01	Slope	0.04
	Content of large stones	0.01				
ReC2:						
Ritchey	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	0.96
	Droughty	1.00	Slope	1.00	Depth to bedrock	0.74
	Slope	1.00	Content of large stones	0.01		
	Content of large stones	0.01				
ReE2:						
Ritchey	Very Limited		Very Limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	0.82
	Droughty	1.00	Content of large stones	0.01		
	Content of large stones	0.01				

TABLE 27.--WATER MANAGEMENT PART 2--Continued

Map symbol and soil name	Constructing Grassed Waterways		Constructing Terraces and Diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ReF2:						
Ritchey	Very Limited		Very Limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	0.84
	Droughty	1.00	Content of large stones	0.05		
	Content of large stones	0.05				
RfD3:						
Ritchey	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Droughty	1.00	Slope	1.00	Depth to bedrock	0.89
	Slope	1.00	Content of large stones	0.18		
	Content of large stones	0.18				
Rh:						
Riverwash	Not Rated		Not Rated		Not Rated	
RlE2:						
Rodman	Very Limited		Very Limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00			Depth to saturated zone	1.00
Fox	Very Limited		Very Limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Droughty	1.00				
RlF2:						
Rodman	Very Limited		Very Limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00			Depth to saturated zone	1.00
Fox	Very Limited		Very Limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Droughty	1.00				
Rs:						
Ross	Not Limited		Not Limited		Very limited	
					Flooding	1.00
					Depth to saturated zone	1.00
Rt:						
Urban Land	Not Rated		Not Rated		Not Rated	
Ross	Not Limited		Not Limited		Very limited	
					Flooding	1.00
					Depth to saturated zone	1.00

TABLE 27.--WATER MANAGEMENT PART 2--Continued

Map symbol and soil name	Constructing Grassed Waterways		Constructing Terraces and Diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RuB:						
Russell	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to saturated zone	1.00
					Restricted permeability	0.22
					Slope	0.04
RvC2:						
Russell	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Slope	1.00	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Slope	0.96
					Restricted permeability	0.22
Miamian	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Slope	1.00	Slope	1.00	Slope	0.96
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
RvD2:						
Russell	Very Limited		Very Limited		Very limited	
	Slope	1.00	Water erosion	1.00	Frost action	1.00
	Water erosion	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to saturated zone	1.00
					Restricted permeability	0.22
Miamian	Very Limited		Very Limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.22	Restricted permeability	0.22	Restricted permeability	0.22
Sh:						
Shoals	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
So:						
Sloan	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.22	Ponding	1.00	Flooding	1.00
			Restricted permeability	0.22	Restricted permeability	0.22
ThA:						
Thackery	Very Limited		Very Limited		Not Limited	
	Water erosion	1.00	Water erosion	1.00		
	Depth to saturated zone	0.68	Depth to saturated zone	1.00		

TABLE 27.--WATER MANAGEMENT PART 2--Continued

Map symbol and soil name	Constructing Grassed Waterways		Constructing Terraces and Diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
TpA:						
Tippecanoe----------	Somewhat Limited		Very Limited		Not Limited	
	Depth to saturated zone	0.68	Depth to saturated zone	1.00		
Ua:						
Urban Land----------	Not Rated		Not Rated		Not Rated	
Ud:						
Udorthents----------	Not Rated		Not Rated		Not Rated	
Ug:						
Urban Land----------	Not Rated		Not Rated		Not Rated	
Um:						
Urban Land----------	Not Rated		Not Rated		Not Rated	
WaA:						
Warsaw--------------	Not Limited		Not Limited		Very limited	
					Depth to saturated zone	1.00
WaB:						
Warsaw--------------	Not Limited		Not Limited		Very limited	
					Depth to saturated zone	1.00
					Slope	0.04
WeA:						
Wea-----------------	Not Limited		Not Limited		Very limited	
					Depth to saturated zone	1.00
WeB:						
Wea-----------------	Not Limited		Not Limited		Very limited	
					Depth to saturated zone	1.00
					Slope	0.04
Ws:						
Westland------------	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
			Ponding	1.00	Frost action	1.00
WyB2:						
Wynn----------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	0.54	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to bedrock	0.14
	Depth to saturated zone	0.11			Slope	0.04

TABLE 27.--WATER MANAGEMENT PART 2--Continued

Map symbol and soil name	Constructing Grassed Waterways		Constructing Terraces and Diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
XeA:						
Xenia---------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22		
XeB:						
Xenia---------------	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Slope	0.04

TABLE 28.--ENGINEERING INDEX PROPERTIES

(Absence of an entry indicates that the data were not estimated. See text on page 177 for additional information.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
Ag:												
Algiers---------	0-20	Silt loam	ML, CL-ML	A-4	0	0	100	90-100	80-90	75-85	30-40	4-10
	20-60	Silty clay loam, silt loam	CL, CL-ML	A-6, A-7	0	0	100	90-100	85-95	70-80	30-45	7-19
Bo:												
Borrow Pits-----	---	---	---	---	---	---	---	---	---	---	---	---
Bp:												
Brookston-------	0-12	Silt loam	ML, CL-ML, MH	A-7	0	0	100	100	90-100	85-95	20-30	5-15
	12-36	Silty clay loam	CL-ML, CH, CL	A-7	0	0	100	90-100	90-100	85-90	25-40	8-20
	36-60	Loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-95	75-90	65-75	20-30	5-15
Br:												
Brookston-------	0-12	Silt loam	MH, CL-ML, ML, CL	A-7	0	0	100	100	90-100	85-95	20-30	5-15
	12-44	Silty clay loam, loam	CL-ML, CH, CL	A-7	0	0	100	90-100	90-100	85-90	25-40	8-20
	44-72	Loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-95	75-90	65-75	20-30	5-15
Bs:												
Brookston-------	0-12	Silty clay loam	CL-ML, ML, MH, CL	A-7	0	0	100	100	90-100	85-95	30-40	10-20
	12-36	Clay loam, silty clay loam, loam	CL-ML, CL, CH	A-7	0	0	100	90-100	90-100	85-90	25-40	8-20
	36-60	Loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-95	75-90	65-75	20-30	5-15
Bu:												
Brookston-------	0-12	Silty clay loam	CL, CL-ML, ML, MH	A-7	0	0	100	100	90-100	85-95	30-40	10-20
	12-36	Silty clay loam	CL-ML, CL, CH	A-7	0	0	100	90-100	90-100	85-90	25-40	8-20
	36-60	Loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-95	75-90	65-75	20-30	5-15
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
Ca:												
Carlisle--------	0-82	Muck	PT	A-8	0	0	0	0	0	0	---	---
	82-90	Clay	CH	A-7, A-6	0	0	100	100	95-100	90-100	40-55	20-32
CeA:												
Celina----------	0-8	Silt loam	ML, CL-ML	A-4	0	0	100	90-100	90-100	70-85	26-40	3-10
	8-30	Clay loam, silty clay loam, silty clay	CL, CL-ML	A-6, A-7	0	0	100	90-100	80-95	70-85	32-48	12-28
	30-60	Loam	CL, CL-ML	A-4	0	0	75-95	70-90	60-75	50-65	20-36	4-16
CeB:												
Celina----------	0-8	Silt loam	ML, CL-ML	A-4	0	0	100	90-100	90-100	70-85	26-40	3-10
	8-30	Clay loam, silty clay loam, silty clay	CL, CL-ML	A-6, A-7	0	0	100	90-100	80-95	70-85	32-48	12-28
	30-60	Loam	CL, CL-ML	A-4	0	0	75-95	70-90	60-75	50-65	20-36	4-16
CeB2:												
Celina----------	0-8	Silt loam	ML, CL-ML	A-4	0	0	100	90-100	90-100	70-85	26-40	3-10
	8-30	Clay loam, silty clay loam, silty clay	CL, CL-ML	A-6, A-7	0	0	100	90-100	80-95	70-85	32-48	12-28
	30-60	Loam	CL, CL-ML	A-4	0	0	75-95	70-90	60-75	50-65	20-36	4-16
ClB:												
Celina----------	0-8	Silt loam	ML, CL-ML	A-4	10-25	0	100	90-100	90-100	70-85	26-40	3-10
	8-30	Clay loam, silty clay loam, silty clay	CL, CL-ML	A-6, A-7	0	0	100	90-100	80-95	70-85	32-48	12-28
	30-60	Loam	CL, CL-ML	A-4	0	0	75-95	70-90	60-75	50-65	20-36	4-16

TABLE 28.--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	
CoA:												
Corwin----------	0-9	Silt loam	CL-ML, ML	A-4	0	0	100	100	90-100	80-90	20-30	4-12
	9-36	Clay loam, silty clay loam	CL, CL-ML	A-6, A-7	0	0	100	95-100	90-100	85-95	30-40	9-15
	36-60	Loam	CL, CL-ML	A-4	0	0	90-100	80-90	60-75	55-65	15-25	3-8
CoB:												
Corwin----------	0-9	Silt loam	CL-ML, ML	A-4	0	0	100	100	90-100	80-90	20-30	4-12
	9-36	Clay loam, silty clay loam	CL, CL-ML	A-6, A-7	0	0	100	100	90-100	85-95	30-40	9-15
	36-60	Loam	CL, CL-ML	A-4	0	0	90-100	80-90	60-75	55-65	15-25	3-8
CsA:												
Crosby----------	0-8	Silt loam	CL-ML, ML	A-4	0	0	100	90-100	90-100	85-95	15-30	3-15
	8-26	Clay loam, silty clay loam, clay	CH, CL-ML, CL	A-7	0	0	100	90-100	90-100	80-95	35-50	15-25
	26-60	Loam	CL, CL-ML	A-4, A-6	0	0	85-95	80-90	75-85	55-65	15-30	3-15
CtB:												
Crosby----------	0-8	Silt loam	CL-ML, ML	A-4	0	0	100	90-100	90-100	85-95	15-30	3-15
	8-26	Clay loam, silty clay loam, clay	CH, CL-ML, CL	A-6, A-7	0	0	100	90-100	90-100	80-95	35-50	15-25
	26-60	Loam	CL, CL-ML	A-4, A-6	0	0	85-95	80-90	75-85	55-65	15-30	3-15
Celina----------	0-8	Silt loam	ML, CL-ML	A-4	0	0	100	90-100	90-100	70-85	26-40	3-10
	8-30	Clay loam, silty clay loam, silty clay	CL, CL-ML	A-6, A-7	0	0	100	90-100	80-95	70-85	32-48	12-28
	30-60	Loam	CL, CL-ML	A-4	0	0	75-95	70-90	60-75	50-65	20-36	4-16
Cu:												
Crosby----------	0-8	Silt loam	CL-ML, ML	A-4	0	0	100	90-100	90-100	85-95	15-30	3-15
	8-26	Clay loam, silty clay loam, clay	CH, CL-ML, CL	A-6, A-7	0	0	100	90-100	90-100	80-95	35-50	15-25
	26-60	Loam	CL, CL-ML	A-4, A-6	0	0	85-95	80-90	75-85	55-65	15-30	3-15
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
DaB:												
Dana------------	0-7	Silt loam	CL-ML, ML	A-4	0	0	100	90-100	85-95	80-90	30-35	8-12
	7-28	Clay loam, silty clay loam	CL, CL-ML	A-6, A-7	0	0	100	90-100	85-95	80-90	38-50	20-32
	28-36	Clay loam	CL, CL-ML	A-6, A-7	0	0	100	95-100	80-90	70-80	37-50	17-30
	36-60	Loam	CL, CL-ML	A-4	0	0	85-95	80-90	75-85	55-65	17-30	2-14
FaE2:												
Fairmount-------	0-4	Silty clay loam	CL, ML	A-6, A-4	0	5	90-100	90-100	80-90	70-85	35-45	15-22
	4-16	Silty clay, silty clay loam	CH, CL-ML	A-7, A-6	0	5-15	100	80-100	75-90	70-90	40-70	20-40
	16-18	Unweathered bedrock			---	---	---	---	---	---	---	---
FaF2:												
Fairmount-------	0-3	Silty clay loam	CL, ML	A-6, A-4	0	5	90-100	90-100	80-90	70-85	35-45	15-22
	3-15	Silty clay, silty clay loam	CH, CL-ML	A-7, A-6	0	5-15	100	80-100	75-90	70-90	40-70	20-40
	15-17	Unweathered bedrock			---	---	---	---	---	---	---	---
FcA:												
Fincastle-------	0-19	Silt loam	CL-ML, ML	A-4	0	0	100	100	90-100	80-95	15-25	3-10
	19-38	Silty clay loam, clay loam	CL, CL-ML	A-6, A-7	0	0	100	100	90-100	85-100	30-40	10-15
	38-60	Loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-90	70-85	55-65	25-30	8-11
FkA:												
Fox-------------	0-11	Sandy loam	ML, SM	A-4	0	0	85-100	75-100	65-100	55-70	15-25	2-7
	11-29	Loam, sandy loam	CL-ML, SM, SC, SC-SM	A-6, A-7	0	0	80-100	65-95	55-95	40-75	22-45	10-25
	29-60	Sand and gravel	GP, GP-GM, SP, SP-SM, GW	A-1	0	2-5	25-55	20-35	5-20	4-12	---	NP

TABLE 28.--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	
FkB:												
Fox-------------	0-11	Sandy loam	ML, SM	A-4	0	0	85-100	75-100	65-100	55-70	15-25	2-7
	11-29	Loam, sandy loam	CL-ML, SM, SC	A-6, A-7	0	0	80-100	65-95	55-95	40-75	22-45	10-25
	29-60	Sand and gravel	GP, GP-GM, SP, SP-SM, GW	A-1	0	2-5	25-55	20-35	5-20	4-12	---	NP
FlA:												
Fox-------------	0-11	Loam	CL-ML, ML	A-4	0	0	85-100	75-100	65-100	55-70	15-25	3-8
	11-29	Gravelly clay loam, sandy clay, clay loam, loam, sandy clay loam	CL-ML, SC, CL	A-6, A-7	0	0	80-100	65-95	55-95	40-75	22-45	10-25
	29-60	Sand and gravel	GP, GW, SP, GW-GM	A-1	0	2-5	25-55	20-35	5-20	4-12	---	NP
FlB:												
Fox-------------	0-11	Loam	CL-ML, ML	A-4	0	0	85-100	75-100	65-100	55-70	15-25	3-8
	11-29	Gravelly clay loam, clay loam, loam, sandy clay loam, sandy clay	CL-ML, SC, CL	A-6, A-7	0	0	80-100	65-95	55-95	40-75	22-45	10-25
	29-60	Sand and gravel	GP, GW, GW-GM	A-1	0	2-5	25-55	20-35	5-20	4-12	---	NP
FlC2:												
Fox-------------	0-3	Loam	CL-ML, ML	A-4	0	0	85-100	75-100	65-100	55-70	15-25	3-8
	3-21	Clay loam, loam, sandy clay loam, sandy clay	CL-ML, SC, CL	A-6, A-7	0	0	80-100	65-95	55-95	40-75	22-45	10-25
	21-60	Sand and gravel	GP, GW, GW-GM	A-1	0	2-5	25-55	20-35	5-20	4-12	---	NP
FmA:												
Fox-------------	0-11	Silt loam	CL-ML, ML	A-4	0	0	85-100	75-100	65-100	55-70	15-25	3-8
	11-29	Clay loam, loam, sandy clay loam, sandy clay	CL-ML, SC, CL	A-6, A-7	0	0	80-100	65-95	55-95	40-75	22-45	10-25
	29-60	Sand and gravel	GP, GW, GW-GM	A-1	0	2-5	25-55	20-35	5-20	4-12	---	NP
FmB:												
Fox-------------	0-11	Silt loam	ML, CL-ML	A-4	0	0	85-100	75-100	65-100	55-70	15-25	3-8
	11-29	Clay loam, loam, sandy clay loam, sandy clay	CL-ML, SC, CL	A-6, A-7	0	0	80-100	65-95	55-95	40-75	22-45	10-25
	29-60	Sand and gravel	GP, GW, GW-GM	A-1	0	2-5	25-55	20-35	5-20	4-12	---	NP
FmC2:												
Fox-------------	0-3	Silt loam	CL-ML, ML	A-4	0	0	85-100	75-100	65-100	55-70	15-25	3-8
	3-21	Clay loam, loam, sandy clay loam, sandy clay	CL-ML, SC, CL	A-6, A-7	0	0	80-100	65-95	55-95	40-75	22-45	10-25
	21-60	Sand and gravel	GP, GP-GM, SP, SP-SM	A-1	0	2-5	25-55	20-35	5-20	4-12	---	NP
FmD2:												
Fox-------------	0-3	Silt loam	CL-ML, ML	A-4	0	0	85-100	75-100	75-100	55-70	15-25	3-8
	3-21	Clay loam, loam, sandy clay loam, sandy clay	CL-ML, GC, CL	A-6, A-7	0	0	80-100	65-95	55-95	40-75	22-45	10-25
	21-60	Sand and gravel	GP, GP-GM, SP, SP-SM	A-1	0	2-5	25-55	20-35	5-20	4-12	---	NP

TABLE 28.--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	
FsC3:												
Fox-------------	0-3	Clay loam	CL-ML, ML	A-4	0	0	85-100	75-100	65-100	55-70	25-40	9-20
	3-18	Clay loam, loam, sandy clay loam, sandy clay	CL-ML, SC, CL	A-6, A-7	0	0	80-100	65-95	55-95	40-75	22-45	10-25
	18-60	Sand and gravel	GP, GW, GW-GM	A-1	0	2-5	25-55	20-35	5-20	4-12	---	NP
FuB:												
Fox-------------	0-11	Silt loam	CL-ML, ML	A-4	0	0	85-100	75-100	65-100	55-70	15-25	3-8
	11-29	Clay loam, loam, sandy clay loam, sandy clay	CL-ML, SC, CL	A-6, A-7	0	0	80-100	65-95	55-95	40-75	22-45	10-25
	29-60	Sand and gravel	GP, GW, GW-GM	A-1	0	2-5	25-55	20-35	5-20	4-12	---	NP
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
FuC:												
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
Fox-------------	0-3	Silt loam	CL-ML, ML	A-4	0	0	85-100	75-100	65-100	55-70	15-25	3-8
	3-21	Clay loam, loam, sandy clay loam, sandy clay	CL-ML, SC, CL	A-6, A-7	0	0	80-100	65-95	55-95	40-75	22-45	10-25
	21-60	Sand and gravel	GP, GW, GW-GM	A-1	0	2-5	25-55	20-35	5-20	4-12	---	NP
FuF:												
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
Fox-------------	0-3	Silt loam	CL-ML, ML	A-4	0	0	85-100	75-100	65-100	55-70	15-25	3-8
	3-18	Clay loam, loam, sandy clay loam, sandy clay	CL-ML, SC, CL	A-6, A-7	0	0	80-100	65-95	55-95	40-75	22-45	10-25
	18-60	Sand and gravel	GP, GW, GW-GM	A-1	0	2-5	25-55	20-35	5-20	4-12	---	NP
Gp:												
Gravel Pits-----	---	---	---	---	---	---	---	---	---	---	---	---
HeE2:												
Hennepin--------	0-4	Silt loam	CL-ML, ML	A-4	0	0	90-100	90-100	80-90	75-80	25-45	5-20
	4-12	Loam, clay loam	CL, ML	A-4, A-6	0	0	90-100	90-100	70-90	65-75	20-50	5-25
	12-60	Loam	CL, CL-ML	A-4, A-6	0	0	90-100	80-90	70-80	55-65	20-50	5-25
Miamian---------	0-4	Silt loam	CL-ML, ML	A-4	0	0	90-100	90-100	80-90	70-90	25-40	4-12
	4-25	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0	90-100	85-95	75-90	70-85	35-50	15-30
	25-60	Loam	CL, CL-ML	A-4	0	0	75-95	75-90	65-85	55-70	20-35	3-13
HeF2:												
Hennepin--------	0-3	Silt loam	CL-ML, ML	A-4	0	0	90-100	90-100	80-90	75-80	25-45	5-20
	3-12	Loam, clay loam	CL, ML	A-4, A-6	0	0	90-100	90-100	70-80	65-75	20-50	5-25
	12-60	Loam	CL, CL-ML	A-4, A-6	0	0	90-100	80-90	70-80	55-65	20-50	5-25
Miamian---------	0-4	Silt loam	ML, CL-ML	A-4	0	0	90-100	90-100	80-90	70-90	25-40	4-12
	4-25	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0	90-100	85-95	75-90	70-85	35-50	15-30
	25-60	Loam	CL, CL-ML	A-4	0	0	75-95	75-90	65-85	55-70	20-35	3-13
HmF3:												
Hennepin--------	0-6	Loam	CL, ML	A-4, A-6	0	0	90-100	90-100	70-90	65-75	20-50	5-25
	6-60	Loam	CL, CL-ML	A-4, A-6	0	0	90-100	80-90	70-80	55-65	20-50	5-25
Miamian---------	0-21	Clay loam	CL	A-6, A-7	0	0	90-100	85-95	75-90	70-85	35-50	15-30
	21-60	Loam	CL, CL-ML	A-4	0	0	75-95	75-90	65-85	55-70	20-35	3-13

TABLE 28.--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	
KeA:												
Kendallville----	0-9	Silt loam	ML, CL-ML	A-4	0	0	100	90-100	70-90	65-80	26-40	4-12
	9-26	Clay loam, silty clay loam	CL, CL-ML	A-6, A-7	0	0	100	90-100	75-95	65-90	25-40	5-15
	26-36	Clay loam, gravelly clay loam, sandy clay loam	CL, CL-ML, SC	A-6	0	0	80-90	70-80	60-75	40-55	25-40	5-15
	36-60	Loam	CL, CL-ML	A-4	0	0	90-100	85-95	70-80	55-70	20-35	3-15
KeB:												
Kendallville----	0-9	Silt loam	ML, CL-ML	A-4	0	0	100	90-100	70-90	65-80	26-40	4-12
	9-26	Clay loam, silty clay loam	CL, CL-ML	A-6, A-7	0	0	100	90-100	75-95	65-90	25-40	5-15
	26-36	Clay loam, gravelly clay loam, sandy clay loam	CL, SC	A-4, A-6	0	0	80-90	70-80	60-75	40-55	25-40	5-15
	36-60	Loam	CL, CL-ML	A-4	0	0	90-100	85-95	70-80	55-70	20-35	3-15
KeC2:												
Kendallville----	0-4	Silt loam	CL-ML	A-4, A-6	0	0	100	90-100	70-90	65-80	26-40	4-12
	4-21	Clay loam, silty clay loam	CL, CL-ML	A-6, A-7	0	0	100	90-100	75-95	65-90	25-40	5-15
	21-36	Clay loam, gravelly clay loam, sandy clay loam	CL, CL-ML, SC	A-6	0	0	80-90	70-80	60-75	40-55	25-40	5-15
	36-60	Loam	CL, CL-ML	A-4	0	0	90-100	85-95	70-80	55-70	20-35	3-15
Ld:												
Landes----------	0-19	Fine sandy loam, sandy loam	SM	A-2, A-4	0	0	95-100	75-90	30-50	25-40	15-25	NP-10
	19-42	Loamy sand, sand, fine sandy loam, loam	SM	A-4, A-2	0	0	95-100	75-90	30-50	25-40	15-25	NP-10
	42-60	Sand and gravel	GM, SM, SW-SM	A-2, A-1	0	5-10	50-75	30-50	20-40	5-35	15-30	NP-10
Lg:												
Lanier----------	0-20	Sandy loam, loam, silt loam	SM	A-2, A-4	0	0	95-100	75-90	30-50	25-40	15-25	NP-7
	20-60	Sand and gravel	GM, SW, GW-GM, SW-SM	A-1, A-2	0	5-10	50-75	30-50	20-40	5-35	---	NP
LsB:												
Lewisburg-------	0-7	Silt loam	CL-ML, ML	A-4	0	0	100	95-100	85-95	70-80	24-40	4-14
	7-15	Clay loam, clay	CH, CL	A-6, A-7	0	0	100	95-100	80-95	75-85	30-55	10-35
	15-60	Loam	CL, CL-ML	A-4, A-6	0	0	90-95	85-90	70-85	55-70	20-35	5-20
LxC2:												
Lorenzo---------	0-4	Loam	ML	A-4	0	0	90-100	90-100	80-90	65-75	25-40	10-20
	4-15	Loam, clay loam, sandy clay loam	SC	A-6, A-4	0	0	70-90	55-80	50-75	40-50	30-50	10-25
	15-60	Sand and gravel	GW, GW-GM, GP	A-1	0	5-10	25-55	20-35	5-20	4-12	15-30	NP-10
Rodman----------	0-3	Loam	ML	A-4	0	0	90-100	90-100	75-90	65-75	15-30	3-10
	3-9	Gravelly loam	ML, SM	A-4	0	2-5	70-90	55-80	50-60	40-55	15-30	NP-10
	9-60	Sand and gravel	GW-GM, GW	A-1	0	5-10	25-55	20-35	5-20	4-12	---	NP
LxD2:												
Lorenzo---------	0-4	Loam	ML	A-4	0	0-9	90-100	90-100	80-90	65-75	25-40	10-20
	4-15	Loam, clay loam, sandy clay loam	SC	A-6, A-4	0	0	70-90	55-80	50-75	40-50	30-50	10-25
	15-60	Sand and gravel	GW, GW-GM, GP	A-1	0	5-10	25-55	20-35	5-20	4-12	15-30	NP-10
Rodman----------	0-3	Loam	ML	A-4	0	0	90-100	90-100	75-90	65-75	15-30	3-10
	3-9	Gravelly loam	ML, SM	A-4	0	2-5	70-90	55-70	50-60	40-55	15-30	NP-10
	9-60	Sand and gravel	GW, GW-GM	A-1	0	5-10	25-55	20-35	5-20	4-12	---	NP

TABLE 28.--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	
Mb:												
Made Land-------	---	---	---	---	---	---	---	---	---	---	---	---
Md:												
Medway----------	0-20	Silt loam	CL-ML, ML	A-4	0	0	100	100	80-90	70-80	20-40	3-15
	20-29	Loam	ML	A-4	0	0	100	90-100	75-90	65-90	20-45	4-20
	29-45	Loam, silt loam, silty clay loam, sandy loam	CL-ML, SM	A-2, A-4	0	0	95-100	80-85	40-50	30-45	15-30	NP-15
	45-60	Gravelly sand	SW-SM, SM	A-1, A-2	0	0-5	100	55-75	50-70	5-30	15-30	NP-15
MlA:												
Miamian---------	0-7	Silt loam	ML, CL-ML	A-4	0	0	90-100	90-100	80-90	70-90	25-40	4-12
	7-24	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	90-100	85-95	75-90	70-85	35-50	15-30
	24-60	Loam	CL, CL-ML	A-4	0	0-5	75-95	75-90	65-75	55-70	20-35	3-13
MlB:												
Miamian---------	0-7	Silt loam	CL-ML, ML	A-4	0	0	90-100	90-100	80-90	70-90	25-40	4-12
	7-24	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	90-100	85-95	75-90	70-85	35-50	15-30
	24-60	Loam	CL, CL-ML	A-4	0	0-5	75-95	75-90	65-75	55-70	20-35	3-13
MlB2:												
Miamian---------	0-7	Silt loam	ML, CL-ML	A-4	0	0	90-100	90-100	80-90	70-90	25-40	4-12
	7-24	Silty clay loam, clay loam, clay	CL, CL-ML	A-6, A-7	0	0-5	90-100	85-95	75-90	70-85	35-50	15-30
	24-60	Loam	CL	A-4	0	0-5	75-95	75-90	65-75	55-70	20-35	3-13
MlC2:												
Miamian---------	0-7	Silt loam	CL-ML, ML	A-4	0	0	90-100	90-100	80-90	70-90	25-40	4-12
	7-24	Silty clay loam, clay loam, clay	CL, CL-ML	A-6, A-7	0	0-5	90-100	85-95	75-90	70-85	35-50	15-30
	24-60	Loam	CL, CL-ML	A-4	0	0-5	75-95	75-90	65-75	55-70	20-35	3-13
MlD2:												
Miamian---------	0-4	Silt loam	ML, CL-ML	A-4	0	0	90-100	90-100	80-90	70-90	25-40	4-12
	4-21	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	90-100	85-95	75-90	70-85	35-50	15-30
	21-60	Loam	CL, CL-ML	A-4	0	0-5	75-95	75-90	65-75	55-70	20-35	3-13
MmB:												
Miamian---------	0-7	Silt loam	ML, CL-ML	A-4, A-6	10-25	0	90-100	90-100	80-90	70-90	25-40	4-12
	7-24	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	90-100	85-95	75-90	70-85	35-50	15-30
	24-60	Loam	CL, CL-ML	A-4	0	0-5	75-95	75-90	65-75	55-70	20-35	3-13
MnB3:												
Miamian---------	0-5	Clay loam	CL	A-6, A-7	0	0	90-100	90-100	80-90	70-90	30-45	15-25
	5-22	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	90-100	85-95	75-90	70-85	35-50	15-30
	22-60	Loam	CL, CL-ML	A-4	0	0-5	75-95	75-90	65-75	55-70	20-35	3-13
MnC3:												
Miamian---------	0-5	Clay loam	CL	A-6, A-7	0	0	90-100	90-100	80-90	70-90	30-45	15-25
	5-22	Clay loam, clay	CL	A-6, A-7	0	0-5	90-100	85-95	75-90	70-85	35-50	15-30
	22-60	Loam	CL, CL-ML	A-4	0	0-5	75-95	75-90	65-75	55-70	20-35	3-13
MnD3:												
Miamian---------	0-4	Clay loam	CL	A-6, A-7	0	0	90-100	90-100	80-90	70-90	30-45	15-25
	4-21	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	90-100	85-95	75-90	70-85	35-50	15-30
	21-60	Loam	CL, CL-ML	A-4	0	0-5	75-95	75-90	65-75	55-70	20-35	3-13
MoB:												
Miamian---------	0-7	Silt loam	CL-ML, ML	A-4, A-6	0	0	90-100	90-100	80-90	70-90	25-40	4-12
	7-24	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	90-100	85-95	75-90	70-85	35-50	15-30
	24-60	Loam	CL, CL-ML	A-4	0	0-5	75-95	75-90	65-75	55-70	20-35	3-13
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 28.--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	
MoC:												
Miamian	0-7	Silt loam	CL-ML, ML	A-4	0	0	90-100	90-100	80-90	70-90	25-40	4-12
	7-24	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	90-100	85-95	75-90	70-85	35-50	15-30
	24-60	Loam	CL, CL-ML	A-4	0	0-5	75-95	75-90	65-75	55-70	20-35	3-13
Urban Land	---	---	---	---	---	---	---	---	---	---	---	---
MoE:												
Miamian	0-6	Silt loam	CL-ML, ML	A-4	0	0	90-100	90-100	80-90	70-90	25-40	4-12
	6-23	Silty clay loam, clay loam, clay	CL	A-6, A-7	0	0-5	90-100	85-95	75-90	70-85	35-50	15-30
	23-60	Loam	CL, CL-ML	A-4	0	0-5	75-95	75-90	65-75	55-70	20-35	3-13
Urban Land	---	---	---	---	---	---	---	---	---	---	---	---
MrA:												
Millsdale	0-14	Silty clay loam	CL, CL-ML	A-7, A-6	0	0	100	95-100	90-100	80-90	32-50	12-25
	14-36	Clay, silty clay loam, silty clay	CL, CL-ML, CH	A-7, A-6	0	0-5	90-100	90-100	85-95	85-95	40-60	20-35
	36-40	Unweathered bedrock			---	---	---	---	---	---	---	---
MsA:												
Milton	0-9	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	90-100	85-95	80-90	26-36	4-12
	9-25	Silty clay loam, clay loam, silty clay	CL, CL-ML	A-6, A-7	0	0	95-100	80-100	75-100	70-95	32-48	12-28
	25-28	Clay	CH, CL-ML, CL	A-6, A-7	0	0-5	95-100	90-100	85-95	80-90	32-55	14-33
	28-30	Unweathered bedrock			---	---	---	---	---	---	---	---
MsB:												
Milton	0-9	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	90-100	85-95	80-90	26-36	4-12
	9-25	Silty clay loam, clay loam, silty clay	CL, CL-ML	A-6, A-7	0	0	95-100	80-100	75-100	70-95	32-48	12-28
	25-28	Clay	CH, CL-ML, CL	A-6, A-7	0	0-5	95-100	90-100	85-95	80-90	32-55	14-33
	28-35	Unweathered bedrock			---	---	---	---	---	---	---	---
MsB2:												
Milton	0-9	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	90-100	85-95	80-90	26-36	4-12
	9-25	Silty clay loam, clay loam, silty clay	CL, CL-ML	A-6, A-7	0	0	95-100	80-100	75-100	70-95	32-48	12-28
	25-28	Clay	CH, CL-ML, CL	A-6, A-7	0	0-5	95-100	90-100	85-95	80-90	32-55	14-33
	28-30	Unweathered bedrock			---	---	---	---	---	---	---	---
MsC2:												
Milton	0-9	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	90-100	85-95	80-90	26-36	4-12
	9-22	Silty clay loam, clay loam, silty clay	CL, CL-ML	A-6, A-7	0	0	95-100	80-100	75-100	70-95	32-48	12-28
	22-25	Clay	CH, CL-ML, CL	A-6, A-7	0	0-5	95-100	90-100	85-95	80-90	32-55	14-33
	25-27	Unweathered bedrock			---	---	---	---	---	---	---	---
MsD2:												
Milton	0-5	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	90-100	85-95	80-90	26-36	4-12
	5-21	Silty clay loam, clay loam, silty clay	CL, CL-ML	A-6, A-7	0	0	95-100	80-100	75-100	70-95	32-48	12-28
	21-24	Clay	CH, CL-ML, CL	A-6, A-7	0	0-5	95-100	90-100	85-95	80-90	32-55	14-33
	24-26	Unweathered bedrock			---	---	---	---	---	---	---	---

TABLE 28.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
MtD3:												
Milton----------	0-4	Silty clay loam	CL, CL-ML	A-6, A-7	0	0	95-100	90-100	85-95	80-90	30-45	15-25
	4-20	Clay loam, clay	CL, CL-ML	A-6, A-7	0	0	95-100	80-100	75-100	70-95	32-48	12-28
	20-23	Clay, silty clay loam	CH, CL-ML, CL	A-6, A-7	0	0-5	95-100	90-100	85-95	80-90	32-55	14-33
	23-25	Unweathered bedrock			---	---	---	---	---	---	---	---
MuB:												
Milton----------	0-9	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	90-100	85-95	80-90	26-36	4-12
	9-25	Silty clay loam, clay loam, clay	CL, CL-ML	A-6, A-7	0	0	95-100	80-100	75-100	70-95	32-48	12-28
	25-28	Clay	CH, CL-ML, CL	A-6, A-7	0	0-5	95-100	90-100	85-95	80-90	32-55	14-33
	28-30	Unweathered bedrock			---	---	---	---	---	---	---	---
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
MuC:												
Milton----------	0-9	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	90-100	85-95	80-90	26-36	4-12
	9-25	Silty clay loam, clay loam, clay	CL, CL-ML	A-6, A-7	0	0	95-100	80-100	75-100	70-95	32-48	12-28
	25-28	Silty clay, clay	CH, CL-ML, CL	A-6, A-7	0	0-5	95-100	90-100	85-95	80-90	32-55	14-33
	28-30	Unweathered bedrock			---	---	---	---	---	---	---	---
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
MuD:												
Milton----------	0-9	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	90-100	85-95	80-90	26-36	4-12
	9-25	Silty clay loam, clay loam, silty clay	CL, CL-ML	A-7, A-6	0	0	95-100	80-100	75-100	70-95	32-48	12-28
	25-28	Clay	CH, CL-ML, CL	A-6, A-7	0	0-5	95-100	90-100	85-95	80-90	32-55	14-33
	28-30	Unweathered bedrock			---	---	---	---	---	---	---	---
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
Mv:												
Montgomery------	0-8	Silty clay loam	CL, ML	A-4, A-6	0	0	100	100	90-100	80-100	40-50	20-30
	8-33	Silty clay, clay	CH, CL-ML	A-7, A-6	0	0	100	100	90-100	90-100	50-65	30-42
	33-60	Clay	CH, CL-ML, CL	A-7, A-6	0	0	100	100	90-100	90-100	40-55	20-32
OcA:												
Ockley----------	0-13	Silt loam	CL-ML, ML	A-4	0	0	100	100	80-100	70-95	15-30	3-10
	13-40	Sandy clay, silty clay loam, clay loam, sandy clay loam	CL, CL-ML	A-7, A-6	0	0	95-100	90-100	80-95	70-90	25-40	8-15
	40-48	Sandy clay	CL, SC	A-6, A-7	0	0-5	95-100	90-100	60-85	45-70	25-40	8-15
	48-60	Sand and gravel	GW, GP-GM, GW-GM	A-1	0	5-10	25-55	20-35	5-20	4-12	---	NP
OcB:												
Ockley----------	0-13	Silt loam	CL-ML, ML	A-4	0	0	100	100	80-100	70-95	15-30	3-10
	13-40	Silty clay loam, clay loam, sandy clay loam	CL, CL-ML	A-6, A-7	0	0	95-100	90-100	80-95	70-90	25-40	8-15
	40-48	Sandy clay	CL, SC	A-6, A-7	0	0-5	95-100	90-100	60-85	45-70	25-40	8-15
	48-60	Sand and gravel	GW, GW-GM	A-1	0	5-10	25-55	20-35	5-20	4-12	---	NP
PlB:												
Plattville------	0-10	Silt loam	CL-ML, ML	A-4	0	0	95-100	90-100	80-90	70-90	30-40	8-18
	10-23	Clay loam, silty clay loam	CL, CL-ML	A-6	0	0	90-100	85-95	80-90	70-90	35-50	11-25
	23-27	Silty clay loam	CL-ML, CL	A-6, A-7	0	2-5	90-100	85-95	80-90	75-85	35-50	11-25
	27-29	Unweathered bedrock			---	---	---	---	---	---	---	---

TABLE 28.--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	
PlC:												
Plattville------	0-10	Silt loam	ML, CL-ML	A-4	0	0	95-100	90-100	80-90	70-90	25-35	5-10
	10-23	Silty clay loam, clay loam	CL, CL-ML	A-6	0	0	90-100	85-95	80-90	70-90	30-45	10-20
	23-27	Silty clay loam	CL-ML, CL	A-6, A-7	0	2-5	90-100	85-95	80-90	75-85	40-60	20-35
	27-29	Weathered bedrock			---	---	---	---	---	---	---	---
PyA:												
Pyrmont---------	0-9	Silt loam	CL-ML, ML	A-4	0	0	100	95-100	85-95	70-80	20-40	4-14
	9-16	Clay loam, clay	CL, CH	A-6, A-7	0	0-2	100	95-100	80-95	75-85	35-50	15-30
	16-60	Loam, silt loam	CL-ML, CL	A-4, A-6	0	0-5	90-95	85-90	70-85	55-70	25-40	6-16
Qu:												
Quarries--------	---	---	---	---	---	---	---	---	---	---	---	---
RcA:												
Randolph--------	0-14	Silt loam	CL-ML, ML	A-4, A-6	0	0	100	100	80-90	75-85	20-38	4-15
	14-23	Clay loam, silty clay, clay	CH, CL-ML, CL	A-6, A-7	0	0	100	100	85-95	80-90	35-60	14-32
	23-31	Silty clay loam	CL-ML, CH, CL	A-6, A-7	0	0	90-100	85-95	80-95	75-90	20-30	5-15
	31-35	Unweathered bedrock			---	---	---	---	---	---	---	---
ReB:												
Ritchey---------	0-6	Silt loam	CL-ML, ML	A-4	0	0	100	95-100	80-90	75-85	25-40	1-15
	6-18	Silty clay, clay loam, clay, silty clay loam	CL-ML, MH, CL	A-6, A-7	0-10	2-5	100	90-95	85-90	80-90	33-50	10-20
	18-20	Unweathered bedrock			---	---	---	---	---	---	---	---
ReB2:												
Ritchey---------	0-4	Silt loam	ML, CL-ML	A-4	0	0	100	95-100	80-90	75-85	25-40	1-15
	4-14	Silty clay loam, clay loam, clay, silty clay	MH, CL-ML, CL	A-6, A-7	0-10	2-5	100	90-95	85-90	80-90	33-50	10-20
	14-16	Unweathered bedrock			---	---	---	---	---	---	---	---
ReC2:												
Ritchey---------	0-4	Silt loam	CL-ML, ML	A-4	0	0	100	95-100	80-90	75-85	25-40	1-15
	4-14	Silty clay loam, clay loam, clay, silty clay	MH, CL-ML, CL	A-6, A-7	0-10	2-5	100	90-95	85-90	80-90	33-50	10-20
	14-16	Unweathered bedrock			---	---	---	---	---	---	---	---
ReE2:												
Ritchey---------	0-3	Silt loam	CL-ML, ML	A-4	0	0	100	95-100	80-90	75-85	25-40	1-15
	3-12	Silty clay loam, clay loam, clay, silty clay	MH, CL-ML, CL	A-6, A-7	0-10	2-5	100	90-95	85-90	80-90	33-50	10-20
	12-14	Unweathered bedrock			---	---	---	---	---	---	---	---
ReF2:												
Ritchey---------	0-2	Silt loam	CL-ML, ML	A-4	0	0	100	95-100	80-90	75-85	25-40	1-15
	2-11	Silty clay loam, clay loam, clay, silty clay	MH, CL-ML, CL	A-6, A-7	0-10	2-5	100	90-95	85-90	80-90	33-50	10-20
	11-13	Unweathered bedrock			---	---	---	---	---	---	---	---
RfD3:												
Ritchey---------	0-9	Silty clay loam	CL, ML	A-6, A-7	0-10	2-5	100	90-95	85-90	80-90	33-50	10-20
	9-11	Unweathered bedrock			---	---	---	---	---	---	---	---
Rh:												
Riverwash-------	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 28.--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	
RlE2:												
Rodman----------	0-4	Loam	ML	A-4	0	0-2	90-100	90-100	75-90	65-75	15-30	3-10
	4-10	Gravelly loam, loam	ML, SM	A-4	0	2-5	70-90	55-70	50-60	40-55	15-30	NP-10
	10-60	Sand and gravel	GW, GW-GM	A-1	0-1	5-10	25-55	20-35	5-20	4-12	---	NP
Fox------------	0-3	Loam	CL-ML, ML	A-4	0	0	85-100	75-100	65-100	55-70	15-25	3-8
	3-21	Clay loam, loam	CL	A-6, A-7	0-1	0	80-100	65-95	55-95	40-75	22-50	10-25
	21-60	Sand and gravel	GP, GW, GW-GM	A-1	0-3	2-5	25-55	20-35	5-20	4-12	---	NP
RlF2:												
Rodman----------	0-3	Loam	ML	A-4	0	0-2	90-100	90-100	75-90	65-75	15-30	3-10
	3-9	Gravelly loam, loam	ML, SM	A-4	0	2-5	70-90	55-70	50-60	40-55	15-30	NP-10
	9-60	Sand and gravel	GW, GW-GM	A-1	0-1	5-10	25-55	20-35	5-20	4-12	---	NP
Fox------------	0-3	Loam	CL-ML, ML	A-4	0	0	85-100	75-100	65-100	55-70	15-25	3-8
	3-21	Sandy clay, sandy clay loam, clay loam, loam	CL	A-6, A-7	0-1	0	80-100	65-95	55-95	40-75	22-50	10-25
	21-60	Sand and gravel	GP, GP-GM, SP, SP-SM	A-1	0-3	2-5	25-55	20-35	5-20	4-12	---	NP
Rs:												
Ross------------	0-22	Silt loam	CL-ML, ML	A-4	0	0	90-100	90-100	80-90	70-85	20-35	NP-12
	22-34	Loam, silt loam, silty clay loam, clay loam, fine sandy loam	ML, SM, CL-ML	A-4, A-2	0	0	100	100	50-70	30-55	22-45	3-20
	34-60	Silt loam, gravelly loam	ML	A-4	0	0-5	95-100	80-100	75-85	65-80	15-30	NP-12
Rt:												
Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
Ross------------	0-22	Silt loam	CL-ML, ML	A-4	0	0	90-100	90-100	80-90	70-85	20-35	NP-12
	22-34	Loam, silt loam, silty clay loam, clay loam, fine sandy loam	ML, SM	A-4, A-2	0	0	100	100	50-70	30-55	22-45	3-20
	34-60	Loam, silt loam	ML	A-4	0	0-5	95-100	80-100	75-85	65-80	15-30	NP-12
RuB:												
Russell---------	0-12	Silt loam	CL-ML, ML	A-4	0	0	100	100	90-100	85-95	20-35	5-15
	12-24	Silty clay loam	CL, CL-ML	A-6	0	0	100	90-100	85-100	85-95	35-45	15-25
	24-39	Clay loam, loam	CL, CL-ML	A-6	0	0	100	90-100	75-90	65-80	35-45	15-25
	39-60	Loam	CL, CL-ML	A-4, A-6	0	2-5	100	90-100	80-90	75-85	20-30	5-12
RvC2:												
Russell---------	0-12	Silt loam	CL-ML, ML	A-4	0	0	100	100	90-100	85-95	20-35	5-15
	12-24	Silty clay loam	CL, CL-ML	A-6	0	0	100	90-100	85-100	85-95	35-45	15-25
	24-39	Clay loam	CL, CL-ML	A-6	0	0	100	90-100	75-90	65-80	35-45	15-25
	39-60	Loam	CL, CL-ML	A-4	0	2-5	100	90-100	80-90	75-85	20-30	5-12
Miamian---------	0-7	Silt loam	CL-ML, ML	A-4	0	0	90-100	90-100	80-90	70-90	25-40	4-12
	7-24	Clay loam, clay	CL	A-6, A-7	0	0-5	90-100	85-95	75-90	70-85	35-50	15-30
	24-60	Loam	CL, CL-ML	A-4	0	0-5	75-95	75-90	65-75	50-70	20-35	3-13
RvD2:												
Russell---------	0-12	Silt loam	ML, CL-ML	A-4	0	0	100	100	90-100	85-95	20-35	5-15
	12-24	Silty clay loam	CL, CL-ML	A-6	0	0	100	100	85-100	85-95	35-45	15-25
	24-39	Clay loam	CL, CL-ML	A-6	0	0	100	90-100	75-90	65-80	35-45	15-25
	39-60	Loam	CL, CL-ML	A-4	0	0-3	100	90-100	80-90	75-85	20-30	5-12
Miamian---------	0-7	Silt loam	CL-ML, ML	A-4	0	0	90-100	90-100	80-90	70-90	25-40	4-12
	7-24	Clay loam, clay	CL	A-6, A-7	0	0-5	90-100	85-95	75-90	70-85	35-50	15-30
	24-60	Loam	CL, CL-ML	A-4	0	0-5	75-95	75-90	65-75	50-70	20-35	3-13
Sh:												
Shoals----------	0-8	Silt loam	ML	A-4	0	0	100	100	80-90	60-75	20-35	6-15
	8-13	Silt loam, loam	ML	A-4	0	0	100	100	80-90	60-75	25-40	5-15
	13-60	Clay loam, loam, silt loam, sandy clay loam, sandy loam	ML, CL-ML	A-4, A-2	0	0-3	100	90-100	60-80	30-60	15-30	3-10

TABLE 28.--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	
So: Sloan-----------	0-12	Silt loam	CL-ML, ML	A-4, A-6	0	0	100	90-100	80-90	75-85	20-40	3-15
	12-25	Clay loam	CL, CL-ML	A-6	0	0	90-100	80-95	75-85	70-80	30-45	8-18
	25-60	Gravelly loam, loam, gravelly sandy loam	CL, ML, SM	A-4	0	0	80-90	50-60	45-55	40-55	25-40	3-15
ThA: Thackery--------	0-15	Silt loam	CL-ML, ML	A-4	0	0	100	90-100	75-90	70-85	22-36	3-14
	15-30	Silty clay loam, clay loam	CL-ML, CL	A-7, A-6	0	0	100	80-90	75-90	75-85	25-40	8-18
	30-45	Gravelly clay loam	ML, SM	A-6, A-4	0	0	80-90	65-75	55-70	40-60	25-40	8-18
	45-60	Sandy loam, loam	CL-ML, CL	A-4	0	2-5	95-100	80-90	75-90	65-85	---	---
TpA: Tippecanoe------	0-12	Silt loam	CL-ML, ML	A-4, A-6	0	0	100	95-100	80-90	70-85	20-35	5-15
	12-36	Clay loam	CL, CL-ML	A-6, A-7	0	0	100	90-100	80-90	65-80	25-40	10-20
	36-45	Loam	ML, CL-ML	A-4	0	0-3	95-100	80-90	70-85	60-80	20-30	5-10
	45-60	Sand and gravel	GP, GW, GM	A-1	0	5-10	25-60	20-50	5-30	4-25	---	NP
Ua: Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
Ud: Udorthents------	---	---	---	---	---	---	---	---	---	---	---	---
Ug: Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
Um: Urban Land------	---	---	---	---	---	---	---	---	---	---	---	---
WaA: Warsaw----------	0-6	Silt loam	ML, CL-ML	A-4	0	0	100	90-100	75-85	65-80	20-30	4-12
	6-25	Sandy clay loam, clay loam, silty clay loam	CL, CL-ML	A-6, A-7	0	0-3	90-100	85-90	75-90	65-85	20-35	6-15
	25-32	Gravelly sandy loam, gravelly clay loam	SM	A-2	0	0-5	80-95	55-70	40-60	20-30	20-35	6-15
	32-60	Sand and gravel	GP, GW-GM, GW	A-1	0	5-10	25-55	20-35	5-20	4-12	15-20	NP
WaB: Warsaw----------	0-6	Silt loam	ML, CL-ML	A-4	0	0	100	90-100	75-85	65-80	20-30	4-12
	6-25	Sandy clay loam, clay loam, silty clay loam	CL, CL-ML	A-6, A-7	0	0-3	90-100	85-90	75-90	65-85	20-35	6-15
	25-32	Gravelly sandy loam, gravelly clay loam	SM	A-2	0	0-5	80-95	55-70	40-60	20-30	20-35	6-15
	32-60	Sand and gravel	GP, GW-GM, GW	A-1	0	5-10	25-55	20-35	5-20	4-12	15-20	NP
WeA: Wea-------------	0-14	Silt loam	CL-ML, ML	A-4	0	0	100	90-100	80-95	75-90	20-30	4-13
	14-47	Silty clay loam, clay loam, sandy clay loam	CL, CL-ML	A-7, A-6	0	0	100	90-100	85-95	70-85	30-40	11-20
	47-60	Sand and gravel	GP, GW-GM, GW	A-1	0-1	5-10	25-55	20-35	5-20	4-12	---	NP
WeB: Wea-------------	0-14	Silt loam	CL-ML, ML	A-4	0	0	100	90-100	80-95	75-90	20-30	4-13
	14-47	Silty clay loam, clay loam, sandy clay loam	CL, CL-ML	A-7, A-6	0	0	100	90-100	85-95	70-85	30-40	11-20
	47-60	Sand and gravel	GP, GW-GM, GW	A-1	0-1	5-10	25-55	20-35	5-20	4-12	---	NP

TABLE 28.--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	
Ws:												
Westland--------	0-8	Silty clay loam	CL-ML, ML	A-6, A-4	0	0	100	90-100	85-95	80-90	30-40	11-16
	8-28	Clay loam, loam, silty clay loam	CH, CL-ML, CL	A-7, A-6	0	0	100	90-100	85-95	80-90	25-40	8-16
	28-45	Sandy loam	ML, SC, SM	A-2	0	0-3	95-100	80-90	40-60	25-35	15-35	NP-15
	45-60	Sand and gravel	GP, GW-GM, GW	A-1	0	5-10	25-55	20-35	5-20	4-12	---	NP-3
WyB2:												
Wynn------------	0-14	Silt loam	CL-ML, ML	A-4	0	0	100	100	90-100	75-90	24-38	5-15
	14-29	Silty clay loam, clay loam	CL, CL-ML	A-6, A-7	0	2-5	100	80-95	80-90	75-90	30-55	15-35
	29-35	Weathered bedrock			---	---	---	---	---	---	---	---
XeA:												
Xenia-----------	0-11	Silt loam	ML, CL-ML	A-4	0	0	100	100	90-100	75-90	20-35	5-15
	11-35	Silty clay loam	CL, CL-ML	A-6	0	0	100	95-100	90-95	75-85	35-45	15-25
	35-45	Clay loam	CL, CL-ML	A-6, A-7	0	0-5	100	90-100	80-90	65-80	30-45	10-25
	45-78	Loam	CL, CL-ML	A-4, A-6	0	0-5	90-100	85-95	70-85	55-70	20-30	5-15
XeB:												
Xenia-----------	0-11	Silt loam	ML, CL-ML	A-4	0	0	100	100	90-100	75-90	20-35	5-15
	11-35	Silty clay loam	CL, CL-ML	A-6	0	0	100	100	90-95	75-85	35-45	15-25
	35-45	Clay loam	CL, CL-ML	A-6, A-7	0	0-5	100	90-100	80-90	55-80	30-45	10-25
	45-78	Loam	CL, CL-ML	A-4, A-6	0	0-5	90-100	85-95	70-85	55-70	20-30	5-15

TABLE 29.--PHYSICAL PROPERTIES OF THE SOILS

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" apply only to the surface layer. Absence of an entry indicates that data were not estimated. See text on page 178 for additional information.)

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
Ag:										
Algiers	0-20	15-27	1.20-1.45	0.60-2.00	0.16-0.19	Moderate	.37	.37	5	6
	20-60	20-35	1.25-1.65	0.20-0.60	0.16-0.20	Moderate	.37	.37		
Bo:										
Borrow pits	---	---	---	---	---	---	---	---	-	---
Bp:										
Brookston	0-12	14-27	1.35-1.50	0.60-2.00	0.21-0.24	Moderate	.28	.28	5	6
	12-36	25-35	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	.28	.32		
	36-60	15-26	1.45-1.70	0.60-2.00	0.05-0.19	Low	.28	.32		
Br:										
Brookston	0-12	14-27	1.35-1.50	0.60-2.00	0.21-0.24	Moderate	.28	.28	5	6
	12-44	25-35	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	.28	.32		
	44-72	15-26	1.45-1.70	0.60-2.00	0.05-0.19	Low	.28	.32		
Bs:										
Brookston	0-12	27-35	1.40-1.55	0.60-2.00	0.21-0.24	Moderate	.28	.28	5	6
	12-36	25-35	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	.28	.32		
	36-60	15-26	1.45-1.70	0.60-2.00	0.05-0.19	Low	.28	.32		
Bu:										
Brookston	0-12	27-35	1.40-1.55	0.60-2.00	0.21-0.24	Moderate	.28	.28	5	6
	12-36	25-35	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	.28	.32		
	36-60	15-26	1.45-1.70	0.60-2.00	0.05-0.19	Low	.28	.32		
Urban land	---	---	---	---	---	---	---	---	-	---
Ca:										
Carlisle	0-82	0-4	0.13-0.23	0.20-6.00	0.20-0.25	---	---	---	3	2
	82-90	60-80	1.50-1.60	0.06-0.20	0.06-0.10	High	.15	.15		
CeA:										
Celina	0-8	14-26	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	8-30	35-48	1.45-1.60	0.60-2.00	0.16-0.19	Moderate	.37	.37		
	30-60	16-35	1.60-1.82	0.20-0.60	0.06-0.10	Low	.37	.49		
CeB:										
Celina	0-8	14-26	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	8-30	35-48	1.45-1.60	0.60-2.00	0.16-0.19	Moderate	.37	.37		
	30-60	16-35	1.60-1.82	0.20-0.60	0.06-0.10	Low	.37	.49		
CeB2:										
Celina	0-8	14-26	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	8-30	35-48	1.45-1.60	0.60-2.00	0.16-0.19	Moderate	.37	.37		
	30-60	16-35	1.60-1.82	0.20-0.60	0.06-0.10	Low	.37	.49		
ClB:										
Celina	0-8	14-26	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	8-30	35-48	1.45-1.60	0.60-2.00	0.16-0.19	Moderate	.37	.37		
	30-60	16-35	1.60-1.82	0.20-0.60	0.06-0.10	Low	.37	.49		
CoA:										
Corwin	0-9	12-22	1.30-1.45	0.60-2.00	0.18-0.22	Low	.28	.28	5	5
	9-36	25-35	1.40-1.60	0.60-2.00	0.16-0.19	Moderate	.28	.28		
	36-60	10-25	1.70-1.90	0.20-0.60	0.06-0.10	Low	.37	.43		

TABLE 29.--PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors			Wind erodi- bility group
							Kw	Kf	T	
	In	Pct	g/cc	In/hr	In/in					
CoB:										
Corwin----------	0-9	12-22	1.30-1.45	0.60-2.00	0.18-0.22	Low	.28	.28	5	5
	9-36	25-35	1.40-1.60	0.60-2.00	0.16-0.19	Moderate	.28	.28		
	36-60	10-25	1.70-1.90	0.20-0.60	0.06-0.10	Low	.37	.43		
CsA:										
Crosby----------	0-8	11-24	1.35-1.45	0.60-2.00	0.17-0.20	Low	.43	.43	4	5
	8-26	35-45	1.50-1.60	0.20-0.60	0.15-0.19	High	.43	.49		
	26-60	15-27	1.70-2.00	0.20-0.60	0.06-0.10	Low	.43	.49		
CtB:										
Crosby----------	0-8	11-24	1.35-1.45	0.60-2.00	0.17-0.20	Low	.43	.43	4	5
	8-26	35-45	1.50-1.60	0.20-0.60	0.15-0.19	High	.43	.49		
	26-60	15-27	1.70-2.00	0.20-0.60	0.06-0.10	Low	.43	.49		
Celina----------	0-8	14-26	1.30-1.50	0.60-2.00	0.17-0.20	Moderate	.37	.37	4	6
	8-30	35-48	1.45-1.60	0.60-2.00	0.16-0.19	Low	.37	.37		
	30-60	16-35	1.60-1.82	0.20-0.60	0.06-0.10	Low	.37	.49		
Cu:										
Crosby----------	0-8	11-24	1.35-1.45	0.60-2.00	0.17-0.20	Low	.43	.43	4	5
	8-26	35-45	1.50-1.60	0.20-0.60	0.15-0.19	High	.43	.49		
	26-60	15-27	1.70-2.00	0.20-0.60	0.06-0.10	Low	.43	.49		
Urban land------	---	---	---	---	---	---	---	---	-	---
DaB:										
Dana------------	0-7	11-22	1.40-1.55	0.60-2.00	0.18-0.22	Low	.32	.32	5	5
	7-28	27-35	1.45-1.65	0.60-2.00	0.16-0.20	Moderate	.43	.43		
	28-36	27-35	1.45-1.65	0.20-0.60	0.15-0.18	Moderate	.43	.49		
	36-60	15-25	1.70-1.90	0.20-0.60	0.14-0.17	Low	.43	.55		
FaE2:										
Fairmount-------	0-4	27-40	1.20-1.40	0.60-2.00	0.16-0.22	Low	.37	.37	1	6
	4-16	35-60	1.40-1.60	0.20-0.60	0.14-0.18	Moderate	.37	.28		
	16-18	---	---	0.00-0.20	---	---	---	---		
FaF2:										
Fairmount-------	0-3	27-40	1.20-1.40	0.60-2.00	0.16-0.22	Low	.37	.37	1	6
	3-15	35-60	1.40-1.60	0.20-0.60	0.14-0.18	Moderate	.37	.28		
	15-17	---	---	0.00-0.20	---	---	---	---		
FcA:										
Fincastle-------	0-19	11-22	1.40-1.55	0.60-2.00	0.16-0.20	Low	.37	.37	5	5
	19-38	23-35	1.45-1.65	0.20-0.60	0.15-0.18	Moderate	.37	.37		
	38-60	20-26	1.55-1.90	0.20-0.60	0.06-0.10	Low	.37	.43		
FkA:										
Fox-------------	0-11	5-15	1.40-1.70	0.60-2.00	0.16-0.20	Low	.24	.24	4	3
	11-29	18-27	1.55-1.65	0.60-2.00	0.14-0.18	Moderate	.32	.32		
	29-60	0-2	1.30-1.70	6.00-20.00	0.02-0.05	Low	.10	.24		
FkB:										
Fox-------------	0-11	5-15	1.40-1.70	0.60-2.00	0.16-0.20	Low	.24	.24	4	3
	11-29	18-27	1.55-1.65	0.60-2.00	0.14-0.18	Moderate	.32	.32		
	29-60	0-2	1.30-1.70	6.00-20.00	0.02-0.05	Low	.10	.24		
FlA:										
Fox-------------	0-11	10-20	1.35-1.55	0.60-2.00	0.16-0.20	Low	.37	.37	4	5
	11-29	18-45	1.55-1.65	0.60-2.00	0.14-0.18	Moderate	.32	.32		
	29-60	0-2	1.30-1.70	6.00-20.00	0.02-0.05	Low	.10	.24		

TABLE 29.--PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
FlB:										
Fox-------------	0-11	10-20	1.35-1.55	0.60-2.00	0.16-0.20	Low	.37	.37	4	5
	11-29	18-45	1.55-1.65	0.60-2.00	0.14-0.18	Moderate	.32	.32		
	29-60	0-2	1.30-1.70	6.00-20.00	0.02-0.05	Low	.10	.24		
FlC2:										
Fox-------------	0-3	10-20	1.35-1.55	0.60-2.00	0.16-0.20	Low	.37	.37	4	5
	3-21	18-45	1.55-1.65	0.60-2.00	0.14-0.18	Moderate	.32	.32		
	21-60	0-2	1.30-1.70	6.00-20.00	0.02-0.05	Low	.10	.24		
FmA:										
Fox-------------	0-11	10-20	1.35-1.55	0.60-2.00	0.16-0.20	Low	.37	.37	4	5
	11-29	18-45	1.55-1.65	0.60-2.00	0.14-0.18	Moderate	.32	.32		
	29-60	0-2	1.30-1.70	6.00-20.00	0.02-0.05	Low	.10	.24		
FmB:										
Fox-------------	0-11	10-20	1.35-1.55	0.60-2.00	0.16-0.20	Low	.37	.37	4	5
	11-29	18-45	1.55-1.65	0.60-2.00	0.14-0.18	Moderate	.32	.32		
	29-60	0-2	1.30-1.70	6.00-20.00	0.02-0.05	Low	.10	.24		
FmC2:										
Fox-------------	0-3	10-20	1.35-1.55	0.60-2.00	0.16-0.20	Low	.37	.37	4	5
	3-21	18-45	1.55-1.65	0.60-2.00	0.14-0.18	Moderate	.32	.32		
	21-60	0-2	1.30-1.70	6.00-20.00	0.02-0.05	Low	.10	.24		
FmD2:										
Fox-------------	0-3	10-20	1.35-1.55	0.60-2.00	0.16-0.20	Low	.37	.37	4	5
	3-21	18-45	1.55-1.65	0.60-2.00	0.14-0.18	Moderate	.32	.32		
	21-60	0-2	1.30-1.70	6.00-20.00	0.02-0.05	Low	.10	.24		
FsC3:										
Fox-------------	0-3	20-35	1.55-1.65	0.60-2.00	0.16-0.20	Moderate	.32	.32	4	6
	3-18	18-45	1.55-1.65	0.60-2.00	0.14-0.18	Moderate	.32	.32		
	18-60	0-2	1.30-1.70	6.00-20.00	0.02-0.05	Low	.10	.24		
FuB:										
Fox-------------	0-11	10-20	1.35-1.55	0.60-2.00	0.16-0.20	Low	.37	.37	4	5
	11-29	18-45	1.55-1.65	0.60-2.00	0.14-0.18	Moderate	.32	.32		
	29-60	0-2	1.30-1.70	6.00-20.00	0.02-0.05	Low	.10	.24		
Urban land------	---	---	---	---	---	---	---	---	-	---
FuC:										
Urban land------	---	---	---	---	---	---	---	---	-	---
Fox-------------	0-3	10-20	1.35-1.55	0.60-2.00	0.16-0.20	Low	.37	.37	4	5
	3-21	18-45	1.55-1.65	0.60-2.00	0.14-0.18	Moderate	.32	.32		
	21-60	0-2	1.30-1.70	6.00-20.00	0.02-0.05	Low	.10	.24		
FuF:										
Urban land------	---	---	---	---	---	---	---	---	-	---
Fox-------------	0-3	10-20	1.35-1.55	0.60-2.00	0.16-0.20	Low	.37	.37	4	5
	3-18	18-45	1.55-1.65	0.60-2.00	0.14-0.18	Moderate	.32	.32		
	18-60	0-2	1.30-1.70	6.00-20.00	0.02-0.05	Low	.10	.24		
Gp:										
Gravel pits-----	---	---	---	---	---	---	---	---	-	---

TABLE 29.--PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
HeE2:										
Hennepin--------	0-4	20-27	1.20-1.40	0.60-2.00	0.15-0.19	Low	.28	.28	5	6
	4-12	18-35	1.30-1.60	0.60-2.00	0.14-0.18	Low	.32	.32		
	12-60	18-35	1.70-1.85	0.20-0.60	0.06-0.10	Low	.32	.32		
Miamian---------	0-4	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	4-25	35-48	1.45-1.70	0.20-0.60	0.14-0.19	Moderate	.37	.43		
	25-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
HeF2:										
Hennepin--------	0-3	20-27	1.20-1.40	0.60-2.00	0.15-0.19	Low	.28	.28	5	6
	3-12	18-35	1.30-1.60	0.60-2.00	0.14-0.18	Low	.32	.32		
	12-60	18-35	1.70-1.85	0.20-0.60	0.06-0.10	Low	.32	.32		
Miamian---------	0-4	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	4-25	35-48	1.45-1.70	0.20-0.60	0.14-0.19	Moderate	.37	.43		
	25-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
HmF3:										
Hennepin--------	0-6	18-35	1.30-1.60	0.60-2.00	0.14-0.18	Low	.28	.28	5	6
	6-60	18-35	1.70-1.85	0.20-0.60	0.06-0.10	Low	.32	.32		
Miamian---------	0-21	35-48	1.45-1.70	0.20-0.60	0.12-0.17	Moderate	.37	.37	4	6
	21-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
KeA:										
Kendallville----	0-9	15-24	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.43	5	6
	9-26	20-35	1.40-1.60	0.60-2.00	0.16-0.20	Moderate	.37	.37		
	26-36	23-38	1.40-1.65	0.60-2.00	0.12-0.15	Moderate	.37	.55		
	36-60	12-30	1.45-1.75	0.20-0.60	0.06-0.10	Low	.37	.43		
KeB:										
Kendallville----	0-9	15-24	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.43	5	6
	9-26	20-35	1.40-1.60	0.60-2.00	0.16-0.20	Moderate	.37	.37		
	26-36	23-38	1.40-1.65	0.60-2.00	0.12-0.15	Moderate	.37	.55		
	36-60	12-30	1.45-1.75	0.20-0.60	0.06-0.10	Low	.37	.43		
KeC2:										
Kendallville----	0-4	15-24	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.43	5	6
	4-21	20-35	1.40-1.60	0.60-2.00	0.16-0.20	Moderate	.37	.37		
	21-36	23-38	1.40-1.65	0.60-2.00	0.12-0.15	Moderate	.37	.55		
	36-60	12-30	1.45-1.75	0.20-0.60	0.06-0.10	Low	.37	.43		
Ld:										
Landes----------	0-19	5-20	1.40-1.60	6.00-20.00	0.08-0.12	Low	.20	.20	5	3
	19-42	5-18	1.45-1.70	6.00-20.00	0.08-0.12	Low	.20	.20		
	42-60	2-10	1.60-1.70	6.00-20.00	0.02-0.05	Low	.20	.20		
Lg:										
Lanier----------	0-20	5-14	1.20-1.50	6.00-20.00	0.09-0.14	Low	.20	.24	5	3
	20-60	1-8	1.30-1.60	6.00-20.00	0.02-0.05	Low	.15	.64		
LsB:										
Lewisburg-------	0-7	16-27	1.30-1.55	0.60-2.00	0.17-0.20	Low	.43	.49	3	6
	7-15	35-45	1.40-1.70	0.20-0.60	0.12-0.17	Moderate	.32	.37		
	15-60	18-27	1.70-2.00	0.20-0.60	0.06-0.10	Low	.32	.37		
LxC2:										
Lorenzo---------	0-4	18-27	1.25-1.40	2.00-6.00	0.14-0.18	Low	.28	.28	3	6
	4-15	20-35	1.60-1.70	2.00-6.00	0.14-0.18	Moderate	.28	.32		
	15-60	1-5	1.40-1.60	6.00-12.00	0.02-0.05	Low	.10	---		
Rodman----------	0-3	8-20	1.20-1.40	6.00-12.00	0.14-0.18	Low	.20	.24	3	5
	3-9	5-25	1.10-1.50	6.00-12.00	0.08-0.14	Low	.20	.32		
	9-60	0-5	1.40-1.60	6.00-12.00	0.02-0.05	Low	.10	.43		

TABLE 29.--PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
LxD2:										
Lorenzo---------	0-4	18-27	1.25-1.40	2.00-6.00	0.14-0.18	Low	.28	.28	3	6
	4-15	20-35	1.60-1.70	2.00-6.00	0.14-0.18	Moderate	.28	.32		
	15-60	1-5	1.40-1.60	6.00-12.00	0.02-0.05	Low	.10	---		
Rodman----------	0-3	8-20	1.20-1.40	6.00-12.00	0.14-0.18	Low	.20	.24	3	5
	3-9	5-25	1.10-1.50	6.00-12.00	0.08-0.14	Low	.32	.32		
	9-60	0-5	1.40-1.60	6.00-12.00	0.02-0.05	Low	.10	.43		
Mb:										
Made land-------	---	---	---	---	---	---	---	---	-	---
Md:										
Medway----------	0-20	18-27	1.20-1.45	0.60-2.00	0.17-0.22	Low	.28	.28	5	6
	20-29	18-35	1.20-1.50	0.60-2.00	0.15-0.19	Low	.32	.37		
	29-45	5-30	1.20-1.60	0.60-6.00	0.08-0.14	Low	.32	.37		
	45-60	5-10	1.20-1.60	0.60-6.00	0.02-0.05	Low	.32	.49		
MlA:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	7-24	35-48	1.45-1.70	0.20-0.60	0.14-0.19	Moderate	.37	.43		
	24-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
MlB:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	7-24	35-48	1.45-1.70	0.20-0.60	0.14-0.19	Moderate	.37	.43		
	24-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
MlB2:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	7-24	35-48	1.45-1.70	0.20-0.60	0.14-0.19	Moderate	.37	.43		
	24-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
MlC2:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	7-24	35-48	1.45-1.70	0.20-0.60	0.14-0.19	Moderate	.37	.43		
	24-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
MlD2:										
Miamian---------	0-4	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	4-21	35-48	1.45-1.70	0.20-0.60	0.14-0.19	Moderate	.37	.43		
	21-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
MmB:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.55	4	6
	7-24	35-48	1.45-1.70	0.20-0.60	0.14-0.19	Moderate	.37	.43		
	24-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
MnB3:										
Miamian---------	0-5	27-35	1.35-1.55	0.20-0.60	0.17-0.20	Moderate	.32	.32	4	6
	5-22	35-48	1.45-1.70	0.20-0.60	0.14-0.19	Moderate	.37	.43		
	22-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
MnC3:										
Miamian---------	0-5	27-35	1.35-1.55	0.20-0.60	0.17-0.20	Moderate	.32	.32	4	6
	5-22	35-48	1.45-1.70	0.20-0.60	0.14-0.19	Moderate	.37	.43		
	22-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
MnD3:										
Miamian---------	0-4	27-35	1.35-1.55	0.20-0.60	0.17-0.20	Moderate	.32	.32	4	6
	4-21	35-48	1.45-1.70	0.20-0.60	0.14-0.19	Moderate	.37	.43		
	21-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		

TABLE 29.--PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
MoB:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	7-24	35-48	1.45-1.70	0.20-0.60	0.14-0.19	Moderate	.37	.43		
	24-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
Urban land------	---	---	---	---	---	---	---	---	-	---
MoC:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	7-24	35-48	1.45-1.70	0.20-0.60	0.14-0.19	Moderate	.37	.43		
	24-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
Urban land------	---	---	---	---	---	---	---	---	-	---
MoE:										
Miamian---------	0-6	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	6-23	35-48	1.45-1.70	0.20-0.60	0.14-0.19	Moderate	.37	.43		
	23-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
Urban land------	---	---	---	---	---	---	---	---	-	---
MrA:										
Millsdale-------	0-14	27-35	1.30-1.50	0.60-2.00	0.16-0.19	Moderate	.28	.32	2	6
	14-36	35-45	1.40-1.65	0.60-2.00	0.13-0.15	High	.32	.37		
	36-40	---	---	0.00-0.06	---	---	---	---		
MsA:										
Milton----------	0-9	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	2	6
	9-25	35-50	1.45-1.65	0.60-2.00	0.16-0.19	Moderate	.37	.43		
	25-28	25-45	1.40-1.70	0.20-0.60	0.13-0.16	High	.37	.43		
	28-30	---	---	0.00-0.06	---	---	---	---		
MsB:										
Milton----------	0-9	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	2	6
	9-25	35-50	1.45-1.65	0.60-2.00	0.16-0.19	Moderate	.37	.43		
	25-28	25-45	1.40-1.70	0.20-0.60	0.13-0.16	High	.37	.43		
	28-35	---	---	0.00-0.06	---	---	---	---		
MsB2:										
Milton----------	0-9	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	2	6
	9-25	35-50	1.45-1.65	0.60-2.00	0.16-0.19	Moderate	.37	.43		
	25-28	25-45	1.40-1.70	0.20-0.60	0.13-0.16	High	.37	.43		
	28-30	---	---	0.00-0.06	---	---	---	---		
MsC2:										
Milton----------	0-9	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	2	6
	9-22	35-50	1.45-1.65	0.60-2.00	0.16-0.19	Moderate	.37	.43		
	22-25	25-45	1.40-1.70	0.20-0.60	0.13-0.16	High	.37	.43		
	25-27	---	---	0.00-0.06	---	---	---	---		
MsD2:										
Milton----------	0-5	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	2	6
	5-21	35-50	1.45-1.65	0.60-2.00	0.16-0.19	Moderate	.37	.43		
	21-24	25-45	1.40-1.70	0.20-0.60	0.13-0.16	High	.37	.43		
	24-26	---	---	0.00-0.06	---	---	---	---		
MtD3:										
Milton----------	0-4	27-35	1.35-1.55	0.60-2.00	0.16-0.19	Moderate	.37	.37	2	6
	4-20	35-50	1.45-1.65	0.60-2.00	0.16-0.19	Moderate	.37	.43		
	20-23	25-45	1.40-1.70	0.20-0.60	0.13-0.16	High	.37	.43		
	23-25	---	---	0.00-0.06	---	---	---	---		

TABLE 29.--PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
MuB:										
Milton----------	0-9	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	2	6
	9-25	35-50	1.45-1.65	0.60-2.00	0.16-0.19	Moderate	.37	.43		
	25-28	25-45	1.40-1.70	0.20-0.60	0.13-0.16	High	.37	.43		
	28-30	---	---	0.00-0.06	---	---	---	---		
Urban land------	---	---	---	---	---	---	---	---	-	---
MuC:										
Milton----------	0-9	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	2	6
	9-25	35-50	1.45-1.65	0.60-2.00	0.16-0.19	Moderate	.37	.43		
	25-28	25-45	1.40-1.70	0.20-0.60	0.13-0.16	High	.37	.43		
	28-30	---	---	0.00-0.06	---	---	---	---		
Urban land------	---	---	---	---	---	---	---	---	-	---
MuD:										
Milton----------	0-9	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	2	6
	9-25	35-50	1.45-1.65	0.60-2.00	0.16-0.19	Moderate	.37	.43		
	25-28	25-45	1.40-1.70	0.20-0.60	0.13-0.16	Moderate	.37	.43		
	28-30	---	---	0.00-0.06	---	---	---	---		
Urban land------	---	---	---	---	---	---	---	---	-	---
Mv:										
Montgomery------	0-8	35-40	1.35-1.55	0.60-2.00	0.17-0.22	Moderate	.32	.32	5	4
	8-33	40-55	1.45-1.65	0.20-0.60	0.13-0.16	High	.37	.37		
	33-60	35-48	1.50-1.60	0.01-0.20	0.13-0.16	High	.37	.37		
OcA:										
Ockley----------	0-13	11-22	1.30-1.40	0.60-2.00	0.17-0.22	Low	.37	.37	4	5
	13-40	20-35	1.45-1.60	0.60-2.00	0.16-0.20	Moderate	.37	.43		
	40-48	20-35	1.45-1.60	0.60-2.00	0.13-0.16	Moderate	.10	.20		
	48-60	2-5	1.60-1.80	6.00-20.00	0.02-0.05	Low	.10	.37		
OcB:										
Ockley----------	0-13	11-22	1.30-1.40	0.60-2.00	0.17-0.22	Low	.37	.37	4	5
	13-40	20-35	1.45-1.60	0.60-2.00	0.16-0.20	Moderate	.37	.43		
	40-48	20-35	1.45-1.60	0.60-2.00	0.13-0.16	Moderate	.10	.20		
	48-60	2-5	1.60-1.80	6.00-20.00	0.02-0.05	Low	.10	.37		
PlB:										
Plattville------	0-10	20-27	1.20-1.40	0.60-2.00	0.17-0.20	Low	.32	.32	3	6
	10-23	25-35	1.30-1.50	0.20-0.60	0.16-0.19	Moderate	.32	.32		
	23-27	25-35	1.40-1.60	0.20-0.60	0.17-0.19	High	.32	.32		
	27-29	---	---	0.00-0.06	---	---	---	---		
PlC:										
Plattville------	0-10	18-27	1.30-1.40	0.60-2.00	0.17-0.20	Low	.32	.32	3	6
	10-23	25-35	1.40-1.55	0.20-0.60	0.16-0.19	Moderate	.28	.28		
	23-27	27-35	1.35-1.45	0.20-0.60	0.17-0.19	High	.28	.28		
	27-29	---	---	0.00-0.06	---	---	---	---		
PyA:										
Pyrmont---------	0-9	16-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.43	.43	3	6
	9-16	35-44	1.40-1.70	0.06-0.60	0.14-0.18	Moderate	.32	.37		
	16-60	18-27	1.70-2.00	0.20-0.60	0.06-0.10	Low	.32	.37		
Qu:										
Quarries--------	---	---	---	---	---	---	---	---	-	---

TABLE 29.--PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
RcA:										
Randolph--------	0-14	16-27	1.30-1.45	0.60-2.00	0.17-0.20	Moderate	.37	.37	2	6
	14-23	35-50	1.40-1.65	0.20-0.60	0.13-0.15	High	.37	.43		
	23-31	---	---	0.20-0.60	0.15-0.18	Moderate	.37	.64		
	31-35	---	---	0.00-0.06	---	---	---	---		
ReB:										
Ritchey---------	0-6	18-27	1.20-1.40	0.60-2.00	0.17-0.20	Low	.37	.37	1	6
	6-18	27-45	1.35-1.60	0.60-2.00	0.13-0.17	Moderate	.37	.32		
	18-20	---	---	0.00-0.20	---	---	---	---		
ReB2:										
Ritchey---------	0-4	18-27	1.20-1.40	0.60-2.00	0.17-0.20	Low	.37	.37	1	6
	4-14	27-45	1.35-1.60	0.60-2.00	0.13-0.17	Moderate	.37	.32		
	14-16	---	---	0.00-0.20	---	---	---	---		
ReC2:										
Ritchey---------	0-4	18-27	1.20-1.40	0.60-2.00	0.17-0.20	Low	.37	.37	1	6
	4-14	27-45	1.35-1.60	0.60-2.00	0.13-0.17	Moderate	.37	.32		
	14-16	---	---	0.00-0.20	---	---	---	---		
ReE2:										
Ritchey---------	0-3	18-27	1.20-1.40	0.60-2.00	0.17-0.20	Low	.37	.37	1	6
	3-12	27-45	1.35-1.60	0.60-2.00	0.13-0.17	Moderate	.37	.32		
	12-14	---	---	0.00-0.20	---	---	---	---		
ReF2:										
Ritchey---------	0-2	18-27	1.20-1.40	0.60-2.00	0.17-0.20	Low	.37	.37	1	6
	2-11	27-45	1.35-1.60	0.60-2.00	0.13-0.17	Moderate	.37	.32		
	11-13	---	---	0.00-0.20	---	---	---	---		
RfD3:										
Ritchey---------	0-9	27-45	1.35-1.60	0.60-2.00	0.13-0.17	Moderate	.37	.37	1	6
	9-11	---	---	0.00-0.20	---	---	---	---		
Rh:										
Riverwash-------	---	---	---	---	---	---	---	---	-	---
RlE2:										
Rodman----------	0-4	8-20	1.20-1.40	6.00-12.00	0.14-0.18	Low	.20	.24	3	5
	4-10	5-25	1.10-1.50	6.00-12.00	0.08-0.14	Low	.20	.32		
	10-60	0-5	1.40-1.60	6.00-20.00	0.02-0.05	Low	.10	.43		
Fox-------------	0-3	10-17	1.35-1.55	0.60-2.00	0.16-0.20	Low	.37	.37	4	5
	3-21	18-35	1.55-1.65	0.60-2.00	0.14-0.18	Moderate	.43	.43		
	21-60	0-2	1.30-1.70	6.00-20.00	0.02-0.05	Low	.10	.24		
RlF2:										
Rodman----------	0-3	8-20	1.20-1.40	6.00-12.00	0.14-0.18	Low	.20	.24	3	5
	3-9	5-25	1.10-1.50	6.00-12.00	0.08-0.14	Low	.20	.32		
	9-60	0-5	1.40-1.60	6.00-20.00	0.02-0.05	Low	.10	.43		
Fox-------------	0-3	10-17	1.35-1.55	0.60-2.00	0.16-0.20	Low	.37	.37	4	5
	3-21	18-35	1.55-1.65	0.60-2.00	0.14-0.18	Moderate	.43	.43		
	21-60	0-2	1.30-1.70	6.00-20.00	0.02-0.05	Low	.10	.24		
Rs:										
Ross------------	0-22	15-27	1.20-1.45	0.60-2.00	0.18-0.24	Low	.32	.32	5	6
	22-34	18-35	1.20-1.50	0.60-2.00	0.12-0.15	Low	.32	.32		
	34-60	5-25	1.35-1.60	0.60-2.00	0.16-0.18	Low	.32	.49		

TABLE 29.--PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in					
Rt:										
Urban land	---	---	---	---	---	---	---	---	-	---
Ross	0-22	15-27	1.20-1.45	0.60-2.00	0.18-0.24	Low	.32	.32	5	6
	22-34	18-35	1.20-1.50	0.60-2.00	0.12-0.15	Low	.32	.32		
	34-60	5-25	1.35-1.60	0.60-2.00	0.16-0.18	Low	.32	.49		
RuB:										
Russell	0-12	11-25	1.30-1.45	0.60-2.00	0.17-0.22	Low	.37	.37	5	5
	12-24	25-35	1.40-1.60	0.60-2.00	0.16-0.19	Moderate	.37	.37		
	24-39	23-35	1.40-1.60	0.20-0.60	0.16-0.19	Moderate	.37	.37		
	39-60	14-27	1.60-1.80	0.20-0.60	0.06-0.10	Low	.37	.43		
RvC2:										
Russell	0-12	11-25	1.30-1.45	0.60-2.00	0.17-0.22	Low	.37	.37	5	5
	12-24	25-35	1.40-1.60	0.60-2.00	0.16-0.19	Moderate	.37	.37		
	24-39	23-35	1.40-1.60	0.20-0.60	0.16-0.19	Moderate	.37	.37		
	39-60	14-27	1.60-1.80	0.20-0.60	0.16-0.19	Low	.37	.43		
Miamian	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	7-24	35-48	1.45-1.70	0.20-0.60	0.14-0.19	Moderate	.37	.43		
	24-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
RvD2:										
Russell	0-12	11-25	1.30-1.45	0.60-2.00	0.17-0.22	Low	.37	.37	5	5
	12-24	25-35	1.40-1.60	0.60-2.00	0.16-0.19	Moderate	.37	.37		
	24-39	23-35	1.40-1.60	0.20-0.60	0.16-0.19	Moderate	.37	.37		
	39-60	14-27	1.60-1.80	0.20-0.60	0.06-0.10	Low	.37	.43		
Miamian	0-7	14-27	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	6
	7-24	35-48	1.45-1.70	0.20-0.60	0.14-0.19	Moderate	.37	.43		
	24-60	16-31	1.60-1.85	0.20-0.60	0.06-0.10	Low	.37	.49		
Sh:										
Shoals	0-8	18-27	1.30-1.50	0.60-2.00	0.18-0.22	Low	.24	.24	5	6
	8-13	18-27	1.35-1.55	0.60-2.00	0.18-0.22	Low	.37	.37		
	13-60	12-25	1.35-1.60	0.60-2.00	0.16-0.19	Low	.37	.43		
So:										
Sloan	0-12	15-27	1.20-1.40	0.60-2.00	0.18-0.22	Low	.28	.28	5	6
	12-25	22-35	1.25-1.55	0.20-0.60	0.17-0.20	Moderate	.37	.37		
	25-60	10-30	1.20-1.50	0.60-2.00	0.08-0.12	Low	.37	.43		
ThA:										
Thackery	0-15	15-25	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	4	5
	15-30	20-30	1.30-1.55	0.60-2.00	0.16-0.19	Moderate	.37	.43		
	30-45	25-35	1.35-1.60	0.60-2.00	0.12-0.16	Moderate	.10	.49		
	45-60	15-27	1.25-1.55	0.20-0.60	0.06-0.10	Low	.10	.49		
TpA:										
Tippecanoe	0-12	18-27	1.30-1.45	0.60-2.00	0.17-0.20	Low	.32	.32	4	6
	12-36	22-35	1.40-1.60	0.60-2.00	0.16-0.19	Moderate	.32	.37		
	36-45	15-18	1.50-1.70	0.60-2.00	0.14-0.18	Low	.20	.37		
	45-60	1-7	1.50-1.75	6.00-20.00	0.03-0.06	Low	.10	.24		
Ua:										
Urban land	---	---	---	---	---	---	---	---	-	---
Ud:										
Udorthents	---	---	---	---	---	---	---	---	-	---
Ug:										
Urban land	---	---	---	---	---	---	---	---	-	---

TABLE 29.--PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi-bility group
	In	Pct	g/cc	In/hr	In/in					
Um:										
Urban land------	---	---	---	---	---	---	---	---	-	---
WaA:										
Warsaw----------	0-6	15-25	1.30-1.50	0.60-2.00	0.17-0.22	Low	.28	.28	4	5
	6-25	17-35	1.35-1.60	0.60-2.00	0.16-0.19	Moderate	.28	.32		
	25-32	18-30	1.40-1.65	0.60-2.00	0.01-0.10	Low	.28	.43		
	32-60	2-8	1.40-1.65	6.00-20.00	0.03-0.06	Low	.10	.37		
WaB:										
Warsaw----------	0-6	15-25	1.30-1.50	0.60-2.00	0.17-0.22	Low	.28	.28	4	5
	6-25	17-35	1.35-1.60	0.60-2.00	0.16-0.19	Moderate	.28	.32		
	25-32	18-30	1.40-1.65	0.60-2.00	0.01-0.10	Low	.28	.43		
	32-60	2-8	1.40-1.65	6.00-20.00	0.03-0.06	Low	.10	.37		
WeA:										
Wea-------------	0-14	12-22	1.30-1.45	0.60-2.00	0.18-0.22	Low	.32	.32	4	5
	14-47	20-35	1.40-1.60	0.60-2.00	0.16-0.20	Moderate	.32	.32		
	47-60	1-5	1.60-1.80	6.00-20.00	0.03-0.06	Low	.10	.28		
WeB:										
Wea-------------	0-14	12-22	1.30-1.45	0.60-2.00	0.18-0.22	Low	.32	.32	4	5
	14-47	20-35	1.40-1.60	0.60-2.00	0.16-0.20	Moderate	.32	.32		
	47-60	1-5	1.60-1.80	6.00-20.00	0.03-0.06	Low	.10	.28		
Ws:										
Westland--------	0-8	27-35	1.45-1.55	0.60-2.00	0.18-0.22	Moderate	.24	.28	4	7
	8-28	20-35	1.40-1.65	0.60-2.00	0.16-0.19	Moderate	.28	.32		
	28-45	5-30	1.55-1.70	2.00-6.00	0.06-0.10	Low	.28	.37		
	45-60	1-10	1.65-1.95	6.00-20.00	0.03-0.05	Low	.10	.24		
WyB2:										
Wynn------------	0-14	17-27	1.30-1.50	0.60-2.00	0.17-0.22	Low	.37	.37	4	6
	14-29	27-37	1.40-1.70	0.20-0.60	0.16-0.19	Moderate	.37	.49		
	29-35	---	---	0.00-0.06	---	---	---	---		
XeA:										
Xenia-----------	0-11	11-25	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	5	5
	11-35	27-35	1.45-1.65	0.60-2.00	0.16-0.19	Moderate	.37	.37		
	35-45	24-35	1.45-1.65	0.20-0.60	0.16-0.19	Moderate	.37	.43		
	45-78	12-25	1.70-1.90	0.20-0.60	0.06-0.10	Low	.37	.43		
XeB:										
Xenia-----------	0-11	11-25	1.30-1.50	0.60-2.00	0.17-0.20	Low	.37	.37	5	5
	11-35	27-35	1.45-1.65	0.60-2.00	0.16-0.19	Moderate	.37	.37		
	35-45	24-35	1.45-1.65	0.20-0.60	0.16-0.19	Moderate	.37	.43		
	45-78	12-25	1.70-1.90	0.20-0.60	0.06-0.10	Low	.37	.43		

TABLE 30.--CHEMICAL PROPERTIES OF THE SOILS

(Absence of an entry indicates that data were not estimated. See text on page 179 for additional information.)

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
Ag:					
Algiers---------	0-20	6.1-7.3	2.0-4.0	10-24	0
	20-60	6.1-7.3	0.1-1.0	10-22	5-10
Bo:					
Borrow pits-----	---	---	---	---	---
Bp:					
Brookston-------	0-12	6.1-7.3	3.0-5.0	20-24	0
	12-36	6.1-7.3	0.5-2.0	8.0-20	0
	36-60	7.4-8.4	0.1-1.0	3.0-16	5-35
Br:					
Brookston-------	0-12	6.1-7.3	3.0-5.0	20-24	0
	12-44	6.1-7.3	0.5-2.0	8.0-20	0
	44-72	7.4-8.4	0.1-1.0	3.0-16	5-35
Bs:					
Brookston-------	0-12	6.1-7.3	3.0-5.0	27-35	0
	12-36	6.1-7.3	0.5-2.0	8.0-20	0
	36-60	7.4-8.4	0.1-1.0	3.0-16	5-35
Bu:					
Brookston-------	0-12	6.1-7.3	3.0-5.0	27-35	0
	12-36	6.1-7.3	0.5-2.0	8.0-20	0
	36-60	7.4-8.4	0.1-1.0	3.0-16	5-35
Urban land------	---	---	---	---	---
Ca:					
Carlisle--------	0-82	6.6-7.3	70-99	150-230	0
	82-90	7.4-8.4	0.0-1.0	4.0-30	0-20
CeA:					
Celina----------	0-8	5.1-6.5	1.0-3.0	9.0-19	0
	8-30	5.1-6.5	0.5-1.0	18-32	0-15
	30-60	7.4-8.4	0.3-0.5	8.0-14	25-45
CeB:					
Celina----------	0-8	5.1-6.5	1.0-3.0	9.0-19	0
	8-30	5.1-6.5	0.5-1.0	18-32	0-15
	30-60	7.4-8.4	0.3-0.5	8.0-14	25-45
CeB2:					
Celina----------	0-8	5.1-6.5	1.0-3.0	9.0-19	0
	8-30	5.1-6.5	0.5-1.0	18-32	0-15
	30-60	7.4-8.4	0.3-0.5	8.0-14	25-45
ClB:					
Celina----------	0-8	5.1-6.5	1.0-3.0	9.0-19	0
	8-30	5.0-6.5	0.5-1.0	18-32	0-15
	30-60	7.4-8.4	0.3-0.5	8.0-14	25-45
CoA:					
Corwin----------	0-9	5.1-6.5	2.0-4.0	10-24	0
	9-36	5.6-7.3	0.0-1.0	11-23	0-15
	36-60	7.4-8.4	0.0-1.0	12-23	10-30
CoB:					
Corwin----------	0-9	5.1-6.5	2.0-4.0	10-24	0
	9-36	5.6-7.3	0.0-1.0	11-23	0-15
	36-60	7.4-8.4	0.0-1.0	12-23	10-30

TABLE 30.--CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
CsA:					
Crosby----------	0-8	5.1-6.5	1.0-3.0	6.0-20	0
	8-26	5.1-7.3	0.0-0.5	7.0-18	0
	26-60	7.4-8.4	0.0-0.5	15-29	10-40
CtB:					
Crosby----------	0-8	5.1-6.5	1.0-3.0	6.0-20	0
	8-26	5.1-7.3	0.0-0.5	7.0-18	0
	26-60	7.4-8.4	0.0-0.5	15-29	10-40
Celina----------	0-8	5.1-6.5	1.0-3.0	9.0-19	0
	8-30	5.1-6.5	0.5-1.0	18-32	0-15
	30-60	7.4-8.4	0.3-0.5	8.0-14	25-45
Cu:					
Crosby----------	0-8	5.1-6.5	1.0-3.0	6.0-20	0
	8-26	5.1-7.3	0.0-0.5	7.0-18	0
	26-60	7.4-8.4	0.0-0.5	15-29	10-40
Urban land------	---	---	---	---	---
DaB:					
Dana------------	0-7	5.6-6.5	3.0-5.0	10-25	0
	7-28	6.1-7.3	0.5-1.0	10-25	0
	28-36	6.6-7.3	0.2-0.5	10-20	0-10
	36-60	7.4-8.4	0.2-0.5	5.0-15	15-25
FaE2:					
Fairmount-------	0-4	6.6-7.3	2.0-4.0	13-30	0
	4-16	6.6-7.8	0.5-1.0	14-38	0-10
	16-18	---	---	---	---
FaF2:					
Fairmount-------	0-3	6.6-7.3	2.0-4.0	13-30	0
	3-15	6.6-7.8	0.5-1.0	14-38	0-10
	15-17	---	---	---	---
FcA:					
Fincastle-------	0-19	5.1-6.5	1.0-3.0	6.0-20	0
	19-38	5.1-7.3	0.0-0.5	9.0-23	0-25
	38-60	7.4-8.4	0.0-0.5	8.0-16	15-35
FkA:					
Fox-------------	0-11	5.1-6.5	1.0-3.0	3.0-20	0
	11-29	5.6-6.5	0.0-0.5	4.0-30	0-45
	29-60	7.4-8.4	0.0-0.5	0.0-3.0	5-45
FkB:					
Fox-------------	0-11	5.1-6.5	1.0-3.0	3.0-20	0
	11-29	5.6-6.5	0.0-0.5	4.0-30	0-45
	29-60	7.4-8.4	0.0-0.5	0.0-3.0	5-45
FlA:					
Fox-------------	0-11	5.1-6.5	1.0-3.0	4.0-20	0
	11-29	5.6-6.5	0.0-0.5	4.0-30	0-45
	29-60	7.4-8.4	0.0-0.5	0.0-3.0	5-45
FlB:					
Fox-------------	0-11	5.1-6.5	1.0-3.0	4.0-20	0
	11-29	5.6-6.5	0.0-0.5	4.0-30	0-45
	29-60	7.4-8.4	0.0-0.5	0.0-3.0	5-45

TABLE 30.--CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
FlC2:					
Fox	0-3	5.1-6.5	1.0-3.0	4.0-20	0
	3-21	5.6-6.5	0.0-0.5	4.0-30	0-45
	21-60	7.4-8.4	0.0-0.5	0.0-3.0	5-45
FmA:					
Fox	0-11	5.1-6.5	1.0-3.0	4.0-20	0
	11-29	5.6-6.5	0.0-0.5	4.0-30	0-45
	29-60	7.4-8.4	0.0-0.5	0.0-3.0	5-45
FmB:					
Fox	0-11	5.1-6.5	1.0-3.0	4.0-20	0
	11-29	5.6-6.5	0.0-0.5	4.0-30	0-45
	29-60	7.4-8.4	0.0-0.5	0.0-3.0	5-45
FmC2:					
Fox	0-3	5.1-6.5	1.0-3.0	4.0-20	0
	3-21	5.6-6.5	0.0-0.5	4.0-30	0-45
	21-60	7.4-8.4	0.0-0.5	0.0-3.0	5-45
FmD2:					
Fox	0-3	5.1-6.5	1.0-3.0	4.0-20	0
	3-21	5.6-6.5	0.0-0.5	4.0-30	0-45
	21-60	7.4-8.4	0.0-0.5	0.0-3.0	5-45
FsC3:					
Fox	0-3	5.1-6.5	0.5-2.0	5.0-30	0-45
	3-18	5.6-6.5	0.0-0.5	4.0-30	0-45
	18-60	7.4-8.4	0.0-0.5	0.0-3.0	5-45
FuB:					
Fox	0-11	5.1-6.5	1.0-3.0	4.0-20	0
	11-29	5.6-6.5	0.0-0.5	4.0-30	0-45
	29-60	7.4-8.4	0.0-0.5	0.0-3.0	5-45
Urban land	---	---	---	---	---
FuC:					
Urban land	---	---	---	---	---
Fox	0-3	5.1-6.5	1.0-3.0	4.0-20	0
	3-21	5.6-6.5	0.0-0.5	4.0-30	0-45
	21-60	7.4-8.4	0.0-0.5	0.0-3.0	5-45
FuF:					
Urban land	---	---	---	---	---
Fox	0-3	5.1-6.5	1.0-3.0	4.0-20	0
	3-18	5.6-6.5	0.0-0.5	4.0-30	0-45
	18-60	7.4-8.4	0.0-0.5	0.0-3.0	5-45
Gp:					
Gravel pits	---	---	---	---	---
HeE2:					
Hennepin	0-4	6.1-6.5	1.0-2.0	14-22	0-20
	4-12	6.1-7.3	0.0-0.5	11-19	0-40
	12-60	7.4-8.4	0.0-0.5	11-18	10-45
Miamian	0-4	5.1-6.5	1.0-3.0	10-18	0
	4-25	5.1-6.5	0.3-1.0	17-28	0-15
	25-60	7.4-8.4	0.1-0.5	7.0-16	25-45

TABLE 30.--CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
HeF2:					
Hennepin--------	0-3	6.1-6.5	1.0-2.0	14-22	0-20
	3-12	6.1-7.3	0.0-0.5	11-19	0-40
	12-60	7.4-8.4	0.0-0.5	11-18	10-45
Miamian---------	0-4	5.1-6.5	1.0-3.0	10-18	0
	4-25	5.1-6.5	0.3-1.0	17-28	0-15
	25-60	7.4-8.4	0.1-0.5	7.0-16	25-45
HmF3:					
Hennepin--------	0-6	6.1-7.3	0.0-0.5	11-19	0-40
	6-60	7.4-8.4	0.0-0.5	11-18	10-45
Miamian---------	0-21	5.1-6.5	0.5-2.0	17-28	0-15
	21-60	7.4-8.4	0.3-1.0	7.0-16	25-45
KeA:					
Kendallville----	0-9	5.1-7.3	1.0-3.0	8.0-20	0
	9-26	5.1-6.0	0.2-0.5	8.0-18	0
	26-36	5.6-7.3	0.1-0.3	10-28	0
	36-60	7.4-8.4	0.0-0.3	7.0-18	20-45
KeB:					
Kendallville----	0-9	5.1-7.3	1.0-3.0	8.0-20	0
	9-26	5.1-6.0	0.2-0.5	8.0-18	0
	26-36	5.6-7.3	0.1-0.3	10-28	0
	36-60	7.4-8.4	0.0-0.3	7.0-18	20-45
KeC2:					
Kendallville----	0-4	5.1-7.3	1.0-3.0	4.0-18	0
	4-21	5.1-6.0	0.2-0.5	8.0-18	0
	21-36	5.6-7.3	0.1-0.3	10-28	0
	36-60	7.4-8.4	0.0-0.5	7.0-18	20-45
Ld:					
Landes----------	0-19	6.6-7.8	1.0-2.0	5.0-16	0
	19-42	6.6-7.8	0.0-1.0	3.0-13	0-10
	42-60	7.4-8.4	0.0-1.0	3.0-13	0-20
Lg:					
Lanier----------	0-20	6.6-7.8	1.0-4.0	4.0-17	0-15
	20-60	7.4-8.4	0.0-1.0	1.0-5.0	15-40
LsB:					
Lewisburg-------	0-7	5.6-7.3	1.0-3.0	8.0-19	0
	7-15	6.1-7.3	0.5-1.0	14-28	0-10
	15-60	7.4-8.4	0.1-0.5	8.0-16	30-47
LxC2:					
Lorenzo---------	0-4	6.6-7.3	2.0-4.0	11-19	0
	4-15	6.6-7.3	0.0-1.0	10-22	0-10
	15-60	7.4-8.4	0.0-1.0	1.0-3.0	10-45
Rodman----------	0-3	6.6-7.8	2.0-4.0	5.0-16	0-15
	3-9	7.4-8.4	0.0-2.0	1.0-14	0-25
	9-60	7.4-8.4	0.0-1.0	1.0-6.0	10-45

TABLE 30.--CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
LxD2:					
Lorenzo---------	0-4	6.6-7.3	2.0-4.0	11-19	0
	4-15	6.6-7.3	0.0-1.0	10-22	0-10
	15-60	7.4-8.4	0.0-1.0	1.0-3.0	10-45
Rodman----------	0-3	6.6-7.8	2.0-4.0	5.0-16	0-15
	3-9	7.4-8.4	0.0-2.0	1.0-14	0-25
	9-60	7.4-8.4	0.0-1.0	1.0-6.0	10-45
Mb:					
Made land-------	---	---	---	---	---
Md:					
Medway----------	0-20	6.6-7.8	3.0-6.0	13-28	0
	20-29	6.6-7.8	0.5-1.0	7.0-17	0-5
	29-45	6.6-7.8	0.5-1.0	4.0-18	0-10
	45-60	7.4-8.4	0.0-0.5	2.0-18	10-20
MlA:					
Miamian---------	0-7	5.1-6.5	1.0-3.0	10-18	0
	7-24	5.1-6.5	0.3-1.0	17-28	0-15
	24-60	7.4-8.4	0.1-0.5	7.0-16	25-45
MlB:					
Miamian---------	0-7	5.1-6.5	1.0-3.0	10-18	0
	7-24	5.1-6.5	0.3-1.0	17-28	0-15
	24-60	7.4-8.4	0.1-0.5	7.0-16	25-45
MlB2:					
Miamian---------	0-7	5.1-6.5	0.5-2.0	10-18	0
	7-24	5.1-6.5	0.3-1.0	17-28	0-15
	24-60	7.4-8.4	0.1-0.5	7.0-16	25-45
MlC2:					
Miamian---------	0-7	5.1-6.5	0.5-2.0	10-18	0
	7-24	5.1-6.5	0.3-1.0	17-28	0-15
	24-60	7.4-8.4	0.1-0.5	7.0-16	25-45
MlD2:					
Miamian---------	0-4	5.1-6.5	0.5-2.0	10-18	0
	4-21	5.1-6.5	0.3-1.0	17-28	0-15
	21-60	7.4-8.4	0.1-0.5	7.0-16	25-45
MmB:					
Miamian---------	0-7	5.1-6.5	1.0-3.0	10-18	0
	7-24	5.1-6.5	0.3-1.0	17-28	0-15
	24-60	7.4-8.4	0.1-0.5	7.0-16	25-45
MnB3:					
Miamian---------	0-5	5.1-6.5	0.0-1.0	14-20	0-10
	5-22	5.1-6.5	0.3-1.0	17-28	0-15
	22-60	7.4-8.4	0.1-0.5	7.0-16	25-45
MnC3:					
Miamian---------	0-5	5.1-6.5	0.0-1.0	14-20	0-10
	5-22	5.1-6.5	0.3-1.0	17-28	0-15
	22-60	7.4-8.4	0.1-0.5	7.0-16	25-45
MnD3:					
Miamian---------	0-4	5.1-6.5	0.0-1.0	14-20	0-10
	4-21	5.1-6.5	0.3-1.0	17-28	0-15
	21-60	7.4-8.4	0.1-0.5	7.0-16	25-45

TABLE 30.--CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
MoB:					
Miamian---------	0-7	5.1-6.5	1.0-3.0	10-18	0
	7-24	5.1-6.5	0.3-1.0	17-28	0-15
	24-60	7.4-8.4	0.1-0.5	7.0-16	25-45
Urban land------	---	---	---	---	---
MoC:					
Miamian---------	0-7	5.1-6.5	1.0-3.0	10-18	0
	7-24	5.1-6.5	0.3-1.0	17-28	0-15
	24-60	7.4-8.4	0.1-0.5	7.0-16	25-45
Urban land------	---	---	---	---	---
MoE:					
Miamian---------	0-6	5.1-6.5	1.0-3.0	10-18	0
	6-23	5.1-6.5	0.3-1.0	17-28	0-15
	23-60	7.4-8.4	0.1-0.5	7.0-16	25-45
Urban land------	---	---	---	---	---
MrA:					
Millsdale-------	0-14	5.6-7.3	4.0-7.0	20-36	0
	14-36	6.6-7.8	0.5-2.0	15-30	0-10
	36-40	---	---	---	---
MsA:					
Milton----------	0-9	5.6-6.5	1.0-3.0	10-22	0
	9-25	5.6-6.5	0.5-1.0	16-30	0
	25-28	6.6-7.8	0.1-0.5	10-27	0-15
	28-30	---	---	---	---
MsB:					
Milton----------	0-9	5.6-6.5	1.0-3.0	10-22	0
	9-25	5.6-6.5	0.5-1.0	16-30	0
	25-28	6.6-7.8	0.1-0.5	10-27	5-15
	28-35	---	---	---	---
MsB2:					
Milton----------	0-9	5.6-6.5	1.0-3.0	10-22	0
	9-25	5.6-6.5	0.3-1.0	16-30	0
	25-28	6.6-7.8	0.1-0.3	10-27	5-15
	28-30	---	---	---	---
MsC2:					
Milton----------	0-9	5.6-6.5	1.0-3.0	10-22	0
	9-22	5.6-6.5	0.3-1.0	16-30	0
	22-25	6.6-7.8	0.1-0.3	10-27	5-15
	25-27	---	---	---	---
MsD2:					
Milton----------	0-5	4.5-7.3	1.0-3.0	10-22	0
	5-21	4.5-7.8	0.3-1.0	16-30	0
	21-24	6.1-8.4	0.1-0.3	10-27	5-15
	24-26	---	---	---	---
MtD3:					
Milton----------	0-4	5.6-6.5	0.0-1.0	16-24	0
	4-20	5.6-6.5	0.3-1.0	16-30	0
	20-23	6.1-8.4	0.1-0.3	10-27	5-15
	23-25	---	---	---	---

TABLE 30.--CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
MuB:					
Milton----------	0-9	5.6-6.5	1.0-3.0	10-22	0
	9-25	5.6-6.5	0.3-1.0	16-30	0
	25-28	6.6-7.8	0.1-0.3	10-27	5-15
	28-30	---	---	---	---
Urban land------	---	---	---	---	---
MuC:					
Milton----------	0-9	5.6-6.5	1.0-3.0	10-22	0
	9-25	5.6-6.5	0.3-1.0	16-30	0
	25-28	6.6-7.8	0.1-0.3	10-27	5-15
	28-30	---	---	---	---
Urban land------	---	---	---	---	---
MuD:					
Milton----------	0-9	5.6-6.5	1.0-3.0	10-22	0
	9-25	5.6-6.5	0.3-1.0	16-30	0
	25-28	6.6-7.8	0.1-0.3	10-27	5-15
	28-30	---	---	---	---
Urban land------	---	---	---	---	---
Mv:					
Montgomery------	0-8	6.1-7.3	3.0-6.0	20-36	0-5
	8-33	6.6-7.3	0.0-1.0	20-35	0-10
	33-60	6.6-8.4	0.0-0.5	20-35	5-35
OcA:					
Ockley----------	0-13	5.6-7.3	1.0-3.0	3.0-15	0
	13-40	5.6-6.0	0.0-0.5	5.0-15	0
	40-48	6.1-7.3	0.0-0.5	2.0-15	0-10
	48-60	7.4-8.4	0.0-0.2	1.0-3.0	10-40
OcB:					
Ockley----------	0-13	5.6-7.3	1.0-3.0	3.0-15	0
	13-40	5.6-6.0	0.0-0.5	5.0-15	0
	40-48	6.1-7.3	0.0-0.5	2.0-15	0-10
	48-60	7.4-8.4	0.0-0.2	1.0-3.0	10-40
PlB:					
Plattville------	0-10	5.6-6.5	3.0-5.0	18-26	0
	10-23	5.6-6.5	0.5-1.0	16-23	0
	23-27	6.6-7.8	0.2-0.5	15-22	0-5
	27-29	---	---	---	---
PlC:					
Plattville------	0-10	5.6-6.5	2.0-4.0	18-26	0
	10-23	5.6-6.5	0.0-1.0	16-23	0
	23-27	6.6-7.8	0.2-0.5	15-22	0-5
	27-29	---	---	---	---
PyA:					
Pyrmont---------	0-9	5.6-6.5	1.0-3.0	8.0-22	0
	9-16	6.1-7.3	0.0-1.0	14-26	0
	16-60	7.4-8.4	0.0-0.5	6.0-16	10-40
Qu:					
Quarries--------	---	---	---	---	---

TABLE 30.--CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
RcA:					
Randolph--------	0-14	5.6-7.3	1.0-3.0	8.0-22	0
	14-23	6.1-7.3	0.5-1.0	14-30	0-45
	23-31	6.6-7.8	0.0-0.5	8.0-20	5-25
	31-35	---	---	---	---
ReB:					
Ritchey---------	0-6	5.6-7.3	1.0-3.0	13-22	0
	6-18	6.1-7.3	0.5-1.0	17-23	0-20
	18-20	---	---	---	---
ReB2:					
Ritchey---------	0-4	5.6-7.3	1.0-3.0	13-22	0
	4-14	6.1-7.3	0.5-1.0	17-23	0-20
	14-16	---	---	---	---
ReC2:					
Ritchey---------	0-4	5.6-7.3	1.0-3.0	13-22	0
	4-14	6.1-7.3	0.5-1.0	17-23	0-20
	14-16	---	---	---	---
ReE2:					
Ritchey---------	0-3	5.6-7.3	1.0-3.0	13-22	0
	3-12	6.1-7.3	0.5-1.0	17-23	0-20
	12-14	---	---	---	---
ReF2:					
Ritchey---------	0-2	5.6-7.3	1.0-3.0	13-22	0
	2-11	6.1-7.3	0.5-1.0	17-23	0-20
	11-13	---	---	---	---
RfD3:					
Ritchey---------	0-9	6.1-7.3	0.5-1.0	17-23	0-20
	9-11	---	---	---	---
Rh:					
Riverwash-------	---	---	---	---	---
RlE2:					
Rodman----------	0-4	6.6-7.8	2.0-4.0	5.0-16	0-15
	4-10	7.4-8.4	0.0-2.0	1.0-14	0-25
	10-60	7.4-8.4	0.0-1.0	1.0-6.0	10-45
Fox-------------	0-3	5.1-6.5	1.0-3.0	4.0-20	0
	3-21	5.1-7.3	0.0-0.5	4.0-30	0-45
	21-60	7.4-8.4	0.0-0.5	0.0-3.0	5-45
RlF2:					
Rodman----------	0-3	6.6-7.8	2.0-4.0	5.0-16	0-15
	3-9	7.4-8.4	0.0-2.0	1.0-14	0-25
	9-60	7.4-8.4	0.0-1.0	1.0-6.0	10-45
Fox-------------	0-3	5.1-6.5	1.0-3.0	4.0-20	0
	3-21	5.1-7.3	0.0-0.5	4.0-30	0-45
	21-60	7.4-8.4	0.0-0.5	0.0-3.0	5-45
Rs:					
Ross------------	0-22	6.6-7.8	3.0-5.0	12-26	0
	22-34	6.6-7.8	1.0-3.0	8.0-20	0-20
	34-60	6.6-7.8	0.5-2.0	2.0-15	0-30

TABLE 30.--CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
Rt:					
Urban land	---	---	---	---	---
Ross	0-22	6.6-7.8	3.0-5.0	12-26	0
	22-34	6.6-7.8	1.0-3.0	8.0-20	0-20
	34-60	6.6-7.8	0.5-2.0	2.0-15	0-30
RuB:					
Russell	0-12	5.6-6.5	0.5-2.0	5.0-19	0
	12-24	5.1-6.0	0.5-1.0	11-22	0
	24-39	5.6-7.3	0.0-1.0	9.0-22	0
	39-60	7.4-8.4	0.0-0.5	5.0-18	10-35
RvC2:					
Russell	0-12	5.6-6.5	0.5-2.0	5.0-19	0
	12-24	5.1-6.0	0.5-1.0	11-22	0
	24-39	5.6-7.3	0.0-1.0	9.0-22	0
	39-60	7.4-8.4	0.0-0.5	5.0-18	10-35
Miamian	0-7	5.1-6.5	1.0-3.0	10-18	0
	7-24	5.1-6.5	0.3-1.0	17-28	0-15
	24-60	7.4-8.4	0.1-0.5	7.0-16	25-45
RvD2:					
Russell	0-12	5.6-6.5	0.5-2.0	5.0-19	0
	12-24	5.1-6.0	0.5-1.0	11-22	0
	24-39	5.6-6.5	0.3-1.0	9.0-22	0
	39-60	7.4-8.4	0.0-0.5	5.0-18	10-35
Miamian	0-7	5.1-6.5	1.0-3.0	10-18	0
	7-24	5.1-6.5	0.3-1.0	17-28	0-15
	24-60	7.4-8.4	0.1-0.5	7.0-16	25-45
Sh:					
Shoals	0-8	6.1-7.8	1.0-3.0	12-27	0-5
	8-13	6.1-7.8	0.5-2.0	8.0-24	0-10
	13-60	6.6-7.8	0.5-1.0	3.0-19	0-25
So:					
Sloan	0-12	6.1-7.3	3.0-6.0	13-26	0
	12-25	6.6-7.8	0.5-1.0	10-20	0-20
	25-60	6.6-7.8	0.1-0.5	4.0-18	5-40
ThA:					
Thackery	0-15	5.6-7.3	1.0-3.0	8.0-21	0
	15-30	5.6-6.5	0.3-0.5	10-21	0
	30-45	6.1-7.3	0.1-0.3	1.0-6.0	30-55
	45-60	7.4-8.4	0.1-0.3	1.0-6.0	30-55
TpA:					
Tippecanoe	0-12	5.6-6.5	2.0-5.0	11-27	0
	12-36	5.6-7.3	0.5-1.0	9.0-23	0
	36-45	6.1-7.3	0.0-1.0	6.0-16	0
	45-60	7.4-8.4	0.0-0.5	1.0-6.0	5-20
Ua:					
Urban land	---	---	---	---	---
Ud:					
Udorthents	---	---	---	---	---
Ug:					
Urban land	---	---	---	---	---

TABLE 30.--CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
Um:					
Urban land	---	---	---	---	---
WaA:					
Warsaw	0-6	5.6-7.3	2.0-5.0	10-25	0
	6-25	5.6-7.3	0.5-2.0	7.0-22	0
	25-32	6.6-7.3	0.5-2.0	9.0-22	0-10
	32-60	7.4-8.4	0.0-1.0	1.0-7.0	15-25
WaB:					
Warsaw	0-6	5.6-7.3	2.0-5.0	10-25	0
	6-25	5.6-7.3	0.5-2.0	7.0-22	0
	25-32	6.1-8.4	0.5-2.0	9.0-22	0-10
	32-60	7.4-8.4	0.0-1.0	1.0-7.0	15-25
WeA:					
Wea	0-14	5.6-7.3	2.0-5.0	8.0-24	0
	14-47	6.1-7.3	0.5-2.0	9.0-24	0-10
	47-60	7.4-8.4	0.0-1.0	0.0-5.0	0-35
WeB:					
Wea	0-14	5.6-7.3	2.0-5.0	8.0-24	0
	14-47	6.1-7.3	0.5-2.0	9.0-24	0-10
	47-60	7.4-8.4	0.0-1.0	0.0-5.0	0-35
Ws:					
Westland	0-8	5.6-6.3	2.0-6.0	15-31	0
	8-28	5.6-7.3	0.5-2.0	9.0-22	0
	28-45	6.6-7.8	0.5-2.0	3.0-15	0-10
	45-60	7.4-8.4	0.2-1.0	0.0-2.0	5-35
WyB2:					
Wynn	0-14	5.6-6.5	1.0-3.0	9.0-22	0
	14-29	6.1-7.3	0.3-0.5	14-29	5-15
	29-35	---	---	---	---
XeA:					
Xenia	0-11	5.6-6.5	1.0-3.0	6.0-20	0
	11-35	5.1-6.5	0.2-1.0	10-23	0
	35-45	6.1-7.3	0.0-1.0	9.0-23	0-10
	45-78	7.4-8.4	0.0-0.5	4.0-13	15-50
XeB:					
Xenia	0-11	5.6-6.5	1.0-3.0	6.0-20	0
	11-35	5.1-6.5	0.2-1.0	10-23	0
	35-45	6.1-7.8	0.0-1.0	9.0-23	0-10
	45-78	7.4-8.4	0.0-0.5	4.0-13	15-50

TABLE 31.--WATER FEATURES

(Depths of layers are in feet. 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 text on page 180 for additional information.)

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
Ag:										
Algiers	C/D	Jan-Jun	0.0-1.5	>6.0	Apparent	---	---	None	Very brief	Occasional
		Jul-Nov	---	---	---	---	---	None	---	None
		Dec	---	---	---	---	---	None	Very brief	Occasional
Bo:										
Borrow pits	---	Jan-Dec	---	---	---	---	---	---	---	None
Bp:										
Brookston	B/D	Jan-May	0	>6.0	Apparent	0.0-0.5	Long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0	>6.0	Apparent	0.0-0.5	Long	Frequent	---	None
Br:										
Brookston	B/D	Jan-May	0	>6.0	Apparent	0.0-0.5	Long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0	>6.0	Apparent	0.0-0.5	Long	Frequent	---	None
Bs:										
Brookston	B/D	Jan-May	0	>6.0	Apparent	0.0-0.5	Long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0	>6.0	Apparent	0.0-0.5	Long	Frequent	---	None
Bu:										
Brookston	B/D	Jan-May	0	>6.0	Apparent	0.0-0.5	Long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0	>6.0	Apparent	0.0-0.5	Long	Frequent	---	None
Urban land	---	Jan-Dec	---	---	---	---	---	---	---	None
Ca:										
Carlisle	A/D	Jan-Jun	0	>6.0	Apparent	0.0-0.5	Very long	Frequent	---	None
		Jul-Aug	---	---	---	---	---	None	---	None
		Sep-Dec	0	>6.0	Apparent	0.0-0.5	Very long	Frequent	---	None
CeA:										
Celina	C	Jan-Apr	1.5-3.0	1.5-3.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CeB:										
Celina	C	Jan-Apr	1.5-3.0	1.5-3.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CeB2:										
Celina	C	Jan-Apr	1.5-3.0	1.5-3.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
ClB:										
Celina	C	Jan-Apr	1.5-3.0	1.5-3.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CoA:										
Corwin	B	Jan-Apr	1.5-3.0	>6.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CoB:										
Corwin	B	Jan-Apr	1.5-3.0	>6.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CsA:										
Crosby	C	Jan-Apr	0.5-1.5	1.0-3.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CtB:										
Crosby	C	Jan-Apr	0.5-1.5	1.0-3.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Celina	C	Jan-Apr	1.5-3.0	1.5-3.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None

TABLE 31.--WATER FEATURES--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
Cu:										
Crosby----------	C	Jan-Apr	0.5-1.5	1.0-3.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Urban land------	---	Jan-Dec	---	---	---	---	---	---	---	None
DaB:										
Dana------------	B	Jan-Feb	---	---	---	---	---	None	---	None
		Mar-Apr	1.5-3.0	3.0-6.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
FaE2:										
Fairmount-------	D	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
FaF2:										
Fairmount-------	D	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
FcA:										
Fincastle-------	C	Jan-Apr	0.5-1.5	>6.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
FkA:										
Fox-------------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
FkB:										
Fox-------------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
FlA:										
Fox-------------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
FlB:										
Fox-------------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
FlC2:										
Fox-------------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
FmA:										
Fox-------------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
FmB:										
Fox-------------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
FmC2:										
Fox-------------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
FmD2:										
Fox-------------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
FsC3:										
Fox-------------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
FuB:										
Fox-------------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Urban land------	---	Jan-Dec	---	---	---	---	---	---	---	None
FuC:										
Urban land------	---	Jan-Dec	---	---	---	---	---	---	---	None
Fox-------------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
FuF:										
Urban land------	---	Jan-Dec	---	---	---	---	---	---	---	None
Fox-------------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
HeE2:										
Hennepin--------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Miamian---------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
HeF2:										
Hennepin--------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Miamian---------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None

TABLE 31.--WATER FEATURES--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
HmF3:										
Hennepin--------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Miamian---------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
KeA:										
Kendallville----	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
KeB:										
Kendallville----	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
KeC2:										
Kendallville----	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Ld:										
Landes----------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	Brief	Occasional
Lg:										
Lanier----------	A	Jan-Jun	>3.0	>3.0	---	---	---	None	Brief	Occasional
		Jul-Oct	>3.0	>3.0	---	---	---	None	---	None
		Nov-Dec	>3.0	>3.0	---	---	---	None	Brief	Occasional
LsB:										
Lewisburg-------	C	Jan-Apr	1.5-3.0	1.5-5.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
LxC2:										
Lorenzo---------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Rodman----------	A	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
LxD2:										
Lorenzo---------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Rodman----------	A	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Md:										
Medway----------	B	Jan-Apr	1.5-3.0	>6.0	Apparent	---	---	None	Brief	Occasional
		May-Jun	---	---	---	---	---	None	Brief	Occasional
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	---	---	---	---	---	None	Brief	Occasional
MlA:										
Miamian---------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
MlB:										
Miamian---------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
MlB2:										
Miamian---------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
MlC2:										
Miamian---------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
MlD2:										
Miamian---------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
MmB:										
Miamian---------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
MnB3:										
Miamian---------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
MnC3:										
Miamian---------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
MnD3:										
Miamian---------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
MoB:										
Miamian---------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Urban land------	---	Jan-Dec	---	---	---	---	---	---	---	None

TABLE 31.--WATER FEATURES--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
MoC:										
Miamian----------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Urban land-------	---	Jan-Dec	---	---	---	---	---	---	---	None
MoE:										
Miamian----------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Urban land-------	---	Jan-Dec	---	---	---	---	---	---	---	None
MrA:										
Millsdale--------	B/D	Jan-May	0.0-0.5	>6.0	Apparent	0.0-1.0	Long	Frequent	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
MsA:										
Milton-----------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
MsB:										
Milton-----------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
MsB2:										
Milton-----------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
MsC2:										
Milton-----------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
MsD2:										
Milton-----------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
MtD3:										
Milton-----------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
MuB:										
Milton-----------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Urban land-------	---	Jan-Dec	---	---	---	---	---	---	---	None
MuC:										
Milton-----------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Urban land-------	---	Jan-Dec	---	---	---	---	---	---	---	None
MuD:										
Milton-----------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Urban land-------	---	Jan-Dec	---	---	---	---	---	---	---	None
Mv:										
Montgomery-------	D	Jan-May	0.0-0.5	>6.0	Apparent	0.0-1.0	Long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.0-0.5	>6.0	Apparent	0.0-1.0	Long	Frequent	---	None
OcA:										
Ockley-----------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
OcB:										
Ockley-----------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
PlB:										
Plattville-------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
PlC:										
Plattville-------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
PyA:										
Pyrmont----------	D	Jan-May	0.5-1.5	1.0-2.0	Perched	---	---	None	---	None
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.5-1.5	1.0-2.0	Perched	---	---	None	---	None
Qu:										
Quarries---------	---	Jan-Dec	---	---	---	---	---	---	---	None

TABLE 31.--WATER FEATURES--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
RcA:										
Randolph--------	C	Jan-Apr	0.5-1.5	1.0-2.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
ReB:										
Ritchey---------	D	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
ReB2:										
Ritchey---------	D	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
ReC2:										
Ritchey---------	D	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
ReE2:										
Ritchey---------	D	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
ReF2:										
Ritchey---------	D	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
RfD3:										
Ritchey---------	D	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
RlE2:										
Rodman----------	A	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Fox-------------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
RlF2:										
Rodman----------	A	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Fox-------------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Rs:										
Ross------------	B	Jan-Jun	>3.0	>3.0	---	---	---	None	Brief	Occasional
		Jul-Oct	>3.0	>3.0	---	---	---	None	---	None
		Nov-Dec	>3.0	>3.0	---	---	---	None	Brief	Occasional
Rt:										
Urban land------	---	Jan-Dec	---	---	---	---	---	---	---	None
Ross------------	B	Jan-Jun	>3.0	>3.0	---	---	---	None	Brief	Occasional
		Jul-Oct	>3.0	>3.0	---	---	---	None	---	None
		Nov-Dec	>3.0	>3.0	---	---	---	None	Brief	Occasional
RuB:										
Russell---------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
RvC2:										
Russell---------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Miamian---------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
RvD2:										
Russell---------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Miamian---------	C	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Sh:										
Shoals----------	C	Jan-Apr	0.5-1.5	>6.0	Apparent	---	---	None	Brief	Occasional
		May-Jun	---	---	---	---	---	None	Brief	Occasional
		Jul-Sep	---	---	---	---	---	None	---	None
		Oct-Dec	---	---	---	---	---	None	Brief	Occasional
So:										
Sloan-----------	B/D	Jan-Jun	0	>6.0	Apparent	0.0-1.0	Long	Frequent	Long	Frequent
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0	>6.0	Apparent	0.0-1.0	Long	Frequent	Long	Frequent
ThA:										
Thackery--------	B	Jan-Dec	1.5-3.0	>6.0	Apparent	---	---	None	---	None
TpA:										
Tippecanoe------	B	Jan-Apr	1.5-3.0	>6.0	Apparent	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	1.5-3.0	>6.0	Apparent	---	---	None	---	None

TABLE 31.--WATER FEATURES--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
Ua:										
Urban land------	---	Jan-Dec	---	---	---	---	---	---	---	None
Ud:										
Udorthents------	---	Jan-Dec	---	---	---	---	---	---	---	None
Ug:										
Urban land------	---	Jan-Dec	---	---	---	---	---	---	---	None
Um:										
Urban land------	---	Jan-Dec	---	---	---	---	---	---	---	None
WaA:										
Warsaw----------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
WaB:										
Warsaw----------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
WeA:										
Wea-------------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
WeB:										
Wea-------------	B	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Ws:										
Westland--------	B/D	Jan-May	0.0-0.5	>6.0	Apparent	0.0-0.5	Long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.0-0.5	>6.0	Apparent	0.0-0.5	Long	Frequent	---	None
WyB2:										
Wynn------------	B	Jan-Dec	>3.0	>6.0	Apparent	---	---	None	---	None
XeA:										
Xenia-----------	B	Jan-Apr	1.5-3.0	>6.0	Apparent	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	1.5-3.0	>6.0	Apparent	---	---	None	---	None
XeB:										
Xenia-----------	B	Jan-Apr	1.5-3.0	>6.0	Apparent	---	---	None	---	None
		May-Nov	---	---	---	---	---	None	---	None
		Dec	1.5-3.0	>6.0	Apparent	---	---	None	---	None

TABLE 32.--SOIL FEATURES

(See text on page 181 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				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
Ag:									
Algiers	---	> 60	---	---		---	High	High	Low.
Bo:									
Borrow pits	---	---	---	---		---	---	---	---
Bp:									
Brookston	---	> 60	---	---		---	High	High	Low.
Br:									
Brookston	---	> 72	---	---		---	High	High	Low.
Bs:									
Brookston	---	> 60	---	---		---	High	High	Low.
Bu:									
Brookston	---	> 60	---	---		---	High	High	Low.
Urban land	---	---	---	---		---	---	---	---
Ca:									
Carlisle	---	> 90	---	---	22-27	43-54	High	High	Low.
CeA:									
Celina	---	> 60	---	---		---	High	High	Moderate.
CeB:									
Celina	---	> 60	---	---		---	High	High	Moderate.
CeB2:									
Celina	---	> 60	---	---		---	High	High	Moderate.
ClB:									
Celina	---	> 60	---	---		---	High	High	Moderate.
CoA:									
Corwin	---	> 60	---	---		---	Moderate	High	Moderate.
CoB:									
Corwin	---	> 60	---	---		---	Moderate	High	Moderate.
CsA:									
Crosby	---	> 60	---	---		---	High	High	Moderate.
CtB:									
Crosby	---	> 60	---	---		---	High	High	Moderate.
Celina	---	> 60	---	---		---	High	High	Moderate.
Cu:									
Crosby	---	> 60	---	---		---	High	High	Moderate.
Urban land	---	---	---	---		---	---	---	---
DaB:									
Dana	---	> 60	---	---		---	High	High	Moderate.
FaE2:									
Fairmount	Bedrock (lithic)	12- 20	---	---		---	Moderate	High	Low.
FaF2:									
Fairmount	Bedrock (lithic)	12- 20	---	---		---	Moderate	High	Low.
FcA:									
Fincastle	---	> 60	---	---		---	High	High	Moderate.
FkA:									
Fox	Strongly contrasting textural stratification	24- 42	---	---		---	Moderate	Moderate	Moderate.
FkB:									
Fox	Strongly contrasting textural stratification	24- 42	---	---		---	Moderate	Moderate	Moderate.
FlA:									
Fox	Strongly contrasting textural stratification	24- 42	---	---		---	Moderate	Moderate	Moderate.

TABLE 32.--SOIL FEATURES--Continued

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
FlB:									
Fox----------------	Strongly contrasting textural stratification	24- 42	---	---		---	Moderate----	Moderate----	Moderate.
FlC2:									
Fox----------------	Strongly contrasting textural stratification	24- 42	---	---		---	Moderate----	Moderate----	Moderate.
FmA:									
Fox----------------	Strongly contrasting textural stratification	24- 42	---	---		---	Moderate----	Moderate----	Moderate.
FmB:									
Fox----------------	Strongly contrasting textural stratification	24- 42	---	---		---	Moderate----	Moderate----	Moderate.
FmC2:									
Fox----------------	Strongly contrasting textural stratification	24- 42	---	---		---	Moderate----	Moderate----	Moderate.
FmD2:									
Fox----------------	Strongly contrasting textural stratification	24- 42	---	---		---	Moderate----	Moderate----	Moderate.
FsC3:									
Fox----------------	Strongly contrasting textural stratification	18- 42	---	---		---	Moderate----	Moderate----	Moderate.
FuB:									
Fox----------------	Strongly contrasting textural stratification	24- 42	---	---		---	Moderate----	Moderate----	Moderate.
Urban land---------	---	---	---	---		---	---	---	---
FuC:									
Urban land---------	---	>	---	---		---	---	---	---
Fox----------------	Strongly contrasting textural stratification	24- 42	---	---		---	Moderate----	Moderate----	Moderate.
FuF:									
Urban land---------	---	---	---	---		---	---	---	---
Fox----------------	Strongly contrasting textural stratification	18- 42	---	---		---	Moderate----	Moderate----	Moderate.
Gp:									
Gravel pits--------	---	---	---	---		---	---	---	---
HeE2:									
Hennepin-----------	---	> 60	---	---		---	Moderate----	Moderate----	Low.
Miamian------------	---	> 60	---	---		---	Moderate----	High--------	Moderate.
HeF2:									
Hennepin-----------	---	> 60	---	---		---	Moderate----	Moderate----	Low.
Miamian------------	---	> 60	---	---		---	Moderate----	High--------	Moderate.
HmF3:									
Hennepin-----------	---	> 60	---	---		---	Moderate----	Moderate----	Low.
Miamian------------	---	> 60	---	---		---	Moderate----	High--------	Moderate.
KeA:									
Kendallville-------	---	> 60	---	---		---	Moderate----	Moderate----	Moderate.
KeB:									
Kendallville-------	---	> 60	---	---		---	Moderate----	Moderate----	Moderate.

TABLE 32.--SOIL FEATURES--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Thickness	Restrictive layer: Hardness	Subsidence: Initial	Subsidence: Total	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In		In	In			
KeC2:									
Kendallville	---	> 60	---	---		---	Moderate	Moderate	Moderate.
Ld:									
Landes	---	> 60	---	---		---	Moderate	Low	Low.
Lg:									
Lanier	Strongly contrasting textural stratification	16- 24	---	---		---	Moderate	Low	Low.
LsB:									
Lewisburg	---	> 60	---	---		---	Moderate	High	Moderate.
LxC2:									
Lorenzo	Strongly contrasting textural stratification	10- 24	---	---		---	Low	Low	Low.
Rodman	Strongly contrasting textural stratification	8- 12	---	---		---	Low	Low	Low.
LxD2:									
Lorenzo	Strongly contrasting textural stratification	10- 24	---	---		---	Low	Low	Low.
Rodman	Strongly contrasting textural stratification	8- 12	---	---		---	Low	Low	Low.
Mb:									
Made land	---	---	---	---		---	---	---	---
Md:									
Medway	---	> 60	---	---		---	High	Moderate	Low.
MlA:									
Miamian	---	> 60	---	---		---	Moderate	High	Moderate.
MlB:									
Miamian	---	> 60	---	---		---	Moderate	High	Moderate.
MlB2:									
Miamian	---	> 60	---	---		---	Moderate	High	Moderate.
MlC2:									
Miamian	---	> 60	---	---		---	Moderate	High	Moderate.
MlD2:									
Miamian	---	> 60	---	---		---	Moderate	High	Moderate.
MmB:									
Miamian	---	> 60	---	---		---	Moderate	High	Moderate.
MnB3:									
Miamian	---	> 60	---	---		---	Moderate	High	Moderate.
MnC3:									
Miamian	---	> 60	---	---		---	Moderate	High	Moderate.
MnD3:									
Miamian	---	> 60	---	---		---	Moderate	High	Moderate.
MoB:									
Miamian	---	> 60	---	---		---	Moderate	High	Moderate.
Urban land	---	---	---	---		---	---	---	---
MoC:									
Miamian	---	> 60	---	---		---	Moderate	High	Moderate.
Urban land	---	---	---	---		---	---	---	---
MoE:									
Miamian	---	> 60	---	---		---	Moderate	High	Moderate.
Urban land	---	---	---	---		---	---	---	---
MrA:									
Millsdale	Bedrock (lithic)	20- 40	---	---		---	High	High	Low.

TABLE 32.--SOIL FEATURES--Continued

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
MsA:									
Milton	Bedrock (lithic)	20- 40	---	---		---	Moderate	Moderate	Moderate.
MsB:									
Milton	Bedrock (lithic)	20- 40	---	---		---	Moderate	Moderate	Moderate.
MsB2:									
Milton	Bedrock (lithic)	20- 40	---	---		---	Moderate	Moderate	Moderate.
MsC2:									
Milton	Bedrock (lithic)	20- 40	---	---		---	Moderate	Moderate	Moderate.
MsD2:									
Milton	Bedrock (lithic)	20- 40	---	---		---	Moderate	Moderate	Moderate.
MtD3:									
Milton	Bedrock (lithic)	20- 40	---	---		---	Moderate	Moderate	Moderate.
MuB:									
Milton	Bedrock (lithic)	20- 40	---	---		---	Moderate	Moderate	Moderate.
Urban land	---	---	---	---		---	---	---	---
MuC:									
Milton	Bedrock (lithic)	20- 40	---	---		---	Moderate	Moderate	Moderate.
Urban land	---	---	---	---		---	---	---	---
MuD:									
Milton	Bedrock (lithic)	20- 40	---	---		---	Moderate	Moderate	Moderate.
Urban land	---	---	---	---		---	---	---	---
Mv:									
Montgomery	---	> 60	---	---		---	High	High	Low.
OcA:									
Ockley	Strongly contrasting textural stratification	40- 60	---	---		---	Moderate	Moderate	Moderate.
OcB:									
Ockley	Strongly contrasting textural stratification	40- 60	---	---		---	Moderate	Moderate	Moderate.
PlB:									
Plattville	Bedrock (lithic)	20- 40	---	---		---	Moderate	Moderate	Moderate.
PlC:									
Plattville	Bedrock (lithic)	20- 40	---	---		---	Moderate	Moderate	Moderate.
PyA:									
Pyrmont	---	> 60	---	---		---	High	High	Low.
Qu:									
Quarries	---	---	---	---		---	---	---	---
RcA:									
Randolph	Bedrock (lithic)	20- 40	---	---		---	High	High	Moderate.
ReB:									
Ritchey	Bedrock (lithic)	10- 20	---	---		---	Moderate	Moderate	Moderate.
ReB2:									
Ritchey	Bedrock (lithic)	10- 20	---	---		---	Moderate	Moderate	Moderate.
ReC2:									
Ritchey	Bedrock (lithic)	10- 20	---	---		---	Moderate	Moderate	Moderate.
ReE2:									
Ritchey	Bedrock (lithic)	10- 20	---	---		---	Moderate	Moderate	Moderate.
ReF2:									
Ritchey	Bedrock (lithic)	10- 20	---	---		---	Moderate	Moderate	Moderate.
RfD3:									
Ritchey	Bedrock (lithic)	9- 20	---	---		---	Moderate	Moderate	Moderate.
Rh:									
Riverwash	---	---	---	---		---	---	---	---

TABLE 32.--SOIL FEATURES--Continued

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
RlE2:									
Rodman	Strongly contrasting textural stratification	8- 12	---	---		---	Low	Low	Low.
Fox	Strongly contrasting textural stratification	24- 42	---	---		---	Moderate	Moderate	Moderate.
RlF2:									
Rodman	Strongly contrasting textural stratification	9- 20	---	---		---	Low	Low	Low.
Fox	Strongly contrasting textural stratification	24- 42	---	---		---	Moderate	Moderate	Moderate.
Rs:									
Ross	---	> 60	---	---		---	Moderate	Moderate	Low.
Rt:									
Urban land	---	---	---	---		---	---	---	---
Ross	---	> 60	---	---		---	Moderate	Moderate	Low.
RuB:									
Russell	---	> 60	---	---		---	High	Moderate	Moderate.
RvC2:									
Russell	---	> 60	---	---		---	High	Moderate	Moderate.
Miamian	---	> 60	---	---		---	Moderate	High	Moderate.
RvD2:									
Russell	---	> 60	---	---		---	High	Moderate	Moderate.
Miamian	---	> 60	---	---		---	Moderate	High	Moderate.
Sh:									
Shoals	---	> 60	---	---		---	High	High	Low.
So:									
Sloan	---	> 60	---	---		---	High	High	Low.
ThA:									
Thackery	---	> 60	---	---		---	Moderate	Moderate	Moderate.
TpA:									
Tippecanoe	---	> 60	---	---		---	Moderate	High	Moderate.
Ua:									
Urban land	---	---	---	---		---	---	---	---
Ud:									
Udorthents	---	---	---	---		---	---	---	---
Ug:									
Urban land	---	---	---	---		---	---	---	---
Um:									
Urban land	---	---	---	---		---	---	---	---
WaA:									
Warsaw	Strongly contrasting textural stratification	24- 42	---	---		---	Moderate	Moderate	Moderate.
WaB:									
Warsaw	Strongly contrasting textural stratification	24- 42	---	---		---	Moderate	Moderate	Moderate.
WeA:									
Wea	Strongly contrasting textural stratification	42- 60	---	---		---	Moderate	Moderate	Moderate.

TABLE 32.--SOIL FEATURES--Continued

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
WeB:									
Wea	Strongly contrasting textural stratification	42- 60	---	---		---	Moderate	Moderate	Moderate.
Ws:									
Westland	Strongly contrasting textural stratification	42- 72	---	---		---	High	High	Low.
WyB2:									
Wynn	Bedrock (lithic)	24- 40	---	---		---	Moderate	Moderate	Moderate.
XeA:									
Xenia	---	> 78	---	---		---	High	High	Moderate.
XeB:									
Xenia	---	> 78	---	---		---	High	High	Moderate.

TABLE 33.--CLASSIFICATION OF THE SOILS

(An asterisk in the first column indicates a taxadjunct to the series. See text on page 182 for a description of those characteristics that are outside the range of the series.)

Soil name	Family or higher taxonomic class
Algiers	Fine-loamy, mixed, nonacid, mesic Aquic Udifluvents
*Brookston	Fine-loamy, mixed, noncalcareous, mesic Typic Argiaquolls
Carlisle	Euic, mesic Typic Medisaprists
Celina	Fine, mixed, mesic Aquic Hapludalfs
Corwin	Fine-loamy, mixed, mesic Typic Argiudolls
Crosby	Fine, mixed, mesic Aeric Ochraqualfs
Dana	Fine-silty, mixed, mesic Typic Argiudolls
Fairmount	Clayey, mixed, mesic, shallow Typic Hapludolls
Fincastle	Fine-silty, mixed, mesic Aeric Ochraqualfs
Fox	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Hapludalfs
Hennepin	Fine-loamy, mixed, mesic Typic Eutrochrepts
Kendallville	Fine-loamy, mixed, mesic Typic Hapludalfs
Landes	Coarse-loamy, mixed, mesic Fluventic Hapludolls
Lanier	Loamy-skeletal, mixed, mesic Fluventic Hapludolls
Lewisburg	Fine, illitic, mesic Typic Hapludalfs
Lorenzo	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Argiudolls
Medway	Fine-loamy, mixed, mesic Fluvaquentic Hapludolls
Miamian	Fine, mixed, mesic Typic Hapludalfs
Millsdale	Fine, mixed, noncalcareous, mesic Typic Argiaquolls
Milton	Fine, mixed, mesic Typic Hapludalfs
*Montgomery	Fine, mixed, noncalcareous, mesic Typic Haplaquolls
Ockley	Fine-loamy, mixed, mesic Typic Hapludalfs
*Plattville	Fine-loamy, mixed, mesic Aquic Argiudolls
Pyrmont	Fine, illitic, mesic Aeric Ochraqualfs
Randolph	Fine, illitic, mesic Aeric Ochraqualfs
*Ritchey	Loamy, mixed, mesic Lithic Hapludalfs
*Rodman	Sandy-skeletal, mixed, mesic Typic Hapludolls
*Ross	Fine-loamy, mixed, mesic Cumulic Hapludolls
Russell	Fine-silty, mixed, mesic Typic Hapludalfs
Shoals	Fine-loamy, mixed, nonacid, mesic Aeric Fluvaquents
Sloan	Fine-loamy, mixed, noncalcareous, mesic Fluvaquentic Haplaquolls
*Thackery	Fine-loamy, mixed, mesic Aquic Hapludalfs
Tippecanoe	Fine-loamy, mixed, mesic Typic Argiudolls
Warsaw	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Argiudolls
Wea	Fine-loamy, mixed, mesic Typic Argiudolls
Westland	Fine-loamy, mixed, noncalcareous, mesic Typic Argiaquolls
Wynn	Fine-loamy, mixed, mesic Typic Hapludalfs
Xenia	Fine-silty, mixed, mesic Aquic Hapludalfs

TABLE 34.--INTERPRETIVE GROUPS

(Unless otherwise indicated, a complex is treated as a single management unit in the 'Land capability' column. See text for definitions of the groups. Absence of an entry indicates that the map unit is not suited to the intended use or is not rated.)

Map symbol and soil name	Land capability classification	Pasture and hayland suitabilty group	Prime farmland	Hydric
Ag:	2w		Prime farmland if drained	
Algiers		C-3		No
Bo:	---		Not prime farmland	
Borrow Pits		Not rated		Unranked
Bp:	2w		Prime farmland if drained	
Brookston		C-1		Yes
Br:	2w		Prime farmland if drained	
Brookston		C-1		Yes
Bs:	2w		Prime farmland if drained	
Brookston		C-1		Yes
Bu:	---		Not prime farmland	
Brookston		---		Yes
Urban Land		Not rated		Unranked
Ca:	3w		Not prime farmland	
Carlisle		D-1		Yes
CeA:	1		All areas are prime farmland	
Celina		A-6		No
CeB:	2e		All areas are prime farmland	
Celina		A-6		No
CeB2:	2e		All areas are prime farmland	
Celina		A-6		No
ClB:	2e		All areas are prime farmland	
Celina		A-6		No
CoA:	1		All areas are prime farmland	
Corwin		A-1		No
CoB:	2e		All areas are prime farmland	
Corwin		A-1		No
CsA:	2w		Prime farmland if drained	
Crosby		C-1		No
CtB:	2w		Prime farmland if drained	
Crosby		C-1		No
Celina		A-6		No

TABLE 34.--INTERPRETIVE GROUPS--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitabilty group	Prime farmland	Hydric
Cu:	---		Not prime farmland	
Crosby		---		No
Urban Land		Not rated		Unranked
DaB:	2e		All areas are prime farmland	
Dana		A-6		No
FaE2:	6e		Not prime farmland	
Fairmount		E-1		No
FaF2:	6e		Not prime farmland	
Fairmount		E-2		No
FcA:	2w		Prime farmland if drained	
Fincastle		C-1		No
FkA:	2s		All areas are prime farmland	
Fox		B-1		No
FkB:	2e		All areas are prime farmland	
Fox		B-1		No
FlA:	2s		All areas are prime farmland	
Fox		B-1		No
FlB:	2e		All areas are prime farmland	
Fox		B-1		No
FlC2:	3e		Not prime farmland	
Fox		B-1		No
FmA:	2s		All areas are prime farmland	
Fox		B-1		No
FmB:	2e		All areas are prime farmland	
Fox		B-1		No
FmC2:	3e		Not prime farmland	
Fox		B-1		No
FmD2:	4e		Not prime farmland	
Fox		B-1		No
FsC3:	4e		Not prime farmland	
Fox		B-1		No
FuB:	---		Not prime farmland	
Fox		---		No
Urban Land		Not rated		Unranked
FuC:	---		Not prime farmland	
Urban Land		Not rated		Unranked
Fox		---		No

TABLE 34.--INTERPRETIVE GROUPS--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitabilty group	Prime farmland	Hydric
FuF:	---		Not prime farmland	
Urban Land		Not rated		Unranked
Fox		---		No
Gp:	---		Not prime farmland	
Gravel Pits		Not rated		Unranked
HeE2:	6e		Not prime farmland	
Hennepin		B-1		No
Miamian		A-2		No
HeF2:	7e		Not prime farmland	
Hennepin		B-2		No
Miamian		A-3		No
HmF3:	7e		Not prime farmland	
Hennepin		B-2		No
Miamian		A-3		No
KeA:	1		All areas are prime farmland	
Kendallville		A-1		No
KeB:	2e		All areas are prime farmland	
Kendallville		A-1		No
KeC2:	3e		Not prime farmland	
Kendallville		A-1		No
Ld:	2w		All areas are prime farmland	
Landes		B-3		No
Lg:	2w		All areas are prime farmland	
Lanier		B-3		No
LsB:	2e		All areas are prime farmland	
Lewisburg		A-1		No
LxC2:	4e		Not prime farmland	
Lorenzo		B-1		No
Rodman		B-1		No
LxD2:	6e		Not prime farmland	
Lorenzo		B-1		No
Rodman		B-1		No
Mb:	---		Not prime farmland	
Made Land		Not rated		Unranked
Md:	2w		All areas are prime farmland	
Medway		A-5		No

TABLE 34.--INTERPRETIVE GROUPS--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitabilty group	Prime farmland	Hydric
MlA:	1		All areas are prime farmland	
Miamian		A-1		No
MlB:	2e		All areas are prime farmland	
Miamian		A-1		No
MlB2:	2e		All areas are prime farmland	
Miamian		A-1		No
MlC2:	3e		Not prime farmland	
Miamian		A-1		No
MlD2:	4e		Not prime farmland	
Miamian		A-1		No
MmB:	2e		Not prime farmland	
Miamian		A-1		No
MnB3:	3e		Not prime farmland	
Miamian		A-1		No
MnC3:	4e		Not prime farmland	
Miamian		A-1		No
MnD3:	6e		Not prime farmland	
Miamian		A-1		No
MoB:	---		Not prime farmland	
Miamian		---		No
Urban Land		Not rated		Unranked
MoC:	---		Not prime farmland	
Miamian		---		No
Urban Land		Not rated		Unranked
MoE:	---		Not prime farmland	
Miamian		---		No
Urban Land		Not rated		Unranked
MrA:	3w		Prime farmland if drained	
Millsdale		C-2		Yes
MsA:	2s		All areas are prime farmland	
Milton		F-1		No
MsB:	2e		All areas are prime farmland	
Milton		F-1		No
MsB2:	2e		All areas are prime farmland	
Milton		F-1		No
MsC2:	3e		Not prime farmland	
Milton		F-1		No

TABLE 34.--INTERPRETIVE GROUPS--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitabilty group	Prime farmland	Hydric
MsD2:	4e		Not prime farmland	
Milton		F-1		No
MtD3:	6e		Not prime farmland	
Milton		F-1		No
MuB:	---		Not prime farmland	
Milton		---		No
Urban Land		Not rated		Unranked
MuC:	---		Not prime farmland	
Milton		---		No
Urban Land		Not rated		Unranked
MuD:	---		Not prime farmland	
Milton		---		No
Urban Land		Not rated		Unranked
Mv:	3w		Prime farmland if drained	
Montgomery		C-2		Yes
OcA:	1		All areas are prime farmland	
Ockley		A-1		No
OcB:	2e		All areas are prime farmland	
Ockley		A-1		No
PlB:	2e		All areas are prime farmland	
Plattville		F-1		No
PlC:	3e		Not prime farmland	
Plattville		F-1		No
PyA:	2w		Prime farmland if drained	
Pyrmont		C-1		No
Qu:	---		Not prime farmland	
Quarries		Not rated		Unranked
RcA:	3w		Prime farmland if drained	
Randolph		C-2		No
ReB:	3e		Not prime farmland	
Ritchey		E-1		No
ReB2:	3e		Not prime farmland	
Ritchey		E-1		No
ReC2:	4e		Not prime farmland	
Ritchey		E-1		No
ReE2:	6e		Not prime farmland	
Ritchey		E-1		No

TABLE 34.--INTERPRETIVE GROUPS--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitabilty group	Prime farmland	Hydric
ReF2:	6e		Not prime farmland	
Ritchey		E-2		No
RfD3:	4e		Not prime farmland	
Ritchey		E-1		No
Rh:	---		Not prime farmland	
Riverwash		Not rated		Unranked
RlE2:	7s		Not prime farmland	
Rodman		B-1		No
Fox		B-1		No
RlF2:	7s		Not prime farmland	
Rodman		B-2		No
Fox		B-2		No
Rs:	2w		All areas are prime farmland	
Ross		A-5		No
Rt:	---		Not prime farmland	
Urban Land		Not rated		Unranked
Ross		---		No
RuB:	2e		All areas are prime farmland	
Russell		A-6		No
RvC2:	3e		Not prime farmland	
Russell		A-6		No
Miamian		A-1		No
RvD2:	4e		Not prime farmland	
Russell		A-6		No
Miamian		A-1		No
Sh:	2w		Prime farmland if drained	
Shoals		C-3		No
So:	3w		Not prime farmland	
Sloan		C-3		Yes
ThA:	1		All areas are prime farmland	
Thackery		A-1		No
TpA:	1		All areas are prime farmland	
Tippecanoe		A-1		No
Ua:	---		Not prime farmland	
Urban Land		Not rated		Unranked
Ud:	---		Not prime farmland	
Udorthents		Not rated		Unranked

TABLE 34.--INTERPRETIVE GROUPS--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitabilty group	Prime farmland	Hydric
Ug:	---		Not prime farmland	
Urban Land		Not rated		Unranked
Um:	---		Not prime farmland	
Urban Land		Not rated		Unranked
WaA:	2s		All areas are prime farmland	
Warsaw		A-1		No
WaB:	2e		All areas are prime farmland	
Warsaw		A-1		No
WeA:	1		All areas are prime farmland	
Wea		A-1		No
WeB:	2e		All areas are prime farmland	
Wea		A-1		No
Ws:	2w		Prime farmland if drained	
Westland		C-1		Yes
WyB2:	2e		All areas are prime farmland	
Wynn		F-1		No
XeA:	1		All areas are prime farmland	
Xenia		A-6		No
XeB:	2e		All areas are prime farmland	
Xenia		A-6		No