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;
Miami Soil and Water Conservation District;
and Miami County Commissioners

Soil Survey of Miami County, Ohio

Supplement
May 2004

How to use this survey

General Soil Map

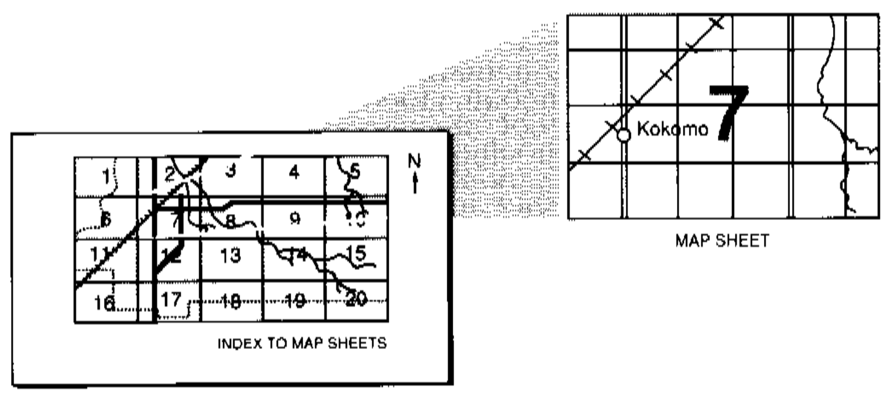
The general soil map, which is the color map at the end of this document, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

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

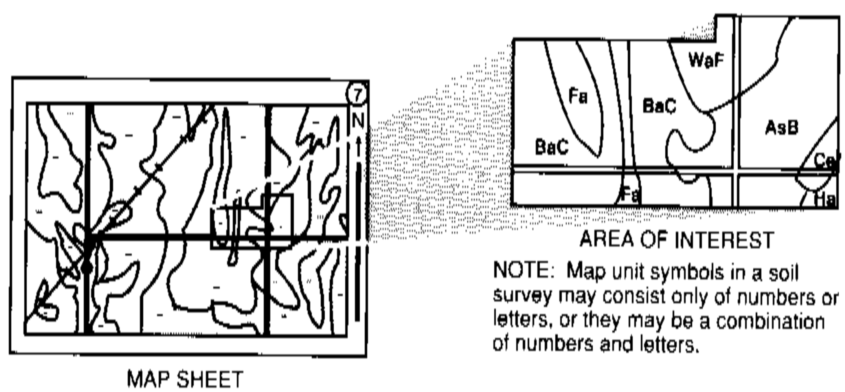
The detailed soil maps which accompany this publication are useful in planning the use and management of small areas.

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.



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

This soil survey supplement 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 1972. Soil names and descriptions were approved in 1973. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1972. The 1978 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 Miami Soil and Water Conservation District and the Miami County Commissioners. This survey is part of the technical assistance furnished to the Miami Soil and Water Conservation District.

Cover: The well drained Eldean loam, 0 to 2 percent slopes and Eldean loam, 2 to 6 percent slopes in the foreground are well suited for growing crops. The Eldean-Casco gravelly loams, 6 to 12 percent slopes in the distance are not as well suited to crops due to the steeper slopes.

Contents

Preface

This soil survey contains information that affects land use planning in Miami 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 Miami County, Ohio

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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

MIAMI COUNTY is in the west-central part of Ohio. It is in the second tier of counties east of the Indiana state line and the fourth county north of the Ohio River. It is bounded on the west by Darke County, on the south by Montgomery County, on the east by Clark and Champaign Counties, and on the north by Shelby County. It covers about 262,221 acres, or 410 square miles. The county consists of 12 townships.

Miami County lies in the Wisconsinan age glaciated region of Ohio. The topography is broad, level to gently rolling till plains dissected by two major rivers and their tributaries. Elevation ranges from 770 to 1,155 feet above sea level. Miami County is well suited to farming because there are large areas of deep, fertile, level soils. Corn, wheat, soybeans, and hay are the principal crops.

Miami County is only a few miles north of the metropolitan area of Dayton.

General Nature of the County

Miami County was first settled in 1797. In 1807 Miami County was formed from a part of Montgomery County, and Staunton was made the first county seat. A year later, Troy, after it was platted, became the county seat.

The county's most valuable natural resources are soil and water. Sand and gravel and limestone are other important natural resources. There are no known deposits of coal, gas, or oil in the county.

Climate

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

Climate Tables are created from climate station Dayton, Ohio. Some precipitation information below was derived from data from Pleasant Hill, Ohio. Unfortunately, no climate stations in Miami County record temperature data.

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

Table 1 (p. 226) gives data on temperature and precipitation for the survey area as recorded at Dayton in the period 1971 to 2000. Table 2 (p. 227)shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 (p. 227)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. 226). 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 at Pleasant Hill is about 37.63 inches. Of this, about 24.22 inches, or about 65 percent, usually falls in April through October. The growing season for most crops falls within this period. The average annual precipitation is about 39.5 inches at Dayton. The heaviest 1-day rainfall during the period of record at Dayton was 4.65 inches on September 14, 1979. Thunderstorms occur on about 40 days each year, and most occur in June and July.

The average seasonal snowfall is about 15 inches. The greatest snow depth at any one time during the period of record at Dayton was 21 inches recorded on January 27, 1978. On average, 22 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record at Dayton 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.

Physiography, Relief and Drainage

Miami County is in the Till Plains section of the Central Lowlands physiographic province. It is characterized by generally nearly level topography except for minor relief in areas along streams and small areas of kames and low recessional moraines. The moraines were formed as long belts of higher land during temporary halts in the retreat of the final stage of the Wisconsinan glacier.

The highest point in the county, 1,155 feet above sea level, occurs along the county line, 1.75 miles north of Lena. The lowest spot, 770 feet above sea level, occurs along the eastern side of the Great Miami River on the Miami-Montgomery County line. Most land in Miami County lies between the 900 and 1,100 foot contours.

Relief near the rivers ranges from 50 feet on the upper part of the Stillwater River to 110 feet on the lower part, and 70 feet on the upper part of the Great Miami River to 130 feet on the lower part. This relief occurs in relatively short distances and the topography is sloping to very steep.

All of the county is within the watershed of the Great Miami River. The two major watercourses within the county are the upper Miami River and its Stillwater tributary, which flow roughly parallel to one another in a south-southeasterly direction across the county. The Mad River tributary, outside the county, drains the southeast corner of Bethel Township.

Harris Creek, Greenville Creek, Painter Creek, and Ludlow Creek enter the Stillwater River from the west. Spring Creek, Lost Creek, and the Honey Creek tributaries enter the Miami River from the east. The area between the two rivers is drained by minor water courses.

Much of the till plain is nearly level to gently sloping on watershed divides and consists of many very poorly drained to somewhat poorly drained soils.

Figure 1. A wildflower in a prairie grass planting along side a firebreak in Eldean loam, 2 to 6 percent slopes.

Geology

Most of the soils on uplands of Miami County formed in two or more distinguishable layers of geologic parent materials.

The uppermost layers of many soils on uplands formed in loess, a windblown dust deposit. This silty layer is seldom more than 12 inches thick. It was mostly deposited shortly after the main ice mass of the glacier receded northward about 15,000 years ago.

The dominant geologic parent material in Miami County is glacial till. This deposit is a mixture of unsorted boulders, stones, gravel, sand, silt, and clay and is spread across the entire county.

Miami County was glaciated more than once, but former deposits were reworked or covered by till and outwash of the Wisconsin age (18, 59). This mantle varies in thickness from a few inches where bedrock is exposed to more than 200 feet where it fills old preglacial stream valleys. Wide, low, slightly hummocky ridges of till built up where the glacier stopped awhile or moved southward briefly. These ridges are recessional moraines. Parts of the Farmersville, Union City, and Bloomer moraines extend across Miami County (19). Generally, moraines contain more boulders than most other till areas.

Glacial melt water has sorted and deposited many areas of sand and gravel in Miami County. These glacial outwash deposits are mainly along the major streams, but small deposits are scattered throughout the county. Some outwash areas are capped with finer sediments.

A few deposits in Miami County are lake-laid sediments during temporary glacial ponding. These sediments are mostly silt and clay.

The bedrock in Miami County is a consolidated, parallel-bedded layer of sedimentary rocks. Most of the outcropping bedrock is limestone and dolomite. A small amount of shale outcrops is at the base of the limestone layers. These bedrock formations lay across the broad Cincinnati arch, the crest of which crosses the eastern side of the county in a generally northeasterly direction. Piqua lies on the west flank of the arch and strata beds dip northwest at a low angle, probably about 10 feet per mile (33).

The uppermost part of the bedrock strata is the Dayton dolomite. Immediately below is the Brassfield limestone. Both are members of the Silurian System and are hard and light gray or buff colored. The Brassfield limestone is particularly high in calcium carbonate and is quarried at Piqua for steel processing. It is often a fair aquifer for water wells at its lower level.

The lowest and oldest rocks exposed in the county are shales that are in the upper Richmond Group of the Ordovician System. These shales are typically soft, calcareous, and greenish gray or bluish gray. They weather to a putty-like consistency when exposed and are very slowly permeable to water.

How This Survey Was Made

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

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

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

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

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

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

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

General Soil Map Units

The general soil map 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 Miami 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 Miami 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. Crosby-Brookston association

Somewhat poorly drained and very poorly drained, deep, nearly level to gently sloping soils that formed in loam glacial till; on uplands

This association is extensive and is mainly in the western part of the county. It makes up about 35 percent of the county. It is about 56 percent Crosby soils, 25 percent Brookston soils, and 19 percent minor soils.

Crosby soils are light colored, are somewhat poorly drained, and are on broad flats and low knolls. They are surrounded by dark colored, very poorly drained Brookston soils that are in broad, level areas or in depressions. In cultivated areas, the soils form striking dark and light colored patterns.

Among the minor soils in the association are the well drained Miamian and the moderately well drained Celina soils. These soils typically are on crests of a few higher lying knolls.

Most areas of this association are farmed intensively. A small acreage is wooded or is used for pasture. A seasonal high water table causes wetness, which is the main limitation to use. Artificially drained areas of Crosby and Brookston soils dry out more quickly in spring than undrained areas, so they are well suited to crops commonly grown in the county. Undrained areas are not well suited to farming and are severely limited for many nonfarm uses.

2. Crosby-Miamian-Brookston association

Well drained to very poorly drained, deep, nearly level to sloping soils that formed in loam glacial till; on uplands

The most extensive area of this association is in the eastern part of Miami County, and a small area is in the western part around Bradford. The association makes up about 29 percent of the county. It is about 37 percent Crosby soils, 20 percent Miamian soils, 15 percent Brookston soils, and 28 percent minor soils.

Crosby soils are light colored, somewhat poorly drained, and nearly level to gently sloping. Miamian soils are also light colored, and they are well drained and mainly gently sloping to sloping. Brookston soils are dark colored and very poorly drained, and they are in depressions and drainageways.

Among the minor soils in the association are the moderately well drained Celina soils, the somewhat poorly drained Odell soils on uplands, and the somewhat poorly drained Shoals soils on flood plains.

Most areas of this association have been cleared and are used for crops or pasture. A few areas are wooded. The seasonal wetness of Crosby and Brookston soils and the hazard of erosion on Miamian soils are the main limitations to use. The moderately slow permeability of the Miamian soils is an additional limitation for some nonfarm uses. Where slope is not a limitation, Miamian soils are suitable for home sites because natural drainage is good. Crosby and Brookston soils can be farmed intensively if they are artificially drained. The eastern part of this association is characterized by glacial boulders on the surface and in the soils. These boulders hinder farming and construction.

3. Milton-Miamian, limestone substratum-Randolph association

Well drained and somewhat poorly drained, moderately deep and deep, nearly level to moderately steep soils that formed in glacial till underlain by limestone bedrock; on uplands

This association is in several areas close to either the Great Miami River or the Stillwater River. It makes up about 8 percent of the county. It is about 41 percent Milton soils; 23 percent Miamian, limestone substratum, soils; 18 percent Randolph soils; and 18 percent minor soils.

Milton soils are nearly level to moderately steep, are well drained, and are 20 to 40 inches deep to limestone bedrock. Miamian, limestone substratum, soils are nearly level to sloping, are well drained, and are 40 to 80 inches deep to limestone bedrock. Randolph soils are nearly level to gently sloping, are somewhat poorly drained, and are 20 to 40 inches deep to limestone bedrock.

Among the minor soils in the association are the dark colored, very poorly drained Millsdale soils and the light colored, well drained Ritchey soils. These soils are underlain by limestone at a depth of less than 40 inches. Limestone outcropping is common in the steeper areas. Some soils in a few areas on narrow flood plains are also minor soils.

Most of the nearly level and gently sloping soils of this association are used for crops. Some of the more sloping and moderately steep soils are wooded or are used for pasture. Nursery crops are grown to some extent near Tipp City in the southeastern part of Miami County. Erosion is a major concern on Milton soils and Miamian, limestone substratum, soils. Wetness caused by a seasonal high water table is the main limitation to use of the Randolph soils. The soils underlain by limestone are suitable for farming, but the shallow depth to the limestone, particularly in Milton and Randolph soils, severely limits some nonfarm uses. The moderately slow permeability of the soils is an additional limitation for some nonfarm uses.

4. Miamian-Celina association

Well drained and moderately well drained, deep, gently sloping to steep soils that formed in loam glacial till; on uplands

This association is in the steepest areas of the county and parallels the rivers and major streams. It makes up about 12 percent of the county. It is about 58 percent Miamian soils, 13 percent Celina soils, and 29 percent minor soils.

Miamian soils are well drained and mainly gently sloping to steep. Celina soils are moderately well drained and mainly gently sloping.

Among the minor soils are the somewhat poorly drained Crosby soils; the well drained, moderately deep Milton soils; and the well drained, steep to very steep Hennepin soils.

Because of the many steep slopes, most of the acreage is in permanent pasture or is wooded. Some of the less sloping soils are used for crops. The steep slopes and the severe hazard of erosion are the main limitations to farming. The steep slopes and moderately slow permeability limit Miamian and Celina soils for many nonfarm uses, but in less sloping areas these soils are suitable for home sites. Steep areas have potential for use as hiking and nature trails. Some areas of the association are within the boulder belt and have glacial boulders on the surface and below. These boulders hinder cultivation and construction.

5. Eldean-Genesee-Ross association

Well drained, deep, level to gently sloping soils that formed in glacial outwash and alluvium; on outwash terraces and flood plains

This association is along the Great Miami River and the Stillwater River and their larger tributaries. It makes up about 10 percent of the county. It is about 46 percent Eldean soils, 14 percent Genesee soils, 10 percent Ross soils, and 30 percent minor soils.

Eldean soils are moderately deep to sand and gravel, are well drained, and are mainly nearly level to gently sloping. Well drained Genesee soils and dark colored, well drained Ross soils are on level to nearly level flood plains.

Among the minor soils are the dark colored, very poorly drained Montgomery and Westland soils; the somewhat poorly drained Shoals soils; and the well drained Ockley soils.

Large areas of this association are used intensively for the crops commonly grown in the county. A few areas are used for specialty crops and nursery plants. Droughtiness caused by the moderate depth to sand and gravel is a main limitation of the Eldean soils for crops, but all the major soils in the association can be irrigated. Seasonal flooding severely limits the Genesee and Ross soils for many nonfarm uses. Because natural drainage is good and topography is favorable, Eldean soils have few limitations for most nonfarm uses. The sand and gravel underlying the Eldean soils are suitable for commercial use.

6. Blount-Glynwood-Pewamo association

Moderately well drained to very poorly drained, deep, nearly level to sloping soils that formed in clay loam or silty clay loam glacial till; on uplands

This association is in the northwestern corner of Miami County. It makes up about 5 percent of the county. It is about 52 percent Blount soils, 35 percent Glynwood soils, 9 percent Pewamo soils, and 4 percent minor soils.

Blount soils are light colored, somewhat poorly drained, and nearly level to gently sloping. Glynwood soils are light colored, moderately well drained, and mainly gently sloping to sloping. Pewamo soils are dark colored, very poorly drained, and nearly level; they are in depressions.

Among the minor soils in the association are the somewhat poorly drained Algiers soils, the somewhat poorly drained Shoals soils, and the moderately well drained Eel soils. These soils are on narrow flood plains of small streams that dissect the association.

Most of this association is used intensively for cultivated crops. A few areas are in permanent pasture or are wooded. The seasonal wetness of Blount and Pewamo soils and the hazard of erosion on Glynwood soils are the main limitations to farming. Unless artificially drained, Blount and Pewamo soils dry out slowly in spring. The slow or moderately slow permeability of the major soils and the wetness of Blount and Pewamo soils severely limit the soils for some nonfarm uses. Where slope is not a limitation, Glynwood soils have fewer limitations for use as building sites than Blount and Pewamo soils.

7. Montgomery-Westland-Shoals association

Very poorly drained and somewhat poorly drained, deep, level to nearly level soils that formed in alluvium and outwash material; on old glacial lake beds, stream terraces, and flood plains

This association is along Honey and Indian Creeks in the southeastern part of Miami County. It makes up about 1 percent of the county. It is about 37 percent Montgomery soils, 18 percent Westland soils, 15 percent Shoals soils, and 30 percent minor soils.

Montgomery soils formed in clayey sediment that was deposited in glacial lakes or ponds. They are dark colored, very poorly drained, and clayey. Westland soils formed in loamy material underlain by sand and gravel at a depth of more than 40 inches. These soils are on low terraces. They are dark colored, very poorly drained, and less clayey than Montgomery soils. Shoals soils formed in loamy sediment that was deposited by floodwater. These soils are on flood plains. They are light colored and somewhat poorly drained.

The light colored, well drained Genesee soils and the light colored, somewhat poorly drained to poorly drained Algiers soils are among the minor soils in this association. They are in small areas on flood plains. The black, very poorly drained Edwards muck soils are also minor soils.

This association is farmed intensively. If the seasonal high water table is lowered by artificial drainage, the major soils are well suited to corn and soybeans. Much of the association, particularly areas of Shoals soils, is subject to seasonal flooding. Fall-seeded small grains are generally not grown on the major soils because of flooding and excessive wetness in winter and early in spring. The wetness and flooding severely limit the soils for many nonfarm uses.

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.

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

Table 4 (p. 228)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: Flood plains
Size of areas: 2 to 175 acres

Map Unit Composition
Algiers and similar components: 85 percent

Similar Components
Medway
Shoals

Contrasting Components
Brookston soils: 5 percent
Montgomery soils: 5 percent
Sloan 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 10.3 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: 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: Moderate
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

BlA—Blount silt loam, 0 to 2 percent slopes

Setting
Landform: Ground moraines
Size of areas: 2 to 175 acres

Map Unit Composition
Blount and similar components: 85 percent

Similar Components
Glynwood

Contrasting Components
Pewamo soils: 10 percent
Slopes of 2 to 6 percent: 5 percent

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

Soil Properties and Qualities

BLOUNT
Available water capacity: About 6.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 17 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 2.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 3.0 percent
Parent material: Loamy till
Permeability: Very slow or 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.
- 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.
- 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

- 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

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

BlB—Blount silt loam, 2 to 6 percent slopes

Setting
Landform: Knolls on ground moraines
Size of areas: 2 to over 1,000 acres

Map Unit Composition
Blount and similar components: 85 percent

Similar Components
Moderately eroded areas
Glynwood

Contrasting Components
slopes of 0 to 2 percent: 10 percent
Pewamo soils: 5 percent

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

Soil Properties and Qualities

BLOUNT
Available water capacity: About 6.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 17 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 2.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 3.0 percent
Parent material: Loamy till
Permeability: Very slow or 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

- 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.
- 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

- Erosion control is needed when pastures are renovated.
- 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.
- 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

- 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

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

BlB2—Blount silt loam, 2 to 6 percent slopes, moderately eroded

Setting
Landform: Knolls on ground moraines
Size of areas: 2 to 70 acres

Map Unit Composition
Blount and similar components: 92 percent

Similar Components
Glynwood on 4 to 6 percent slopes
uneroded areas on 2 to 4 percent slopes

Contrasting Components
Pewamo soils: 5 percent
severely eroded areas: 3 percent

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

Soil Properties and Qualities

BLOUNT
Available water capacity: About 6.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 17 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 2.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: Loamy till
Permeability: Very slow or 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

- 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.
- 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

- Erosion control is needed when pastures are renovated.
- 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.
- Burning may destroy organic matter.

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.
- 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

- 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

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

Bs—Brookston silty clay loam

Setting
Landform: Depressions on ground moraines
Size of areas: 2 to over 8,000

Map Unit Composition
Brookston and similar components: 85 percent

Similar Components
Thinner surface layer
Silt loam surface layer in more sloping areas

Contrasting Components
Celina soils: 5 percent
Crosby soils: 5 percent
Odell soils: 5 percent

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

Soil Properties and Qualities

BROOKSTON
Available water capacity: About 9.9 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: 0.0 to 1.0 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: 3.0 to 5.0 percent
Parent material: Loamy till
Permeability: Moderate in the upper part of the soil and moderately slow in the underlying material
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

CcD2—Casco gravelly loam, 12 to 20 percent slopes, eroded

Setting
Landform: Knolls on outwash terraces
Position on the landform: Shoulder
Backslope
Size of areas: about 2 acres

Map Unit Composition
Casco and similar components: 80 percent
Other features: Removal of part of the original surface layer

Contrasting Components
Eldean soils: 10 percent
Rodman soils: 10 percent

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

Soil Properties and Qualities

CASCO
Available water capacity: About 2.1 inches to a depth of 17 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: 10 to 20 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: Sandy and gravelly outwash
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
Potential frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Gravelly loam
Potential for surface runoff:
Wind erosion hazard: Moderate

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.
- 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

- 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.
- 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.
- 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

- 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

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

CeA—Celina silt loam, 0 to 2 percent slopes

Setting
Landform: low ridges on ground moraines
Size of areas: 2 to 300 acres

Map Unit Composition
Celina and similar components: 90 percent

Similar Components
Crosby

Contrasting Components
Brookston soils: 5 percent
Slopes of 2 to 6 percent: 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 7.4 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: 2.0 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: 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.
- 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.
- 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

- 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.

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: low ridges and knolls on ground moraines
Size of areas: 2 to 150 acres

Map Unit Composition
Celina and similar components: 97 percent

Similar Components
Calcareous till at less than 18 inches
Crosby
Moderately eroded areas
Loam surface layer

Contrasting Components
Brookston soils: 3 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 7.4 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: 2.0 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: High
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.
- 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.
- 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

- 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.

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: low knolls on ground moraines
Size of areas: 2 to 100 acres

Map Unit Composition
Celina and similar components: 95 percent

Similar Components
Calcareous till at less than 18 inches

Crosby
Miamian
Uneroded areas

Contrasting Components
Brookston soils: 3 percent
Severely eroded areas: 2 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 7.0 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: 2.0 to 3.0 feet
Water table kind: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: 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

- 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.
- Burning may destroy organic matter.

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.

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 20 acres

Map Unit Composition
Corwin and similar components: 94 percent

Similar Components
Sand and gravel at 5 feet or more
Celina
Crosby
Odell

Contrasting Components
Brookston soils: 3 percent
Slopes of 2 to 6 percent: 3 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 8.2 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: 2.0 to 4.0 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: 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

- 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 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 20 acres

Map Unit Composition
Corwin and similar components: 92 percent

Similar Components
Celina
Odell

Contrasting Components
Brookston soils: 5 percent
Slopes of 0 to 2 percent: 3 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 8.1 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: 2.0 to 4.0 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: 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.
- 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 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

CrA—Crosby silt loam, 0 to 2 percent slopes

Setting
Landform: Ground moraines
Size of areas: 2 to over 8,000 acres

Map Unit Composition
Crosby and similar components: 90 percent
Similar Components
Carbonates within 18 inches
Celina
Contrasting Components
Brookston soils: 5 percent
Slopes of 2 to 6 percent: 3 percent
Miamian soils: 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 7.3 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 2.0 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: 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.
- 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.

Figure 2. Crosby loam, 0 to 2 percent slopes is considered prime farmland when drained.

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.
- 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

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

CrB—Crosby silt loam, 2 to 6 percent slopes

Setting
Landform: low knolls on ground moraines
Size of areas: 2 to over 1,500 acres

Map Unit Composition
Crosby and similar components: 88 percent

Similar Components
Celina
Moderately eroded areas

Contrasting Components
Brookston soils: 5 percent
Slopes of 0 to 2 percent: 5 percent
Miamian soils: 2 percent

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

Soil Properties and Qualities

CROSBY
Available water capacity: About 7.2 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 2.0 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: 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

- 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.
- 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

- Erosion control is needed when pastures are renovated.

- 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.
- 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

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

Ed—Edwards muck

Setting
Landform: Bogs and swamps
Size of areas: 2 to 55 acres

Map Unit Composition
Edwards and similar components: 90 percent

Contrasting Components
Linwood soils: 5 percent
Montgomery soils: 5 percent

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

Soil Properties and Qualities

EDWARDS
Available water capacity: About 5.2 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 60 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: Very long
Depth of ponding: 0.0 to 1.0 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 55.0 to 75.0 percent
Parent material: Organic material
Permeability: Moderately rapid in the muck and very slow in the underlying material
Potential frost action: High
Shrink-swell potential: Not rated
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.
- 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.
- 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 movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
- The soil may be deficient in micronutrients because of the high content of organic matter.

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.

Woodland

- A seasonal high water table can inhibit the growth of some species of seedlings by reducing root respiration.
- The low pH in the soil may cause a nutrient imbalance in seedlings.
- 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.

Component Interpretive Groups
Pasture and hayland suitability group: D-1
Hydric soil: Yes

Figure 3. Riparian corridor on Eel silt loam.

Ee—Eel silt loam

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

Map Unit Composition
Eel and similar components: 95 percent

Similar Components
Loam surface layer
Medway
Genesee
Shoals

Contrasting Components
Sloan soils: 5 percent

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

Soil Properties and Qualities

EEL
Available water capacity: About 7.4 inches to a depth of 42 inches
Cation-exchange capacity of the surface layer: 12 to 20 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 40 to 80 inches
Depth to the top of the seasonal high water table: 2.0 to 3.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: Occasional
Organic matter content in the surface layer: 1.0 to 2.0 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.

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.
- 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.
- 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.
- Special design of 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

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

EIA—Eldean loam, 0 to 2 percent slopes

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

Map Unit Composition
Eldean and similar components: 95 percent

Similar Components
Ockley
Silt loam surface layer

Contrasting Components
Slopes of 2 to 6 percent: 5 percent

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

Soil Properties and Qualities

ELDEAN
Available water capacity: About 3.6 inches to a depth of 30 inches
Cation-exchange capacity of the surface layer: 8 to 21 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 40 inches
Depth to the top of the seasonal high water table: Greater than 6 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
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
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.
- The rooting depth of crops may be restricted by the high clay content.

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.
- 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

- 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.

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

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

ElB—Eldean loam, 2 to 6 percent slopes

Setting
Landform: Ridges and knolls on terraces
Size of areas: 2 to 250 acres

Map Unit Composition
Eldean and similar components: 97 percent

Similar Components
Coarser textured subsoil
No gravel within 40 inches
Slopes of more than 6 percent
Lorenzo
Moderately eroded areas

Contrasting Components
Casco soils: 3 percent

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

Soil Properties and Qualities

ELDEAN
Available water capacity: About 3.5 inches to a depth of 29 inches
Cation-exchange capacity of the surface layer: 8 to 21 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 40 inches
Depth to the top of the seasonal high water table: Greater than 6 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
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
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.
- The rooting depth of crops may be restricted by the high clay content.

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.
- 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

- 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.

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

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

ElB2—Eldean loam, 2 to 6 percent slopes, moderately eroded

Setting
Landform: Ridges and knolls on terraces
Size of areas: 2 to 80 acres

Map Unit Composition
Eldean and similar components: 95 percent

Similar Components
Silt loam surface layer
Gravelly loam surface layer
Slopes of more than 6 percent
Lorenzo
Slightly eroded areas

Contrasting Components
Casco soils: 5 percent

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

Soil Properties and Qualities

ELDEAN
Available water capacity: About 2.7 inches to a depth of 24 inches
Cation-exchange capacity of the surface layer: 8 to 21 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 40 inches
Depth to the top of the seasonal high water table: Greater than 6 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
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
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.
- 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.
- 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.
- 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.
- Burning may destroy organic matter.

Building Sites

- 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

- 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.

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

ELDEAN

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

EmA—Eldean silt loam, 0 to 2 percent slopes

Setting
Landform: Kames, eskers, and terraces
Size of areas: 2 to 70 acres

Map Unit Composition
Eldean and similar components: 90 percent

Similar Components
Ockley

Contrasting Components
Slopes of 2 to 6 percent: 10 percent

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

Soil Properties and Qualities

ELDEAN
Available water capacity: About 3.6 inches to a depth of 30 inches
Cation-exchange capacity of the surface layer: 8 to 21 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 40 inches
Depth to the top of the seasonal high water table: Greater than 6 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
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
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.
- 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

- 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.
- 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

- 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.

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

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

EmB—Eldean silt loam, 2 to 6 percent slopes

Setting
Landform: Kames, eskers, and terraces
Size of areas: 2 to 400 acres

Map Unit Composition
Eldean and similar components: 100 percent

Similar Components
Ockley
Moderately eroded areas

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

Soil Properties and Qualities

ELDEAN
Available water capacity: About 3.5 inches to a depth of 29 inches
Cation-exchange capacity of the surface layer: 8 to 21 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 40 inches

Depth to the top of the seasonal high water table: Greater than 6 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
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
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.
- 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.
- 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.
- 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

- 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.

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

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

EmB2—Eldean silt loam, 2 to 6 percent slopes, eroded

Setting
Landform: Outwash terraces
Position on the landform: Backslope
Shoulder
Size of areas: about 4 acres

Map Unit Composition
Eldean and similar components: 75 percent
Other features: Removal of part of the original surface layer

Contrasting Components
Ockley soils: 15 percent
Westland soils: 5 percent
Westland soils: 5 percent

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

Soil Properties and Qualities

ELDEAN
Available water capacity: About 3.4 inches to a depth of 24 inches
Cation-exchange capacity of the surface layer: 8 to 21 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 20 to 39 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Outwash
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
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

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.
- 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.
- 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.
- Rock fragments obstruct the use of mechanical planting equipment.

Building Sites

- 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

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

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

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

EoC2—Eldean-Casco gravelly loams, 6 to 12 percent slopes, moderately eroded

Setting
Landform: Ridges, knolls, and terraces
Size of areas: 2 to 60 acres

Map Unit Composition
Eldean and similar components: 50 percent
Casco and similar components: 35 percent

Similar Components
Slightly eroded areas
Loam surface layer
Silt loam surface layer
Slopes of more than 12 percent
Lorenzo

Contrasting Components
Severely eroded areas: 15 percent

Map Unit Interpretive Groups
Land capability classification: 4e
Prime farmland: Farmland of local importance

Soil Properties and Qualities

ELDEAN
Available water capacity: About 2.7 inches to a depth of 23 inches
Cation-exchange capacity of the surface layer: 8 to 22 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 23 to 40 inches
Depth to the top of the seasonal high water table: Greater than 6 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
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Gravelly 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.
- The rooting depth of crops may be restricted by the high clay content.

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.
- 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

- 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

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

Soil Properties and Qualities

CASCO
Available water capacity: About 2.6 inches to a depth of 20 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: 12 to 24 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.0 to 1.0 percent
Parent material: Loamy outwash
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Gravelly 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

- 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.
- 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.
- 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

- 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

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

EoD2—Eldean-Casco gravelly loams, 12 to 18 percent slopes, moderately eroded

Setting
Landform: Ridges, knolls, and terraces
Size of areas: 2 to 50 acres

Map Unit Composition
Eldean and similar components: 50 percent
Casco and similar components: 35 percent

Similar Components
Loam surface layer
Slopes of more than 18 percent
Rodman
Lorenzo

Contrasting Components
Severely eroded areas: 15 percent

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

Soil Properties and Qualities

ELDEAN
Available water capacity: About 3.0 inches to a depth of 26 inches
Cation-exchange capacity of the surface layer: 8 to 22 meq per 100 grams

Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 40 inches
Depth to the top of the seasonal high water table: Greater than 6 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
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Gravelly 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.
- The rooting depth of crops may be restricted by the high clay content.

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.
- 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

- 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

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

Soil Properties and Qualities

CASCO
Available water capacity: About 2.2 inches to a depth of 17 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: 12 to 24 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.0 to 1.0 percent
Parent material: Loamy outwash
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Gravelly 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

- 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.
- 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.
- 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

- 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

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

EpD3—Eldean-Casco complex, 6 to 18 percent slopes, severely eroded

Setting
Landform: Kames, eskers, and terraces
Size of areas: 2 to 25 acres

Map Unit Composition
Casco and similar components: 40 percent
Eldean and similar components: 40 percent

Similar Components
Slopes of more than 18 percent
Lorenzo

Contrasting Components
Moderately eroded areas: 15 percent
Loose sand and gravel at the surface: 5 percent

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

Soil Properties and Qualities

CASCO
Available water capacity: About 2.8 inches to a depth of 20 inches
Cation-exchange capacity of the surface layer: 4 to 30 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 12 to 24 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.0 to 1.0 percent
Parent material: Loamy outwash
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
Potential frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Gravelly 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

- 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.
- 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.
- 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.
- 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

- 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

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

Soil Properties and Qualities

ELDEAN
Available water capacity: About 1.9 inches to a depth of 19 inches
Cation-exchange capacity of the surface layer: 20 to 30 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 12 to 24 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.0 to 1.0 percent
Parent material: Loamy outwash
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Sandy 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.
- 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 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.
- 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.
- 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

- 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

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

EqC2—Eldean-Casco complex, 6 to 12 percent slopes, eroded

Setting
Landform: Outwash terraces
Position on the landform: sideslopes, knolls
Size of areas: 2 to 25 acres

Map Unit Composition
Eldean and similar components: 50 percent
Casco and similar components: 30 percent
Other features: Removal of part of the original surface layer

Contrasting Components
Miamian soils: 20 percent

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

Soil Properties and Qualities

ELDEAN

Available water capacity: About 3.3 inches to a depth of 30 inches
Cation-exchange capacity of the surface layer: 12 to 24 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 20 to 39 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 2.0 percent
Parent material: Outwash
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
Potential frost action: Moderate
Shrink-swell potential: Moderate
Surface layer texture: Clay loam
Potential for surface runoff:
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.
- 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.
- 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.
- 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.
- Burning may destroy organic matter.

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.
- 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 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

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

Soil Properties and Qualities

CASCO
Available water capacity: About 1.8 inches to a depth of 15 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: 10 to 20 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 1.0 to 2.0 percent
Parent material: Outwash
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
Potential frost action: Low
Shrink-swell potential: Moderate
Surface layer texture: Gravelly sandy loam
Potential for surface runoff:
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.

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 slope creates unsafe operating conditions and reduces the operating efficiency of log trucks.
- 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

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

ErB—Eldean-Miamian complex, 2 to 6 percent slopes

Setting
Landform: low kames and eskers and low ridges and knolls on moraines
Size of areas: 2 to 200 acres

Map Unit Composition
Eldean and similar components: 50 percent
Miamian and similar components: 35 percent

Similar Components
Slopes of more than 6 percent

Contrasting Components
Ockley, till substratum soils: 7 percent
Martinsville, till substratum soils: 6 percent
Brookston soils: 2 percent

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

Soil Properties and Qualities

ELDEAN
Available water capacity: About 3.6 inches to a depth of 29 inches
Cation-exchange capacity of the surface layer: 8 to 21 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 40 inches
Depth to the top of the seasonal high water table: Greater than 6 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
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
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.
- The rooting depth of crops may be restricted by the high clay content.

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.
- 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

- 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.

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

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

Soil Properties and Qualities

MIAMIAN
Available water capacity: About 8.0 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 6 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.

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 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

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

ErC—Eldean-Miamian complex, 6 to 12 percent slopes

Setting
Landform: Kames and eskers on moraines
Size of areas: 2 to 25 acres

Map Unit Composition
Eldean and similar components: 50 percent
Miamian and similar components: 35 percent

Similar Components
Uneroded areas
Slopes of more than 12 percent
Silt loam surface layer

Contrasting Components
Severely eroded areas: 12 percent
Brookston soils: 3 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Farmland of local importance

Soil Properties and Qualities

ELDEAN
Available water capacity: About 2.8 inches to a depth of 24 inches
Cation-exchange capacity of the surface layer: 8 to 21 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 24 to 40 inches
Depth to the top of the seasonal high water table: Greater than 6 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
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
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.
- 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.
- The rooting depth of crops may be restricted by the high clay content.

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.

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.
- 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

- 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

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

Soil Properties and Qualities

MIAMIAN
Available water capacity: About 7.6 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 6 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.
- 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.

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

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

Gn—Genesee silt loam

Setting
Landform: Flood plains
Size of areas: 2 to 400 acres

Map Unit Composition
Genesee and similar components: 95 percent

Similar Components
Loam surface layer
Stonelick
Medway
Ross
Eel

Contrasting Components
Sloan soils: 5 percent

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

Soil Properties and Qualities

GENESEE
Available water capacity: About 7.2 inches to a depth of 43 inches
Cation-exchange capacity of the surface layer: 9 to 21 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 6 feet
Ponding: None
Drainage class: Well 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: Moderate
Shrink-swell potential: Low
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.
- 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.
- 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.
- Special design of 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

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

GwB—Glynwood silt loam, 2 to 6 percent slopes

Setting
Landform: low ridges and knolls on ground moraines
Size of areas: 2 to 90 acres

Map Unit Composition
Glynwood and similar components: 95 percent

Similar Components
Blount
Moderately eroded areas

Contrasting Components
Pewamo soils: 5 percent

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

Figure 4. Glynwood clay loam, 6 to 12 percent slopes is well suited to pond reservoir areas.

GLYNWOOD

Available water capacity: About 6.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 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: 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: Very slow or 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

- 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

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

GwB2—Glynwood silt loam, 2 to 6 percent slopes, moderately eroded

Setting
Landform: low ridges and knolls on ground moraines
Size of areas: 2 to 90 acres

Map Unit Composition
Glynwood and similar components: 90 percent

Similar Components
Blount
Uneroded areas

Contrasting Components
Pewamo soils: 5 percent
Severely eroded areas: 5 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: All areas are prime farmland

Soil Properties and Qualities

GLYNWOOD
Available water capacity: About 6.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 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: 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: 0.5 to 2.0 percent
Parent material: Loamy till
Permeability: Very slow or 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

- 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.
- Burning may destroy organic matter.

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

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

GwC2—Glynwood silt loam, 6 to 12 percent slopes, moderately eroded

Setting
Landform: Knolls and hillsides on ground moraines
Size of areas: 2 to 55 acres

Map Unit Composition
Glynwood and similar components: 85 percent

Similar Components
Uneroded areas
Slopes of more than 12 percent
Blount

Contrasting Components
Severely eroded areas: 6 percent
Slopes of 2 to 6 percent: 6 percent
Pewamo soils: 3 percent

Map Unit Interpretive Groups
Land capability classification: 4e
Prime farmland: Farmland of local importance

Soil Properties and Qualities

GLYNWOOD
Available water capacity: About 6.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 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: 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: 0.5 to 2.0 percent
Parent material: Loamy till
Permeability: Very slow or slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Very 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.
- 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

- 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.
- Burning may destroy organic matter.

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

Component Interpretive Groups

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

GwD2—Glynwood silt loam, 12 to 18 percent slopes, moderately eroded

Setting
Landform: Hillsides on ground moraines
Size of areas: 2 to 75 acres

Map Unit Composition
Glynwood and similar components: 90 percent

Similar Components
Slopes of more than 18 percent
Uneroded areas

Contrasting Components
Severely eroded areas: 10 percent

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

Soil Properties and Qualities

GLYNWOOD
Available water capacity: About 6.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 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: 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: 0.5 to 2.0 percent
Parent material: Loamy till
Permeability: Very slow or slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff: Very 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.

- 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

- 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.
- Burning may destroy organic matter.

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.
- 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.
- 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 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

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

GyC3—Glynwood clay loam, 6 to 12 percent slopes, severely eroded

Setting
Landform: Knolls and hillsides on ground moraines
Size of areas: 2 to 40 acres

Map Unit Composition
Glynwood and similar components: 97 percent

Similar Components
Slopes of more than 12 percent
Moderately eroded areas
Silty clay loam surface layer

Contrasting Components
Pewamo soils: 3 percent

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

Soil Properties and Qualities

GLYNWOOD
Available water capacity: About 6.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 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: 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: 0.0 to 1.0 percent
Parent material: Loamy till
Permeability: Very slow or slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Clay loam
Potential for surface runoff: Very 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.
- The root system of winter grain crops may be damaged by frost action.
- 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.

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.
- Burning may destroy organic matter.

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

Component Interpretive Groups

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

GyD3—Glynwood clay loam, 12 to 18 percent slopes, severely eroded

Setting
Landform: Hillsides on ground moraines
Size of areas: 2 to 25 acres

Map Unit Composition
Glynwood and similar components: 95 percent

Similar Components
Slopes of more than 18 percent
Moderately eroded areas
Silty clay loam surface layer

Contrasting Components
Calcareous till at the surface: 5 percent

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

Soil Properties and Qualities

GLYNWOOD
Available water capacity: About 6.0 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 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: 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: 0.0 to 1.0 percent
Parent material: Loamy till
Permeability: Very slow or slow
Potential frost action: High
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.
- 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 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.
- Burning may destroy organic matter.

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.
- 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.
- 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 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

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

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

Setting
Landform: banks of intermittent 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 6 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 high content of lime in the upper part of the soil may cause a nutrient imbalance in seedlings.
- 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 6 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 intermittent 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 6 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 high content of lime in the upper part of the soil may cause a nutrient imbalance in seedlings.
- 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 6 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

Ko—Kokomo silty clay loam

Setting
Landform: Drainageways and open depressions on till plains
Position on the landform: Footslope
Size of areas: 2 to 40 acres

Map Unit Composition

Kokomo and similar components: 90 percent

Contrasting Components

Crosby soils: 5 percent
Celina soils: 3 percent
Strawn soils: 2 percent

Map Unit Interpretive Groups

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

Soil Properties and Qualities

KOKOMO

Available water capacity: About 10.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 16 to 33 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Greater than 80 inches
Depth to the top of the seasonal high water table: 0.0 to 0.5 feet
Water table kind: Apparent
Ponding: Very long
Depth of ponding: 0.0 to 2.0 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 3.0 to 6.0 percent
Parent material: Till
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silty clay loam
Potential for surface runoff:
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.
- Soil wetness may limit the use of this soil by log trucks.
- Ponding restricts the safe use of roads by 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

- 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

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

Ln—Linwood muck

Setting
Landform: Swales on moraines and swamps and bogs on terraces
Size of areas: 2 to 65 acres

Map Unit Composition
Linwood and similar components: 85 percent

Similar Components
Muck more than 50 inches thick

Contrasting Components
Montgomery soils: 8 percent
Muck less than 16 inches thick: 7 percent

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

Soil Properties and Qualities

LINWOOD
Available water capacity: About 12.1 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 60 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: Very long
Depth of ponding: 0.0 to 1.0 feet
Drainage class: Very poorly drained
Flooding: None
Organic matter content in the surface layer: 40.0 to 70.0 percent
Parent material: Organic material over loamy glaciofluvial deposits
Permeability: Rapid in the muck and moderately slow in the underlying material
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Muck
Potential for surface runoff: Medium
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.
- The low pH in the soil may cause a nutrient imbalance in seedlings.
- 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.
- 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

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

LrE2—Lorenzo-Rodman gravelly loams, 18 to 50 percent slopes, moderately eroded

Setting
Landform: Kames and eskers
Size of areas: 2 to 30 acres

Map Unit Composition
Lorenzo and similar components: 50 percent
Rodman and similar components: 35 percent

Similar Components
Eldean
Warsaw

Contrasting Components
Sand and gravel at the surface: 15 percent

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

Soil Properties and Qualities

LORENZO
Available water capacity: About 2.1 inches to a depth of 16 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: 12 to 24 inches
Depth to the top of the seasonal high water table: Greater than 6 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
Permeability: Moderately rapid in the upper part of the soil and rapid in the underlying material
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Gravelly loam
Potential for surface runoff: Medium
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.
- 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.
- Because of the slope, the use of mechanical planting equipment is not practical.
- 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.
- 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.
- 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 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-2
Hydric soil: No

Soil Properties and Qualities

RODMAN
Available water capacity: About 1.8 inches to a depth of 15 inches
Cation-exchange capacity of the surface layer: 5 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 8 to 16 inches
Depth to the top of the seasonal high water table: Greater than 6 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: Moderately rapid in the upper part of the soil and rapid in the underlying material
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Gravelly loam

Potential for surface runoff: Medium
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.
- 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.
- Because of the slope, the use of mechanical planting equipment is not practical.
- 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.
- 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

- 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

MaB—Martinsville and Ockley loams, till substratum, 2 to 6 percent slopes

Setting
Landform: low ridges and knolls on moraines
Size of areas: 2 to 10 acres

Map Unit Composition
Martinsville and similar components: 45 percent
Ockley and similar components: 45 percent

Similar Components
Eldean
Miamian
Celina

Contrasting Components
Slopes of more than 6 percent: 10 percent

Map Unit Interpretive Groups

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

Soil Properties and Qualities

MARTINSVILLE

Available water capacity: About 7.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6 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 6 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 outwash over loamy till
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
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.

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.
- Burning may destroy organic matter.

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 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.

Component Interpretive Groups

MARTINSVILLE

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

Soil Properties and Qualities

OCKLEY

Available water capacity: About 7.5 inches to a depth of 47 inches
Cation-exchange capacity of the surface layer: 6 to 16 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 6 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 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

- 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.
- 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.
- 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

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

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

Md—Medway silt loam

Setting
Landform: Flood plains
Size of areas: 2 to 200 acres

Map Unit Composition
Medway and similar components: 90 percent

Similar Components
Eel
Shoals
Sandy loam surface layer
Loam surface layer

Contrasting Components
Ross soils: 5 percent
Sloan soils: 5 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 10.0 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: 2.0 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
Permeability: Moderate
Potential frost action: High
Shrink-swell potential: Low
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.
- 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.

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 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

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

MhA—Miamian silt loam, 0 to 2 percent slopes

Setting
Landform: Ground moraines
Size of areas: 2 to 150 acres

Map Unit Composition
Miamian and similar components: 90 percent

Similar Components
Celina

Contrasting Components
Brookston soils: 5 percent
Slopes of 2 to 6 percent: 3 percent
Miamian, limestone substratum soils: 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 7.5 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 6 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.

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 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

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

MhB—Miamian silt loam, 2 to 6 percent slopes

Setting
Landform: low ridges and knolls on ground moraines
Size of areas: 2 to 300 acres

Map Unit Composition
Miamian and similar components: 95 percent

Similar Components
Loam surface layer
Moderately eroded areas
Celina

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

MIAMIAN
Available water capacity: About 7.9 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 80 inches
Depth to the top of the seasonal high water table: Greater than 6 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.
- 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.
- 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.

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

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

MhB2—Miamian silt loam, 2 to 6 percent slopes, moderately eroded

Setting
Landform: Hillsides, ridges, and knolls on ground moraines
Size of areas: 2 to 300 acres

Map Unit Composition
Miamian and similar components: 85 percent

Similar Components
Uneroded areas
Celina

Contrasting Components
Brookston soils: 4 percent
Crosby soils: 4 percent
Severely eroded areas: 4 percent
Slopes of more than 6 percent: 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 7.5 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 6 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.
- Burning may destroy organic matter.

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 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

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

MhC2—Miamian silt loam, 6 to 12 percent slopes, moderately eroded

Setting
Landform: Hillsides and knolls on ground moraines
Size of areas: 2 to 75 acres

Map Unit Composition
Miamian and similar components: 92 percent

Similar Components
Celina
Slopes of more than 12 percent
Uneroded areas

Contrasting Components
Brookston soils: 5 percent
Severely eroded areas: 3 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Farmland of local importance

Soil Properties and Qualities

MIAMIAN
Available water capacity: About 7.4 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 6 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.
- Burning may destroy organic matter.

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

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

MhD2—Miamian silt loam, 12 to 18 percent slopes, moderately eroded

Setting
Landform: Knolls and hillsides on ground moraines
Size of areas: 2 to 45 acres

Map Unit Composition
Miamian and similar components: 95 percent

Similar Components
Slopes of more than 18 percent
Uneroded areas

Contrasting Components
Severely eroded areas: 5 percent

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

Soil Properties and Qualities

MIAMIAN
Available water capacity: About 7.4 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 6 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 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-1
Hydric soil: No

MkA—Miamian silt loam, limestone substratum, 0 to 2 percent slopes

Setting
Landform: Ground moraines
Size of areas: 2 to 650 acres

Map Unit Composition
Miamian and similar components: 95 percent

Similar Components
Loam surface layer
Milton
Celina
Bedrock at more than 80 inches

Contrasting Components
Millsdale soils: 5 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 7.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 20 meq per 100 grams
Depth class: Deep or very deep
Depth to root restrictive feature: Bedrock (lithic): 40 to 80 inches
Depth to the top of the seasonal high water table: Greater than 6 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.

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

- 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 limited depth to bedrock reduces the filtering capacity of the soil and greatly increases the difficulty of proper installation of 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.

Component Interpretive Groups

MIAMIAN

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

MkB—Miamian silt loam, limestone substratum, 2 to 6 percent slopes

Setting

Landform: Hillsides, ridges, and knolls on ground moraines
Size of areas: 2 to 250 acres

Map Unit Composition

Miamian and similar components: 95 percent

Similar Components
Loam surface layer
Milton
Celina
Bedrock at more than 80 inches

Contrasting Components
Millsdale soils: 5 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 7.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 20 meq per 100 grams
Depth class: Deep or very deep
Depth to root restrictive feature: Bedrock (lithic): 40 to 80 inches
Depth to the top of the seasonal high water table: Greater than 6 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.

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

- 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 limited depth to bedrock reduces the filtering capacity of the soil and greatly increases the difficulty of proper installation of 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.

Component Interpretive Groups

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

MkB2—Miamian silt loam, limestone substratum, 2 to 6 percent slopes, moderately eroded

Setting

Landform: Hillsides, ridges, and knolls on ground moraines
Size of areas: 2 to 50 acres

Map Unit Composition

Miamian and similar components: 93 percent

Similar Components

Bedrock at more than 80 inches
Uneroded areas

Contrasting Components

Millsdale soils: 5 percent
Severely eroded areas: 2 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 7.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 20 meq per 100 grams
Depth class: Deep or very deep
Depth to root restrictive feature: Bedrock (lithic): 40 to 80 inches
Depth to the top of the seasonal high water table: Greater than 6 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

- 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 limited depth to bedrock reduces the filtering capacity of the soil and greatly increases the difficulty of proper installation of 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.

Component Interpretive Groups

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

MkC2—Miamian silt loam, limestone substratum, 6 to 12 percent slopes, moderately eroded

Setting
Landform: Hillsides and knolls on ground moraines
Size of areas: 2 to 30 acres

Map Unit Composition
Miamian and similar components: 93 percent

Similar Components
Slopes of more than 12 percent
Uneroded areas

Contrasting Components
Millsdale soils: 5 percent
Severely eroded areas: 2 percent

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

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 20 meq per 100 grams
Depth class: Deep or very deep
Depth to root restrictive feature: Bedrock (lithic): 40 to 80 inches
Depth to the top of the seasonal high water table: Greater than 6 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

- 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 limited depth to bedrock reduces the filtering capacity of the soil and greatly increases the difficulty of proper installation of the effluent distribution lines.
- 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

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

MIC3—Miamian clay loam, 6 to 12 percent slopes, severely eroded

Setting
Landform: Hillsides and knolls on ground moraines
Size of areas: 2 to 45 acres

Map Unit Composition
Miamian and similar components: 90 percent

Similar Components
Slopes of more than 12 percent
Moderately eroded areas

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

Map Unit Interpretive Groups
Land capability classification: 4e
Prime farmland: Farmland of local importance

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: 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 6 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.
- 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.

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.
- 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

MID3—Miamian clay loam, 12 to 18 percent slopes, severely eroded

Setting
Landform: Hillsides on ground moraines
Size of areas: 2 to 30 acres

Map Unit Composition
Miamian and similar components: 95 percent

Similar Components
Slopes of more than 18 percent
Moderately eroded areas

Contrasting Components
Calcareous till at the surface: 5 percent

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

Soil Properties and Qualities

MIAMIAN
Available water capacity: About 6.9 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 6 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

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 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

MmE—Miamian and Hennepin silt loams, 18 to 25 percent slopes

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

Map Unit Composition
Hennepin and similar components: 45 percent
Miamian and similar components: 45 percent

Similar Components
Rodman
Ritchey
Slopes of more than 25 percent

Contrasting Components
Severely eroded areas: 10 percent

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

Soil Properties and Qualities

HENNEPIN
Available water capacity: About 5.6 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 6 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.
- 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

HENNEPIN
Pasture and hayland suitability group: B-1
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 6 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 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

MmF—Miamian and Hennepin silt loams, 25 to 50 percent slopes

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

Map Unit Composition
Hennepin and similar components: 45 percent
Miamian and similar components: 45 percent

Similar Components
Moderately eroded areas
Rodman
Ritchey

Contrasting Components
Severely eroded areas: 5 percent
Slopes of more than 50 percent: 5 percent

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

Soil Properties and Qualities

HENNEPIN
Available water capacity: About 5.6 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 6 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.
- 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

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 6 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.

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

MnA—Millsdale silt loam, 0 to 2 percent slopes

Setting
Landform: Depressions on ground moraines
Size of areas: 2 to 60 acres

Map Unit Composition
Millsdale and similar components: 96 percent

Similar Components
Slopes of more than 2 percent
Silty clay loam surface layer

Contrasting Components
Odell soils: 4 percent

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

Soil Properties and Qualities

MILLSDALE
Available water capacity: About 4.6 inches to a depth of 30 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 1.0 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 6.0 percent
Parent material: Till over residuum weathered from limestone
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 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.
- A combination of surface and subsurface drainage helps to remove excess water.
- 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.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

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

MnB—Millsdale silt loam, 2 to 6 percent slopes

Setting
Landform: Depressions on ground moraines
Size of areas: 2 to 30 acres

Map Unit Composition
Millsdale and similar components: 95 percent

Similar Components
Silty clay loam surface layer

Contrasting Components
Odell soils: 5 percent

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

Soil Properties and Qualities

MILLSDALE
Available water capacity: About 4.6 inches to a depth of 30 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 1.0 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 6.0 percent
Parent material: Till over residuum weathered from limestone
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 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.
- 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.
- A combination of surface and subsurface drainage helps to remove excess water.
- 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

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

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

MoA—Millsdale silty clay loam, 0 to 2 percent slopes

Setting

Landform: Depressions on ground moraines
Size of areas: 2 to 400 acres

Map Unit Composition

Millsdale and similar components: 95 percent

Similar Components

Silt loam surface layer

Contrasting Components

Randolph soils: 5 percent

Map Unit Interpretive Groups

Land capability classification: 3w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

MILLSDALE

Available water capacity: About 4.8 inches to a depth of 30 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 1.0 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 residuum weathered from limestone
Permeability: Moderately 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 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.
- 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.
- A combination of surface and subsurface drainage helps to remove excess water.
- 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

MoB—Millsdale silty clay loam, 2 to 6 percent slopes

Setting
Landform: Depressions on ground moraines
Size of areas: 2 to 35 acres

Map Unit Composition
Millsdale and similar components: 100 percent

Similar Components
Bedrock at less than 20 inches
Bedrock at more than 40 inches
Silt loam surface layer

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

Soil Properties and Qualities

MILLSDALE
Available water capacity: About 4.7 inches to a depth of 30 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 1.0 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 residuum weathered from limestone
Permeability: Moderately 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 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.
- 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.
- 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.
- A combination of surface and subsurface drainage helps to remove excess water.
- 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

- 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.
- 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

MpA—Milton silt loam, 0 to 2 percent slopes

Setting
Landform: broad ridges on ground moraines
Size of areas: 2 to 1,500 acres

Map Unit Composition
Milton and similar components: 90 percent

Similar Components
Miamian, limestone substratum

Contrasting Components
Randolph: 4 percent
Ritchey soils on 2 to 6 percent slopes: 3 percent
Slopes of 2 to 6 percent: 3 percent

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

Soil Properties and Qualities

MILTON
Available water capacity: About 4.2 inches to a depth of 29 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 6 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 till over residuum weathered from limestone
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

- 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.

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

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

MpB—Milton silt loam, 2 to 6 percent slopes

Setting
Landform: low ridges and knolls on ground moraines
Size of areas: 2 to 300 acres

Map Unit Composition
Milton and similar components: 95 percent

Similar Components
Loam surface layer
Miamian, limestone substratum

Contrasting Components
Randolph soils: 5 percent

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

Soil Properties and Qualities

MILTON
Available water capacity: About 4.2 inches to a depth of 29 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 6 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 till over residuum weathered from limestone
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

- 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.

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

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

MpB2—Milton silt loam, 2 to 6 percent slopes, moderately eroded

Setting
Landform: low ridges and knolls on ground moraines
Size of areas: 2 to 25 acres

Map Unit Composition
Milton and similar components: 90 percent

Similar Components
Uneroded areas
Ritchey

Contrasting Components
Randolph soils: 5 percent
Slopes of more than 6 percent: 5 percent

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

Soil Properties and Qualities

MILTON
Available water capacity: About 4.2 inches to a depth of 29 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 6 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 till over residuum weathered from limestone
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

- 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.
- 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.
- 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

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

MpC2—Milton silt loam, 6 to 12 percent slopes, moderately eroded

Setting
Landform: Knolls and hillsides on ground moraines
Size of areas: 2 to 55 acres

Map Unit Composition
Milton and similar components: 95 percent

Similar Components
Miamian, limestone substratum
Uneroded areas

Contrasting Components
Severely eroded areas: 5 percent

Map Unit Interpretive Groups
Land capability classification: 3e
Prime farmland: Farmland of local importance

Soil Properties and Qualities

MILTON
Available water capacity: About 4.2 inches to a depth of 29 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 6 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 till over residuum weathered from 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 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.
- 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.
- 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

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

MpD2—Milton silt loam, 12 to 18 percent slopes, moderately eroded

Setting
Landform: Hillsides on ground moraines
Size of areas: 2 to 25 acres

Map Unit Composition
Milton and similar components: 95 percent

Similar Components
Slopes of more than 18 percent
Uneroded areas

Contrasting Components
Ritchey: 5 percent

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

Soil Properties and Qualities

MILTON

Available water capacity: About 4.2 inches to a depth of 29 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 6 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 till over residuum weathered from 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 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 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

- 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

Mt—Montgomery silty clay loam

Setting
Landform: Depressions on moraines and terraces
Size of areas: 2 to 250 acres

Map Unit Composition
Montgomery and similar components: 90 percent

Similar Components
Less clay in the subsoil
Silt loam surface layer
Westland
Brookston

Contrasting Components
Algiers: 5 percent
Linwood soils: 5 percent

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

Soil Properties and Qualities

MONTGOMERY
Available water capacity: About 8.9 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 68 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 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: Moderate
Surface layer texture: Silty clay 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.
- 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.
- 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.

Figure 5. Cows graze on this wooded pasture of Montgomery silty clay loam.

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.
- 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 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

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 50 acres

Map Unit Composition
Ockley and similar components: 95 percent

Similar Components
Wea

Contrasting Components
Slopes of 2 to 6 percent: 5 percent

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

Soil Properties and Qualities

OCKLEY
Available water capacity: About 7.5 inches to a depth of 47 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 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
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.
- 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.
- 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

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

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 35 acres

Map Unit Composition
Ockley and similar components: 95 percent

Similar Components
Moderately well drained soils
Eldean
Moderately eroded areas

Contrasting Components
Slopes of 0 to 2 percent: 5 percent

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

Soil Properties and Qualities

OCKLEY
Available water capacity: About 7.5 inches to a depth of 47 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 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
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.
- 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.
- 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

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

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

OdA—Odell silt loam, 0 to 2 percent slopes

Setting
Landform: Ground moraines
Size of areas: 2 to 100 acres

Map Unit Composition
Odell and similar components: 95 percent

Similar Components
Corwin
Crosby

Contrasting Components
Brookston soils: 5 percent

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

Soil Properties and Qualities

ODELL
Available water capacity: About 8.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 11 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: 1.0 to 2.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent

Parent material: 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.
- 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

- 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

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

OdB—Odell silt loam, 2 to 6 percent slopes

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

Map Unit Composition
Odell and similar components: 95 percent

Similar Components
Corwin
Crosby

Contrasting Components
Brookston soils: 5 percent

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

Soil Properties and Qualities

ODELL
Available water capacity: About 8.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 11 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: 1.0 to 2.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: 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.
- Subsurface drainage helps to lower the seasonal high water table.

Pastureland

- Erosion control is needed when pastures are renovated.
- 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

- 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

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

Pe—Pewamo silty clay loam

Setting
Landform: Drainageways and depressions on ground moraines
Size of areas: 2 to 250 acres

Map Unit Composition
Pewamo and similar components: 90 percent

Similar Components
Silt loam surface layer

Contrasting Components
Blount soils: 5 percent
Glynwood soils: 5 percent

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

Soil Properties and Qualities

PEWAMO
Available water capacity: About 7.9 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: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: Very 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 12.0 percent
Parent material: Loamy till
Permeability: Moderately slow
Potential frost action: High
Shrink-swell potential: Moderate
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.
- 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.
- 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 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

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

Pg—Pits, gravel

Setting
Landform: None assigned
Size of areas: 2 to 85 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
Pasture and hayland suitability group: Not rated
Hydric soil: Unranked

Pq—Pits, quarry

Setting
Landform: None assigned
Size of areas: 2 to 250 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
Pasture and hayland suitability group: Not rated
Hydric soil: Unranked

RdA—Randolph silt loam, 0 to 2 percent slopes

Setting
Landform: Ground moraines
Size of areas: 2 to 750 acres

Map Unit Composition
Randolph and similar components: 90 percent

Similar components
More than 40 inches to bedrock

Contrasting Components
Millsdale soils: 5 percent
Milton soils: 5 percent

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

Soil Properties and Qualities

RANDOLPH
Available water capacity: About 5.2 inches to a depth of 34 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: 1.0 to 2.0 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 over residuum weathered from limestone
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 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.
- 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

- 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.
- 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.
- 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

RdB—Randolph silt loam, 2 to 6 percent slopes

Setting
Landform: Ridges and knolls on ground moraines
Size of areas: 2 to 30 acres

Map Unit Composition
Randolph and similar components: 85 percent

Contrasting Components
Millsdale soils: 5 percent
Milton on steeper slopes soils: 5 percent
Slopes of 0 to 2 percent soils: 5 percent

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

Soil Properties and Qualities

RANDOLPH
Available water capacity: About 5.2 inches to a depth of 34 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: 1.0 to 2.0 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 over residuum weathered from limestone
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 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.
- 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.
- 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

- 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.
- 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

- 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.
- 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.
- 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

RgE—Rodman gravelly loam, 18 to 35 percent slopes

Setting
Landform: Kames
Position on the landform: Backslope
Size of areas: 5 to 15 acres

Map Unit Composition
Rodman and similar components: 85 percent

Contrasting Components
Eldean soils: 15 percent

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

Soil Properties and Qualities

RODMAN
Available water capacity: About 1.3 inches to a depth of 12 inches
Cation-exchange capacity of the surface layer: 5 to 18 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 10 to 20 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Excessively drained
Flooding: None
Organic matter content in the surface layer: 2.0 to 4.0 percent
Parent material: Sandy and gravelly outwash
Permeability: Moderately rapid in the upper part of the soil and very rapid in the underlying material
Potential frost action: Low
Shrink-swell potential: Low
Surface layer texture: Gravelly loam
Potential for surface runoff:
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.

- 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.
- 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.
- 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.
- 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

- 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

RhB—Ritchey silt loam, 2 to 6 percent slopes

Setting
Landform: Knolls on ground moraines
Size of areas: 2 to 40 acres

Map Unit Composition
Ritchey and similar components: 95 percent

Similar Components
Moderately eroded areas
Milton

Contrasting Components
Randolph soils: 5 percent

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

Soil Properties and Qualities

RITCHEY
Available water capacity: About 2.6 inches to a depth of 16 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 6 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 till over residuum weathered from limestone
Permeability: Moderate
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

- 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.
- 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.

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

RhC—Ritchey silt loam, 6 to 18 percent slopes

Setting
Landform: Hillsides on ground moraines
Size of areas: 2 to 30 acres

Map Unit Composition
Ritchey and similar components: 97 percent

Similar Components
Dark-colored soils
Bedrock at less than 10 inches

Milton
Moderately eroded areas

Contrasting Components
Bedrock outcrop: 3 percent

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

Soil Properties and Qualities

RITCHEY
Available water capacity: About 2.6 inches to a depth of 16 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 6 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 till over residuum weathered from limestone
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.
- 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.
- Rock fragments obstruct the use of 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.
- 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

RhE—Ritchey silt loam, 18 to 50 percent slopes

Setting
Landform: Hillsides on ground moraines
Size of areas: 2 to 75 acres

Map Unit Composition
Ritchey and similar components: 92 percent

Similar Components
Dark colored soils
Soils underlain by shale
Bedrock at less than 10 inches

Contrasting Components
Bedrock outcrop: 4 percent
Slopes of 50 to 70 percent: 4 percent

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

Soil Properties and Qualities

RITCHEY
Available water capacity: About 2.2 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 6 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 till over residuum weathered from limestone
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.
- 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.
- 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.
- 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.
- 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 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

Rs—Ross silt loam

Setting
Landform: Flood plains
Size of areas: 2 to 250 acres

Map Unit Composition
Ross and similar components: 98 percent

Similar Components
Cobbles and stones at 32 to 36 inches or more
Silty clay loam surface layer
Thinner surface layer
Buried, dark colored soil at 36 inches or more
Genesee
Medway

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

ROSS

Available water capacity: About 11.2 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 6 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
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 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

ROSS

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

Rt—Ross silt loam, shallow variant

Setting

Landform: Flood plains
Size of areas: 2 to 30 acres

Map Unit Composition

Ross Variant and similar components: 100 percent

Similar Components

Slopes of more than 2 percent

Lighter colored surface layer
Bedrock at more than 20 inches
Silty clay loam surface layer

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

Soil Properties and Qualities

ROSS VARIANT
Available water capacity: About 2.4 inches to a depth of 13 inches
Cation-exchange capacity of the surface layer: 14 to 32 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Bedrock (paralithic): 10 to 18 inches; bedrock (lithic): 10 to 20 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Organic matter content in the surface layer: 4.0 to 8.0 percent
Parent material: Loamy alluvium
Permeability: Moderate
Potential frost action: Moderate
Shrink-swell potential: Low
Surface layer texture: Silt loam
Potential for surface runoff: High
Wind erosion hazard: Slight

Use and Management Considerations

Cropland

- Plants may suffer from moisture stress because of the limited available water capacity.
- 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 high pH in the soil may cause a nutrient imbalance in seedlings.
- 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 nature and depth of the soft bedrock in this soil reduce the ease of excavation and increase the difficulty of constructing foundations and installing utilities.

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.
- This soil is well suited to use as a site for septic tank absorption fields.

Local Roads and Streets

- The limited depth to soft bedrock affects the ease of excavation and grading.
- 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

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

Sh—Shoals silt loam

Setting
Landform: Flood plains
Size of areas: 2 to 300 acres

Map Unit Composition
Shoals and similar components: 90 percent

Similar components
Loam surface layer
Medway
Algiers
Eel

Contrasting Components
Sloan soils: 10 percent

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

Soil Properties and Qualities

SHOALS
Available water capacity: About 7.2 inches to a depth of 40 inches
Cation-exchange capacity of the surface layer: 12 to 27 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 40 to 80 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: Occasional
Organic matter content in the surface layer: 2.0 to 5.0 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.
- 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.
- 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.
- 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

- 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.
- 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

Sk—Shoals silt loam, moderately shallow variant

Setting
Landform: Flood plains
Size of areas: 2 to 50 acres

Map Unit Composition
Shoals Variant and similar components: 90 percent

Similar Components
Bedrock at slightly more than 40 inches

Contrasting Components
Sloan soils: 10 percent

Map Unit Interpretive Groups
Land capability classification: 5w
Prime farmland: Prime farmland if drained

Soil Properties and Qualities

SHOALS VARIANT
Available water capacity: About 6.4 inches to a depth of 36 inches
Cation-exchange capacity of the surface layer: 13 to 24 meq per 100 grams
Depth class: Moderately deep
Depth to root restrictive feature: Bedrock (lithic): 20 to 36 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: Frequent
Organic matter content in the surface layer: 2.0 to 4.0 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 rooting depth of crops is restricted by bedrock.
- 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.
- 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.
- Subsurface drainage helps to lower the seasonal high water table.
- The depth to bedrock may restrict the gradient needed to provide adequate drainage from subsurface systems.

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.
- 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 high pH in the soil may cause a nutrient imbalance in seedlings.
- 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.
- 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

- 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.

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

- 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.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

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

SlA—Sleeth silt loam, 0 to 2 percent slopes

Setting
Landform: Terraces
Size of areas: 2 to 60 acres

Map Unit Composition
Sleeth and similar components: 95 percent

Similar Components
Darker colored surface layer
Moderately well drained soils

Contrasting Components
Westland soils: 5 percent

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

Soil Properties and Qualities

SLEETH

Available water capacity: About 6.6 inches to a depth of 42 inches
Cation-exchange capacity of the surface layer: 5 to 19 meq per 100 grams
Depth class: Very deep
Depth to root restrictive feature: Strongly contrasting textural stratification: 40 to 56 inches
Depth to the top of the seasonal high water table: 0.5 to 2.0 feet
Water table kind: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Organic matter content in the surface layer: 0.5 to 3.0 percent
Parent material: Loamy outwash over sandy and gravelly outwash
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
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.
- 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.
- A loss of soil productivity may occur following an episode of fire.

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.
- 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

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

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

St—Stonelick loam

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

Map Unit Composition
Stonelick and similar components: 96 percent

Similar Components
Silt loam surface layer
Sandy loam surface layer
Riverwash
Darker colored soils with a sandy loam surface layer
Genesee

Contrasting Components
Eel soils: 2 percent
Sloan soils: 2 percent

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

Soil Properties and Qualities

STONELICK
Available water capacity: About 4.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6 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 6 feet
Ponding: None
Drainage class: Well drained
Flooding: Occasional
Organic matter content in the surface layer: 1.0 to 3.0 percent
Parent material: Sandy and gravelly alluvium
Permeability: Moderately rapid
Potential frost action: Moderate
Shrink-swell potential: Low
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.
- 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 high pH in the soil may cause a nutrient imbalance in seedlings.

- 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

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

Ts—Tremont silt loam, occasionally flooded

Setting
Landform: Flood plains
Size of areas: about 9 acres

Map Unit Composition
Tremont and similar components: 80 percent

Contrasting Components
Sloan soils: 20 percent

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

Soil Properties and Qualities

TREMONT
Available water capacity: About 9.9 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 80 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: 4.0 to 7.0 percent
Parent material: Alluvium
Permeability: Moderate
Potential frost action: High
Shrink-swell potential: Moderate
Surface layer texture: Silt loam
Potential for surface runoff:
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 high pH in the soil may cause a nutrient imbalance in seedlings.
- 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.
- 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.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Component Interpretive Groups

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

Ud—Udorthents

Setting
Landform: None assigned
Size of areas: 2 to 100 acres

Map Unit Composition
Udorthents and similar components: 100 percent

Map Unit Interpretive Groups
Land capability classification: None assigned
Prime farmland: Not prime farmland

Use and Management Considerations

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

Component Interpretive Groups

UDORTHENTS
Pasture and hayland suitability group: Not rated
Hydric soil: No

Uf—Udorthents, Sanitary landfill

Setting
Landform: None assigned
Size of areas: 2 to 150 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
Pasture and hayland suitability group: Not rated

Hydric soil: Unranked

Wa—Wallkill silt loam

Setting
Landform: Depressions on terraces and moraines
Size of areas: 2 to 30 acres

Map Unit Composition
Wallkill and similar components: 90 percent

Contrasting Components
Linwood soils: 5 percent
Shoals soils: 5 percent

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

Soil Properties and Qualities

WALLKILL
Available water capacity: About 13.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 15 to 29 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 1.0 feet
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: 3.0 to 10.0 percent
Parent material: Alluvium over organic material
Permeability: Moderate in the upper part of the soil and rapid in the underlying material
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.
- 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.

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

Component Interpretive Groups

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

WdA—Warsaw silt loam, 0 to 2 percent slopes

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

Map Unit Composition
Warsaw and similar components: 95 percent

Similar Components
Wea

Contrasting Components
Slopes of 2 to 6 percent: 5 percent

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

Soil Properties and Qualities

WARSAW
Available water capacity: About 5.3 inches to a depth of 37 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 40 inches
Depth to the top of the seasonal high water table: Greater than 6 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 upper part of the soil and rapid in the underlying material
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.
- 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

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

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

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 100 acres

Map Unit Composition
Wea and similar components: 90 percent

Similar Components
loam surface layer
Ross
Warsaw

Contrasting Components
Westland soils: 5 percent
gently sloping areas: 5 percent

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

Soil Properties and Qualities

WEA
Available water capacity: About 7.5 inches to a depth of 44 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: 40 to 66 inches
Depth to the top of the seasonal high water table: Greater than 6 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 upper part of the soil and rapid in the underlying material
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.
- 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

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

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

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

Wt—Westland silty clay loam

Setting
Landform: Depressions on terraces
Size of areas: 2 to 300 acres

Map Unit Composition
Westland and similar components: 85 percent

Similar Components
Montgomery

Contrasting Components
Algiers: 3 percent
Shoals: 3 percent
Warsaw soils: 3 percent
Wea soils: 3 percent
Slopes of 2 to 6 percent: 3 percent

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

Soil Properties and Qualities

WESTLAND
Available water capacity: About 7.5 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: 40 to 60 inches
Depth to the top of the seasonal high water table: 0.0 to 1.0 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: Moderately slow in the upper part of the soil and rapid in the underlying material
Potential frost action: High
Shrink-swell potential: Moderate
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.
- 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.
- 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

- 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.

Component Interpretive Groups

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

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. 230). 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. 228). 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.

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. 231).

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"

Figure 6. This waterway is a very common site in very poorly drained Brookston silty clay loam.

(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.

The map units in table 6 (p. 231) 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. 232), 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 7. 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 34 (p. 465). The extent of the soils are shown in table 4 (p. 228).

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. 236). The main concerns in managing nonirrigated cropland are controlling flooding and water erosion, preventing ground-water 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 ground–water 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).

Erosion hazard.—The relative value of the

Figure 8. Miamian silt loam, 6 to 12 percent slopes is better suited to pasture than row crops.

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 ground–water 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 ground water 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.

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 estimated yields of the main crops and pasture plants are listed in table 9 (p. 236) and 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.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 9 (p. 236). In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of map units in the survey area also is shown in the table.

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

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

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

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

Crops other than those shown in table B are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

The productivity index is a relative rating of the capacity of a soil to produce a specific plant under a defined management system. The index is determined from yield data on a few benchmark soils and is used to calculate yields, the net returns from crops, land assessment values, and taxes and to perform risk analysis when land management decisions are made.

Crop Yield Index

Table 10 (p. 246) is the crop yield index for Miami 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 BIA, multiply 0.77 by the corn yield in the table header, which is 130. 0.77 x 130 = 100 bushels of corn estimated for BIA.

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 11 (p. 250). 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 35 (p. 466). 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 12 (p. 251), table 13 (p. 258), and table 14 (p. 267), 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

Figure 9. Celina silt loam, 0 to 2 percent slopes is well suited to windbreaks.

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 15 (p. 277), 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 16 (p. 291) shows the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates in table 16 (p. 291) 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 17 (p. 299) and table 18 (p. 299) 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 17 (p. 299) and table 18 (p. 299) 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 19 (p. 310), 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

Figure 10. This prairie grass planting flourishes on Algiers silt loam.

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.

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 20 (p. 324) and table 21 (p. 333) 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 20 (p. 324), 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 22 (p. 346) and table 23 (p. 355) 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 24 (p. 367) and table 25 (p. 379) 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 26 (p. 389) 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

Figure 11. Glynwood silt loam, 2 to 6 percent slopes, moderately eroded is well suited to animal waste lagoons.

storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30 milligrams per liter. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter. When wastewater is applied, checks should be made to ensure that nitrogen, heavy metals, and salts are not added in excessive amounts.

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

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

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

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

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

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

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

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

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

Water Management

Table 27 (p. 406) and table 28 (p. 406) 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.

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 29 (p. 415) 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 12). "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

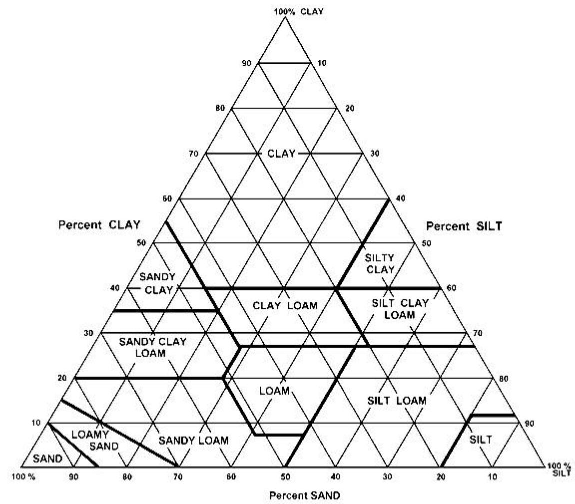

Figure 12. Textural Triangle

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 29 (p. 415).

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 30 (p. 438) 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 30 (p. 438), 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 30 (p. 438) 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 31 (p. 447) 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 31 (p. 447), 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 32 (p. 455) 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 33 (p. 460) 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 34 (p. 465) 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 Miami 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 somewhat poorly drained, level or nearly level soils. The upper part of Algiers soils formed in recent alluvium. The lower part is a buried dark-colored soil that formed in older alluvium or in glacial till. Algiers soils formed under mixed hardwoods. They are on flood plains and in depressions on uplands. Areas are small and widely scattered throughout the county.

In a representative profile the surface layer is dark grayish brown silt loam about 16 inches thick. The subsoil is dark brown silt loam about 7 inches thick. A buried soil is at a depth of 23 inches. It is very dark gray silty clay loam in the upper 12 inches, very dark grayish brown clay loam in the next 6 inches, and grayish brown silty clay loam in the lower 5 inches. Olive gray clay loam is between depths of 46 and 60 inches.

Artificially drained Algiers soils are used for cultivated crops, pasture, and meadow. Undrained areas are too wet for crops, but in places are suited to pasture or wildlife habitat. Tile and open ditches are used to provide drainage. Levees are used to control flooding in some areas.

Representative profile of Algiers silt loam in a pasture field in Bethel Township, Miami County, SE¼NW¼ sec. 8, T. 2 E., R. 9 N.:

A-0 to 16 inches, dark grayish brown (10YR 4/2) silt loam; moderate, medium and fine, granular structure; friable; slightly acid; clear, smooth boundary.

B2-16 to 23 inches, dark brown (10YR 4/3) silt loam; weak, medium, subangular blocky structure; friable; neutral; clear, wavy boundary.

IIAb-23 to 35 inches, very dark gray (10YR 3/1) silty clay loam; moderate, medium, angular blocky structure; friable; few reddish brown (5YR 4/4) streaks; mildly alkaline; clear, wavy boundary.

IIB2bg-35 to41 inches, very dark grayish brown (10YR 3/2) clay loam; common, medium, distinct, grayish brown (2.5Y 5/2) mottles; moderate, medium, subangular blocky structure; firm; few reddish brown (5YR 4/4) streaks; 2 percent pebbles; mildly alkaline; clear, smooth boundary.

IIB3bg-41 to 46 inches, grayish brown (2.5Y 5/2) silty clay loam; medium, distinct, brown (10YR 4/3) and dark gray (N 4/0) mottles; weak, medium, subangular blocky structure; firm; 5 to 10 percent pebbles; moderately alkaline; clear, wavy boundary.

IIIC-46 to 60 inches, olive gray (5Y 5/2) clay loam; many, medium, distinct, olive brown (2.5Y 4/4) mottles and few, medium, distinct, brown (10YR 4/3) mottles; massive; firm; 10 percent pebbles; moderately alkaline.

The medium textured recent alluvium is 14 to 36 inches thick over the IIAb horizon of the buried soil. The recent alluvium ranges from slightly acid to neutral, and the buried soil ranges from neutral to moderately alkaline and in places is calcareous.

The A horizon is brown (10YR 4/3) or dark grayish brown (10YR 4/2). In some places there is an 8- to 10-inch Ap horizon.

The B2 horizon is dark brown (10YR 4/3) or dark grayish brown (10YR 4/2) silt loam or loam. It is 6 to 20 inches thick. The IIAb horizon is very dark gray (10YR 3/1) or black (10YR 2/1) clay loam or silty clay loam and contains up to 5 percent pebbles in places. The IIAb horizon is 10 to 18 inches thick. The IIB2 horizon is very dark grayish brown (10YR 3/2), dark gray (10YR 4/1), or dark grayish brown (10YR 4/2) silty clay loam, clay loam, or loam. It has few to many gray and brown mottles. The content of pebbles is 0 to 10 percent. The IIB3 horizon is similar to the IIB2 horizon.

The IIC horizon or IIIC horizon is olive gray (5Y 5/2) or grayish brown (10YR 5/2 or 2.5Y 5/2) silty clay loam or clay loam. The content of pebbles is 2 to 10 percent.

The B2 horizon in these Algiers soils has more structural development than is defined as the range for the series, but this difference does not alter the use or behavior of the soils.

Algiers soils are near Shoals, Medway, and Montgomery soils. A few areas of Algiers soils are near Brookston and Wallkill soils. Algiers soils have dark colored buried soils, which are lacking in the Shoals, Medway, Montgomery, and Brookston soils. They have a lighter colored A horizon than Medway, Montgomery, and Brookston soils. They are underlain by mineral soil material, but Wallkill soils are underlain by muck.

Blount Series

The Blount series consists of somewhat poorly drained, level to gently sloping soils. These soils formed in moderately fine textured glacial till in the northwestern part of the county. The native vegetation was mixed hardwoods, but most wooded areas have been cleared.

In a representative profile the surface layer is dark grayish brown silt loam about 9 inches thick. The subsoil is grayish brown silty clay loam in the upper 3 inches, olive brown silty clay in the next 9 inches, and light olive brown silty clay in the lower 12 inches. It is firm and has some grayish brown and, olive brown mottles. The underlying material is olive brown clay loam to a depth of 60 inches. It is mottled with olive gray.

These soils are used mainly for crops. A few areas are in pasture or woods. Most cultivated areas have been artificially drained. These soils dry and warm later in the spring than nearby Glynwood soils. Because water moves slowly through these soils after rain, more days of drying are needed before they are suited to tillage or planting. The soils generally drain well with tile.

Representative profile of Blount silt loam, 0 to 2 percent slopes, in Washington Township, Miami County, NW¼SW¼ sec. 36, T. 8 N., R. 5 E.

Ap-0 to 9 inches, dark grayish brown (10YR 4/2) silt loam; weak, fine, granular structure; friable; many roots; medium acid; abrupt, smooth boundary.

B&A-9 to 12 inches, grayish brown (2.5Y 5/2) silty clay loam; common, medium, faint, olive brown (2.5Y 4/4) mottles; moderate, medium, angular blocky structure; firm; many roots; thin, very patchy, dark grayish brown (10YR 4/2) clay coating; medium, patchy, grayish brown (10YR 5/2) silt coatings; medium acid; clear, smooth boundary.

B21t-12 to 21 inches, olive brown (2.5Y 4.4) silty clay; many, coarse, distinct, grayish brown (10YR 5/2) mottles; weak, medium, prismatic structure parting to moderate, fine and medium, angular blocky; firm; many roots; medium, continuous, grayish brown (2.5Y 5/2) clay films on ped faces; few dark concretions; few pebbles; medium acid; clear, smooth boundary.

B22t-21 to 29 inches, light olive brown (2.5Y 5/4) silty clay; common, medium, faint, grayish brown (2.5Y 5/2) and light olive brown (2.5Y 5/6) mottles; moderate, medium, angular blocky structure; firm; few roots; grayish brown (2.5Y 5/2) coatings on peds; thin, patchy, grayish brown (2.5Y 5/2) clay films on ped faces; few dark concretions; few pebbles; mildly alkaline; clear, wavy boundary.

B3t-29 to 33 inches, light olive brown (2.5Y 5/4) silty clay; common, medium, distinct, olive gray (5Y 5/2) mottles and few, medium, faint, olive brown (2.5Y 4/4) mottles; weak, coarse, subangular blocky structure; firm; thin, very patchy, grayish brown (2.5Y 5/2) clay

films on ped faces; few pebbles; mildly alkaline, weakly calcareous; clear, wavy boundary.

C-33 to 60 inches, olive brown (2.5Y 4/4) clay loam; many, coarse, distinct, olive gray (5Y 5/2) mottles; massive; firm; 10 percent pebbles; moderately alkaline, calcareous.

The solum is 20 to 40 inches thick.

In some places there is a 2- to 3-inch A2 horizon. The Ap horizon is dark gray (10YR 4/1) or dark grayish brown (10YR 4/2). In wooded areas there is a 3- to 4-inch A horizon that is very dark gray (10YR 3/1) or very dark brown (10YR 2/2).

The B horizon is silty clay or silty clay loam. It has matrix colors with hue of 2.5Y or 10YR, value of 4 to 6, and chroma of 2 to 4. It is medium acid or slightly acid in the upper part and slightly acid to mildly alkaline in the lower part. In some places the B3 horizon is weakly calcareous.

The C horizon is silty clay loam or clay loam and commonly contains glacial pebbles.

Blount soils are near Pewamo and Glynwood soils. They are somewhat poorly drained members of a drainage sequence that includes the moderately well drained Glynwood soils and the very poorly drained Pewamo soils. Blount soils are similar to Crosby soils but have heavier texture in the B horizon and C horizon. Blount soils commonly have poorer tilth than Crosby soils. They are underlain by glacial till, but Randolph soils are underlain by limestone bedrock.

Brookston Series

The Brookston series consists of very poorly drained, nearly level, deep soils. These soils formed in loam glacial till. They are in depressions and drainageways on uplands throughout the county. The native vegetation was a mixed stand of hardwoods and wetland grasses, but most areas have been cleared and are used for crops.

In a representative profile the surface layer is very dark, gray silty clay loam about 11 inches thick. The subsoil is firm silty clay loam 28 inches thick. It is dark gray mottled with light olive brown in the upper 6 inches and olive gray mottled with yellowish brown in the lower 22 inches. Light olive brown loam glacial till is between depths of 39 and 60 inches.

Brookston soils are used extensively for crops. A few areas are wooded and in pasture. Most cultivated areas are artificially drained. Tiling and open ditches provide drainage, and the soils generally drain well with tile. Crops respond well to fertilizers. Undrained areas are commonly used for wildlife habitat or woods.

Representative profile of Brookston silty clay loam in Concord Township, Miami County, SW¼SW¼ sec. 31, T. 5 N., R. 6 E.:

Ap-0 to 11 inches, very dark gray (10YR 3/1) silty clay loam; weak, medium, subangular blocky structure; firm; many roots; neutral; abrupt, smooth boundary.

B1g-11 to 17 inches, dark gray (5Y 4/1) silty clay loam; common, medium, distinct, light olive brown (2.5Y 5/4) mottles; moderate, medium, angular blocky structure; firm; many roots; organic coatings on some vertical ped faces; neutral; clear, smooth boundary.

B2tg-17 to 31 inches, olive gray (5Y 5/2) silty clay loam; many, medium, distinct, light olive brown (2.5Y 5/4) and yellowish brown (10YR 5/4) mottles; weak, medium, prismatic structure parting to moderate, medium, angular blocky; firm; thin continuous clay films on ped faces; 5 percent pebbles; few fine roots; neutral; gradual, smooth boundary.

B3tg-31 to 39 inches, olive gray (5Y 5/2) silty clay loam; common, medium, distinct, yellowish brown (10YR 5/6) mottles; weak, medium, subangular blocky structure; firm; thin patchy clay films on vertical ped surfaces; 5 percent pebbles; neutral grading to mildly alkaline in lower part; clear, wavy boundary.

C-39 to 60 inches, light olive brown (2.5Y 5/4) loam; many, coarse, distinct, gray (10YR 6/1) mottles; massive; friable; 10 percent pebbles; moderately alkaline, calcareous.

The solum is 30 to 50 inches thick. It ranges from slightly acid to mildly alkaline, and the B3 horizon is weakly calcareous in places.

The A horizon is very dark gray (10YR 3/1), very dark grayish brown (10YR 3/2), or black (10YR 2/1). It has weak or medium, subangular blocky or granular structure.

There is a B1g horizon in most places. The B2 horizon has hue of 10YR, 2.5Y, or 5Y; value of 4 to 6; and chroma of 1 or 2. It is mainly silty clay loam or clay loam, but individual subhorizons are silty clay or loam. In the lower part of the B2 horizon, the content of glacial pebbles is 5 to 15 percent in places. Clay films in the Bt horizon range from thin and very patchy to medium and continuous. The B3 horizon is similar in color to the B2 horizon, but it has chroma of 2 to 6. It is silty clay loam or clay loam and is 5 to 15 percent glacial pebbles.

The C horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 3 or 4. It is generally loam, but is clay loam in places.

Brookston soils are very poorly drained members of a drainage sequence that includes the somewhat poorly drained Crosby soils, the moderately well drained Celina soils, and the well drained Miamian soils. In some places, Brookston soils are near Odell, Montgomery, Millsdale, and Algiers soils. Brookston soils have a grayer B horizon and are more highly mottled than Odell soils. They are underlain by glacial till, unlike Montgomery soils, which are underlain by silty clay and clay loam lacustrine sediment, and Millsdale soils, which are underlain by limestone bedrock. Brookston soils have a darker colored A horizon than Algiers soils. They are similar to Pewamo soils but have a coarser textured B horizon and C horizon.

Casco Series

The Casco series consist of well drained, sloping to moderately steep soils. These soils are shallow over sand and gravel. They formed in loamy glacial outwash. They are mainly on gravelly outwash terraces along the Miami and Stillwater Rivers and their larger tributaries. A few areas of Casco soils are on kames and eskers on uplands, mainly in Bethel Township. The native vegetation was mixed hardwoods.

In a representative profile the surface layer is dark grayish brown gravelly loam about 8 inches thick. The subsoil is gravelly clay loam 12 inches thick. It is dark yellowish brown in the upper 5 inches and dark reddish brown in the lower 7 inches. Brown, calcareous stratified sand and gravel are between depths of 20 and 60 inches.

The hazard of drought is severe, and crops are damaged by a lack of moisture during the growing season of most years. These soils dry and warm early in spring.

Representative profile of Casco gravelly loam, in an area of Eldean-Casco gravelly loams, 6 to 12 percent slopes, moderately eroded, in a cultivated field in Staunton Township, Miami County, NE¼SE¼ sec. 2, T. 1 E., R. 10 N.:

Ap-0 to 8 inches, dark grayish brown (10YR 4/2) gravelly loam; weak, fine and medium, subangular blocky structure; friable; many roots; mildly alkaline; clear, smooth boundary.

B2t-8 to 13 inches, dark yellowish brown (10YR 4/4) gravelly clay loam; moderate, medium, subangular blocky structure; firm; common roots; thin, continuous, dark brown (7.5YR 3/2) clay films on ped and pebble faces; mildly alkaline; clear, smooth boundary.

B3t-13 to 20 inches, dark reddish brown (5YR 3/3) gravelly clay loam; weak, coarse, subangular blocky structure; firm; common roots; thin, patchy, dark brown (7.5YR 3/2) clay films on ped faces; mildly alkaline; abrupt, irregular boundary.

C-20 to 60 inches, brown (10YR 5/3) stratified sand and gravel; single grained; loose; moderately alkaline, calcareous.

The solum is 12 to 24 inches thick. Depth to calcareous material ranges from 10 to 20 inches. The solum is neutral or mildly alkaline and in places is calcareous in the lower part.

The Ap horizon is dark grayish brown (10YR 4/2) or dark brown.

The Bt horizon is clay loam or sandy clay loam and has 2- to 3-inch layers of clay in places. It is mainly gravelly. The B2t horizon ranges from reddish brown (5YR 4/4) to dark yellowish brown (10YR 4/4). In some places the B3 horizon lacks clay films. Tongues of the B3 horizon extend as much as 1 foot to 2 feet into the C horizon in many places.

The C horizon ranges from poorly sorted to well sorted, calcareous sand and gravel.

Casco soils are near Eldean, Rodman, Lorenzo, Sleeth, Wea, and Warsaw soils. Casco soils have a thinner B horizon and are shallower to calcareous sand and gravel than Eldean, Sleeth, Wea, and Warsaw soils. They have a lighter colored A horizon than Rodman, Lorenzo, Wea, and Warsaw soils. They also lack the gray B horizon that Sleeth soils have.

Celina Series

The Celina series consists of moderately well drained, level to gently sloping soils on uplands. These soils formed in medium textured glacial till. In some areas the till is mantled with 6 to 12 inches of loess. The soils occur in scattered areas on uplands throughout the county, except in the northern third of Newberry Township. The native vegetation was a mixed stand of hardwoods, but most wooded areas have been cleared.

In a representative profile the surface layer is dark grayish brown silt loam about 12 inches thick. The subsoil is firm clay loam 12 inches thick. It is dark brown mottled with grayish brown in the upper 7 inches and yellowish brown mottled with grayish brown in the lower 5 inches. Mottled yellowish brown calcareous loam glacial till is between depths of 24 and 60 inches.

Celina soils are used mainly for crops. A few areas are wooded. These soils dry and warm earlier in spring than nearby Crosby, Odell, and Brookston soils.

Representative profile of Celina silt loam, 2 to 6 percent slopes, in an orchard field in Springcreek Township, Miami County, NE¼SE¼ sec. 7, R. 12 N., T. 1 E.:

Ap1-0 to 9 inches, dark grayish brown (10YR 4/2) silt loam; moderate, fine, granular structure; friable; few roots; slightly acid; clear, smooth boundary.

Ap2-9 to 12 inches, dark grayish brown (10YR 4/2) silt loam; moderate, fine, subangular blocky structure; friable; few roots; neutral; abrupt, smooth boundary.

IIB21t-12 to 19 inches, dark brown (10YR 4/3) clay loam; few, fine, distinct, grayish brown (10YR 5/2) mottles; moderate, medium, subangular blocky structure; firm; thin, patchy, dark grayish brown (10YR 4/2) clay films on ped faces; few glacial pebbles; neutral; gradual, smooth boundary.

IIB22t-19 to 24 inches, yellowish brown (10YR 5/6) clay loam; common, fine, distinct, grayish brown (10YR 5/2) and yellowish brown (10YR 5/8) mottles; moderate, medium and coarse, subangular blocky structure; firm; thin, patchy, dark brown (10YR 4/3) clay films on ped faces; few glacial pebbles; mildly alkaline; clear, wavy boundary.

IIC-24 to 60 inches, yellowish brown (10YR 5/4) loam; few, fine, distinct, dark grayish brown (10YR 4/2) mottles; massive; friable; 10 percent glacial pebbles; moderately alkaline, calcareous.

The solum is 20 to 40 inches thick. The depth to calcareous material ranges from 18 to 36 inches. The silty loess capping ranges from 0 to 12 inches in thickness. The solum ranges from medium acid to neutral in the upper part and is mildly alkaline and in places weakly calcareous in the B3 horizon. Coarse fragment content below the silty loess cap ranges from 5 to 15 percent.

The Ap horizon is dark grayish brown (10YR 4/2) or dark brown (10YR 4/3). In uncultivated areas there is a very dark brown (10YR 2/2) or black (10YR 2/1) A1 horizon that is 3 to 4 inches thick and a brown (10YR 5/3) A2 horizon that is 4 to 8 inches thick. In some cultivated areas there is a 1- to 2-inch A2 horizon below the Ap horizon. The Ap horizon has weak or moderate, granular or subangular blocky structure.

In some places there is a yellowish brown (10YR 5/4) or brown (10YR 5/3) B1 horizon that is 1 inch to 3 inches thick. It is silt loam or silty clay loam and has weak or moderate, medium, subangular blocky structure. The B2t horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. It is clay loam, silty clay loam, silty clay, or clay. It has moderate or strong, medium or coarse, subangular blocky structure. In some places there is a 4- to 6-inch B3 horizon that is yellowish brown (10YR 5/4) clay loam or loam.

The C horizon is brown (10YR 5/3) or yellowish brown (10YR 5/4) silt loam or loam.

Celina soils are moderately well drained members of a drainage sequence that includes the well drained Miamian soils, the somewhat poorly drained Crosby soils, and the very poorly drained Brookston soils. Celina soils are near these soils and also near Odell, Corwin, and Martinsville soils and Ockley, till substratum soils. Celina soils have more mottles than Miamian soils, but they have less mottles and are better drained than Crosby and Odell soils. They have a lighter colored A horizon than Corwin soils. Celina soils contain more clay and less sand in the B horizon than Martinsville and Ockley, till substratum soils, and they are shallower to calcareous till. They contain less clay in the B horizon and C horizon than Glynwood soils.

Corwin Series

The Corwin series consists of moderately well drained, level to gently sloping soils. These soils formed in medium textured glacial till. They are in scattered small areas on uplands, mainly in the northeastern part of the county. The native vegetation was tall prairies grasses and some scattered mixed hardwoods, but most areas have been cultivated.

In a representative profile the surface layer is very dark grayish brown silt loam in the upper 10 inches, and very dark grayish brown loam in the lower 3 inches. The subsoil is firm clay loam 15 inches thick. It is dark brown in the upper 8 inches and olive brown mottled with dark grayish brown in the lower 7 inches. Calcareous, olive brown loam till mottled with light yellowish brown is between depths of 28 and 60 inches.

Corwin soils are used mainly for crops. These soils dry and warm earlier in spring than nearby Brookston, Odell, and Crosby soils.

Representative profile of Corwin silt loam, 0 to 2 percent slopes, in a cultivated field in Lost Creek Township, Miami County, SW¼NW¼ sec. 26, T. 2 E., R. 11 N.

Ap-0 to 10 inches, very dark grayish brown (10YR 3/2) silt loam; weak, fine and medium, subangular blocky structure; friable; many roots; neutral; abrupt, smooth boundary.

A12-10 to 13 inches, very dark grayish brown (10YR 3/2) loam; moderate, medium, subangular blocky structure; slightly firm; common roots; neutral; clear, wavy boundary.

B21t-13 to 21 inches, dark brown (10YR 4/3) clay loam; moderate, fine and medium, angular blocky structure; firm; few roots; thin patchy clay films on ped faces; few, medium, very dark grayish brown (10YR 3/2) organic fillings; 10 percent pebbles; neutral; clear, wavy boundary.

B22t-21 to 28 inches, olive brown (2.5Y 4/4) clay loam; few, fine, distinct, dark grayish brown (2.5Y 4/2) mottles; moderate, medium, subangular blocky structure; firm; thin very patchy clay films on ped faces; 10 percent pebbles; mildly alkaline; clear, wavy boundary.

C-28 to 60 inches, olive brown (2.5Y 4/4) loam till; few, fine, distinct, light yellowish brown (2.5Y 6/4 mottles; massive; firm; 15 percent pebbles, moderately alkaline, calcareous.

The solum is 24 to 36 inches thick. The depth to calcareous material ranges from 20 to 36 inches. The thickness of the dark colored surface layer ranges from 11 to 16 inches and corresponds to the thickness of the A horizon. The solum is slightly acid or neutral in the upper part and neutral or mildly alkaline in the lower part. In some places it is weakly calcareous in the lower part. The solum generally is 2 to 5 percent coarse fragments in the upper part and 5 to 15 percent in the lower part.

The A horizon is very dark grayish brown (10YR 3/2), very dark brown (10YR 2/2), or very dark gray (10YR 3/1). Its structure is weak or moderate, fine or medium, granular, or it is weak, fine or medium, subangular blocky.

The B2t horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 to 5. Mottles of chroma of 2 or less are at a depth of 6 inches or more below the A horizon. The B2t horizon is clay loam or silty clay loam.

The C horizon is brown (10YR 5/3), yellowish brown (10YR 5/4), or olive brown (2.5Y 4/4) loam or clay loam.

Corwin soils are moderately well drained members of a drainage sequence that includes the somewhat poorly drained Odell soils. Corwin soils are near Odell, Crosby, Celina, Brookston, and Miamian soils. Corwin soils contain fewer mottles in the B horizon and are naturally better drained than Odell, Crosby, and Brookston soils. They have a darker colored A horizon than Crosby, Celina, and Miamian soils.

Crosby Series

The Crosby series consists of somewhat poorly drained, nearly level to gently sloping soils. These soils formed in loam till. They are on uplands in every township in the county. The native vegetation was mixed hardwoods, but most wooded areas have been cleared and are used for crops.

In a representative profile the surface layer is dark grayish brown silt loam 8 inches thick. The subsoil is 20 inches thick and is mottled with yellowish brown and grayish brown. It is light brownish gray silty clay loam in the upper 3 inches, grayish brown silty clay in the next 9 inches, and yellowish brown silty clay loam and loam in the lower 8 inches. Yellowish brown, calcareous loam till is between depths of 28 and 60 inches.

These soils are used mainly for crops. Most cultivated areas have been artificially drained. These soils dry and warm later in spring than adjacent Miamian and Celina soils. They commonly drain well with tile.

Representative profile of Crosby silt loam, 0 to 2 percent slopes, in a cultivated field in Concord Township, Miami County, SW¼NE¼ sec. 23, T. 7 N., R. 5 E.:

Ap-0 to 8 inches, dark grayish brown (10YR 4/2) silt loam; weak, fine, subangular blocky structure; friable; few wormholes; slightly acid; abrupt, smooth boundary.

B&A-8 to 11 inches, light brownish gray (10YR 6/2) silty clay loam; common, medium, distinct, yellowish brown (10YR 5/4) mottles; moderate, fine and medium, angular blocky structure; slightly firm; gray (10YR 6/1) and grayish brown (10YR 5/2) silt coatings; few very dark gray (10YR 3/1) concretions; few wormholes with fillings of dark grayish brown (10YR 4/2); slightly acid; clear, smooth boundary.

B21t-11 to 20 inches, grayish brown (10YR 5/2) silty clay; common, medium, distinct, yellowish brown (10YR 5/6) mottles; weak, medium, prismatic structure parting to moderate, medium, subangular blocky; firm; silt coatings of grayish brown (10YR 5/2) in upper 1 inch; thin continuous clay films on ped faces; few very dark gray (10YR 3/1) concretions; few pebbles; neutral; gradual, smooth boundary.

B22t-20 to 24 inches, yellowish brown (10YR 5/4) silty clay loam; many, medium, distinct, grayish brown (10YR 5/2) mottles; weak, medium, prismatic structure parting to moderate, medium, angular blocky; firm; thin continuous clay films on ped faces; few pebbles; mildly alkaline; clear, wavy boundary.

B3t-24 to 28 inches, yellowish brown (10YR 5/4) loam; common, medium, distinct, grayish brown (10YR 5/2) mottles; weak, fine and medium, subangular blocky structure; friable; thin patchy clay films on vertical ped faces; 10 percent pebbles; moderately alkaline; gradual, wavy boundary.

C-28 to 60 inches, yellowish brown (10YR 5/4) loam; common, medium, faint, light brownish gray (10YR 6/2) and brownish yellow (10YR 6/6) mottles; massive; friable; 10 percent pebbles; moderately alkaline, calcareous.

The solum is 20 to 38 inches thick. Depth to calcareous material ranges from 18 to 36 inches.

The Ap horizon is grayish brown (10YR 5/2) or dark grayish brown (10YR 4/2). In undisturbed areas, there is a 2- to 3-inch, very dark gray (10YR 3/1) A1 horizon and a 4- to 7-inch A2 horizon.

The B horizon is mottled. In some places there is a thin B&A horizon. The B2t horizon is grayish brown (10YR 5/2), brown (10YR 5/3) or yellowish brown (10YR 5/4) silty clay loam, clay loam, silty clay, or clay and is 2 to 15 percent pebbles. It ranges from medium acid to mildly alkaline. In most places there is a B3 horizon that is as much as 6 inches thick.

The C horizon is loam or silt loam and is 5 to 20 percent coarse fragments.

Crosby soils are somewhat poorly drained members of a drainage sequence that includes the very poorly drained Brookston soils, the moderately well drained Celina soils, and the well drained Miamian soils. In some areas, Crosby soils are near Randolph, Odell, and Corwin soils. Crosby soils are similar to Blount soils but have a coarser textured B horizon and C horizon. They are underlain by calcareous loam till, and Randolph soils are underlain by limestone bedrock. Crosby soils have a lighter colored A horizon than Odell and Corwin soils.

Edwards Series

The Edwards series consists of very poorly drained, level organic soils underlain by marl at a depth of 16 to 48 inches. These soils are in bogs and swamps. They consist of partly decomposed plant remains, mainly trees, fibrous grasses, sedges, and reeds.

In a representative profile the organic layer is black muck about 21 inches thick. Below this to a depth of 60 inches is gray, calcareous marl.

The wetness hazard is very severe, and most areas have not been drained. The soils are difficult to drain because drainage outlets are inadequate and the permeability of the marl underlying material is variable. When the surface is dry these soils are subject to soil blowing.

Representative profile of Edwards muck in Bethel Township, Miami County, SW¼SW¼ sec. 6, T. 2 E., R. 9 N.

Oa1-0 to 16 inches, black (N 2/0), on broken face and when rubbed, sapric material; 5 percent fiber when broken, none when rubbed; moderate, fine, crumb structure: friable; sodium pyrophosphate brown (10YR 5/3); neutral; gradual, smooth boundary.

Oa2-16 to 21 inches, black (N 2/0), on broken face, and very dark gray (10YR 3/1), when rubbed, sapric material; 15 percent fiber when broken, 2 percent when rubbed; weak, medium and coarse, subangular blocky structure; slightly firm; sodium pyrophosphate pale brown (10YR 6/3); mildly alkaline; abrupt, smooth boundary.

IILca-21 to 60 inches, gray (10YR 5/1) marl; massive; friable; 10 percent fine shell fragments; moderately alkaline, calcareous.

The depth to the IILca horizon ranges from 16 to 48 inches. Reaction of the organic horizons ranges from neutral to mildly alkaline. In some places the soil is calcareous and has shell fragments on the surface.

The organic material is black (N 2/0 or 10YR 2/1) or very dark brown (10YR 2/2). The surface tier of the organic material has structure that is weak or moderate, fine or medium, crumb or granular. The structure of the subsurface or bottom tier of the organic material is weak or moderate, medium or coarse, subangular blocky.

The IILca horizon has hue of 10YR, value of 5 to 8. and chroma of 1 or 2. It is mildly alkaline or moderately alkaline and is calcareous. It is 20 to 40 inches or more thick, and in some areas the marl has 2- to 4-inch layers of sandy and loamy materials.

Edwards soils are near Linwood and Montgomery soils. They are underlain by marl, and Linwood soils are underlain by loamy mineral materials. They have an organic surface layer, and Montgomery soils do not.

Eel Series

The Eel series consists of moderately well drained, level to nearly level soils. These soils formed in medium textured alluvial deposits. They are on flood plains next to rivers and the larger tributaries throughout the county. The native vegetation was mixed hardwoods, but many of the wooded areas have been cleared. In a representative profile the surface layer is dark grayish brown silt loam about 7 inches thick. The subsoil is friable, dark brown and brown silt loam and loam 24 inches thick. It is mottled with grayish brown in the lower 18 inches. The underlying material is mottled, dark gray loam and grayish brown gravelly loam between depths of 31 and 42 inches and is stratified, calcareous sand and gravel between depths of 42 and 60 inches.

Eel soils are used for mainly row crops and small grain and for meadow. A few areas in narrow stream valleys are subject to frequent flooding. These areas are used mainly for pasture or trees. The soils are highly suited to row crops if they are protected from flooding. A seasonal water table causes wetness in winter and spring at times. Artificial drainage is needed for some crops.

Representative profile of Eel silt loam, in a pasture field in Lost Creek Township, Miami County, NE¼SE¼ sec. 34, T. 2 E., R. 11 N.:

Ap-0 to 7 inches, dark grayish brown (10YR 4/2) silt loam; weak, fine and medium, granular structure; friable; many roots; mildly alkaline, weakly calcareous; clear, smooth boundary.
B1-7 to 13 inches, dark brown (10YR 4/3) silt loam; weak, medium, subangular blocky structure; friable; many roots; mildly alkaline, weakly calcareous; clear, wavy boundary.
B21-13 to 19 inches, brown (10YR 4/3) silt loam; few, fine, faint, grayish brown (10YR 5/2) mottles; weak, medium, subangular blocky structure; friable; few roots; few pebbles; mildly alkaline, weakly calcareous; clear, wavy boundary.
B22-19 to 31 inches, dark brown (10YR 4/3) loam; common, coarse, distinct, grayish brown (2.5Y 5/2) mottles; weak, coarse, subangular blocky structure; friable; 5 percent gravel; mildly alkaline, weakly calcareous. abrupt, wavy boundary.
Cl-31 to 37 inches, dark gray (5Y 4/1) loam; few, medium, distinct, dark yellowish brown (10YR 4/4) mottles; massive; friable; 10 percent pebbles; moderately alkaline, calcareous; clear, wavy boundary.
C2-37 to 42 inches, grayish brown (2.5Y 5/2) gravelly loam; common, medium, distinct, light olive brown (2.5Y 5/6) mottles; massive; friable; moderately alkaline, calcareous; clear, wavy boundary.
C3-42 to 60 inches, light brownish gray (2.5Y 6/2) stratified sand and gravel; common light yellowish brown (2.5Y 6/4) mottles; single grained; loose; moderately alkaline, calcareous.

The solum is 24 to 40 inches thick. The solum is mildly alkaline or moderately alkaline, and in most places it is weakly calcareous in the upper part and moderately calcareous or strongly calcareous in the lower part. In some areas shell fragments cover 2 to 5 percent of the surface.

The Ap horizon is brown (10YR 4/3 or 10YR 5/3) or dark grayish brown (10YR 4/2). In undisturbed areas there is a 2- to 3-inch A1 horizon that is very dark brown (10YR 2/2) or very dark gray (10YR 3/1).

The B horizon is dark brown or brown (10YR 4/3) or yellowish brown (10YR 5/4). Depth to gray mottling ranges from 10 to 24 inches. The B horizon is silt loam or loam, and in some places there are 1- to 4-inch subhorizons of clay loam or sandy loam.

The C horizon has hue of 2.5Y, 10YR, or 5Y; value of 4 to 6; and chroma of 1 to 3. Stratified layers of sand and gravel are common at a depth of 40 inches or more.

The A horizon and B horizon in these Eel soils have a higher carbonate content than is defined as the range for the series, but this difference does not alter their use or behavior.

Eel soils are moderately well drained members of a drainage sequence that includes the well drained Genesee and the somewhat poorly drained Shoals soils. Eel soils are near these soils and also near Medway, Ross, Stonelick, and Shoals variant soils. Eel soils are less brownish and contain more mottles in the B horizon and C horizon than Genesee soils. They lack the limestone bedrock underlying the Shoals variant soils, and they are less mottled and not so gray as those soils. Eel soils have a lighter colored A horizon than Medway and Ross soils. They lack the moderately coarse textures of Stonelick soils and are more mottled than Stonelick soils.

Eldean Series

The Eldean series consist of well drained nearly level to moderately steep soils. These soils are moderately deep to stratified, calcareous sand and gravel. They formed in loamy glacial outwash material. They are on outwash terraces along the rivers and larger streams in the county. A few areas of Eldean soils are on kames and eskers, mainly in Bethel Township. The native vegetation was mixed hardwoods, but most wooded areas have been cleared.

In a representative profile the surface layer is dark brown loam about 9 inches thick. The subsoil extends to a depth of 30 inches. It is brown loam in the upper 3 inches, dark reddish brown and reddish brown clay in the next 11 inches, and dark brown gravelly clay loam in the lower 7 inches. Yellowish brown stratified sand and gravel are between depths of 30 and 60 inches.

Eldean soils are used mainly for field crops. Some truck crops and nursery crops are also grown. Because the soils are droughty, crops are often damaged by a lack of moisture during the growing season. The less sloping areas are well suited to irrigation. Crops can be planted early because the soils dry quickly and warm early in spring.

Representative profile of Eldean loam, 0 to 2 percent slopes, in Elizabeth Township, Miami County, NE¼SW¼ sec. 31, T. 2 E., R. 10 N.:

Ap-0 to 9 inches, dark brown (7.5YR 4/2) loam; weak, fine, subangular blocky structure; friable; few roots; 5 percent gravel; neutral; abrupt, smooth boundary.
B1-9 to 12 inches, brown (7.5YR 4/4) loam; moderate, medium, subangular blocky structure; friable; few roots; 5 percent gravel; slightly acid; clear, wavy boundary.
B21t-12 to 18 inches, dark reddish brown (5YR 3/4) clay; moderate, medium, subangular and angular blocky structure; firm, sticky; few roots; thin patchy clay films on ped faces; 5 percent gravel; slightly acid; clear, wavy boundary.
B22t-18 to 23 inches, reddish brown (5YR 4/4) clay; moderate, fine and medium, subangular blocky structure; firm, sticky; few roots; thin patchy clay films on ped faces; 10 percent gravel; neutral grading to mildly alkaline in the lower part; abrupt, smooth boundary.
B3t-23 to 30 inches, dark brown (7.5YR 3/2) gravelly clay loam; weak, coarse, subangular blocky structure; friable; thin, very patchy clay films on ped faces; 40 percent gravel; common weathered limestone fragments; light gray (10YR 7/2) streaks of lime; moderately alkaline, calcareous; clear, irregular boundary.
C-30 to 60 inches, yellowish brown (10YR 5/4) stratified sand and gravel; single grained; loose; moderately alkaline, calcareous.

The solum is 24 to 40 inches thick. The depth to calcareous material ranges from 18 to 36 inches. The solum is medium acid to neutral in the upper part and neutral to moderately alkaline and calcareous in the lower part.

The Ap horizon is loam, silt loam, or gravelly loam, and the content of gravel ranges from 0 to 20 percent. The Ap horizon is brown (10YR 4/3), dark grayish brown (10YR 4/2), or dark brown (7.5YR 4/2). In wooded areas there is a 3- to 4-inch A1 horizon that is very dark grayish brown (10YR 3/2) to black (10YR 2/1). In some places there is a brown (10YR 5/3) or dark grayish brown (10YR 4/2) A2 horizon.

The B1 horizon is brown (7.5YR 4/4) or dark brown (10YR 4/3). The B2t horizon is clay loam or clay. It has a hue of 7.5YR or 5YR and a value and chroma of 3 to 5. The B3t horizon is gravelly sandy loam, gravelly loam, or gravelly clay loam. It has a hue of 10YR or 7.5YR, a value of 3 to 5, and a chroma of 2 or 3. In places tongues of the B3 horizon extend into the C horizon for 2 to 3 feet.

The proportion of sand and gravel in the C horizon varies greatly within short horizontal distances. The C horizon is yellowish brown (10YR 5/4) or brown (10YR 5/3).

Eldean soils are near Wea, Warsaw, Ockley. and Westland soils and in places are near Casco, Rodman, Sleeth, Lorenzo, and Miamian soils. Eldean soils have a lighter colored A horizon than Wea, Warsaw, and Westland soils. They are shallower to sand and gravel than Wea, Ockley, and Sleeth soils, and their B horizon is not so gray as that of Sleeth soils. Eldean soils are deeper to sand and gravel and have a thicker, more clayey B horizon than Casco, Rodman, and Lorenzo soils. They are underlain by sand and gravel, but Miamian soils are underlain by glacial till.

Genesee Series

The Genesee series consists of well drained, level to nearly level soils. These soils formed in medium textured alluvial deposits. They are on flood plains next to the Miami and Stillwater Rivers and their larger tributaries. The native vegetation was mixed hardwoods, but most wooded areas have been cleared and are used for crops.

In a representative profile the surface layer is dark grayish brown silt loam about 11 inches thick. The subsoil is friable, dark brown silt loam 14 inches thick. The underlying material is brown loam between depths of 25 and 43 inches and is stratified brown loose sand and gravel between depths of 43 and 60 inches.

Genesee soils are used for mainly row crops and some small grain and for meadow. A few areas are wooded or pasture. A large area is protected from flooding by levees along the Miami River. The soils are well suited to row crops, if they are protected from floods.

Representative profile of Genesee silt loam in Bethel Township, Miami County, NW¼SW¼ sec. 36, T. 2 E., R. 9 N.:

Ap-0 to 11 inches, dark grayish brown (10YR 4/2) silt loam; weak, fine, sub angular blocky structure; friable; 5 percent worm casts; few shell fragments; patchy dark brown (10YR 3/3) coatings on ped faces; moderately alkaline, calcareous; clear, smooth boundary.

B-11 to 25 inches, dark brown (10YR 4/3) silt loam; moderate, fine and medium, subangular blocky structure; friable; few shell fragments; moderately alkaline, calcareous; clear, wavy boundary.

C1-25 to 43 inches, brown (10YR 5/3) loam; massive; friable; 10 percent gravel; 2 to 4 percent shell fragments; moderately alkaline, calcareous; abrupt, wavy boundary.

C2-43 to 60 inches, brown (10YR 5/3) stratified sand and gravel; single grained; loose; 5 percent shell fragments; moderately alkaline, calcareous.

The solum is 24 to 36 inches thick. Reaction of the solum is mildly to moderately alkaline and in most places the solum is weakly calcareous. Some areas have 5 to 10 percent shell fragments in the A horizon.

The Ap horizon is dark grayish brown (10YR 4/2) or brown (10YR 5/3). In undisturbed areas there is a 2- or 3-inch A1 horizon that is very dark brown (10YR 2/2) or very dark gray (10YR 3/1).

The B horizon is brown (10YR 4/3), yellowish brown (10YR 5/4), or dark yellowish brown (10YR 4/4). It is mainly silt loam or loam, but in some places there are 1- to 4-inch subhorizons of sandy loam or clay loam. The content of gravel is mainly 5 to 10 percent.

The C horizon is brown (10YR 5/3) or yellowish brown (10YR 5/4), stratified silt loam, loam, and sandy loam. In many places sand and gravel are at a depth of 40 or more inches.

The A horizon and upper part of the B horizon of these Genesee soils have a higher carbonate content than is defined as the range for the series, but this difference does not alter the use or behavior of the soils.

Genesee soils are well drained members of a drainage sequence that includes the moderately well drained Eel soils and the somewhat poorly drained Shoals soils. Genesee soils are near these soils and also are near Ross, Ross variant, Wea, and Stonelick soils. Genesee soils lack the mottled B horizon which Eel and Shoals soils have. They have a lighter colored A horizon than Ross, Ross variant, and Wea soils. They are not underlain by bedrock as Ross variant soils are. Genesee soils contain less sand in the horizons below the A horizon than Stonelick soils.

Glynwood Series

The Glynwood series consists of moderately well drained, gently sloping to moderately steep soils. These soils formed in clay loam or silty clay loam till and are generally mantled with 8 to 14 inches of silty loess material. They are on till plains and moraines in the northwestern part of the county, mainly in the northern half of Newberry and northwest corner of Washington Township. The native vegetation was mixed hardwoods, but most wooded areas have been cleared.

In a representative profile the surface layer is dark brown silt loam about 8 inches thick. The subsoil is 21 inches thick. It is yellowish brown silty clay loam in the upper 3 inches, olive brown clay loam in the next 7 inches, dark yellowish brown clay in the next 4 inches, and brown clay loam in the lower 7 inches. It is mottled with grayish brown. Mottled olive brown clay loam till is between depths of 29 and 60 inches. The till is massive and calcareous, and it restricts root growth and movement of water.

Glynwood soils are used mainly for crops, but some steeper areas are in pasture and a few areas remain wooded. These soils have better natural drainage than most nearby soils.

Representative profile of Glynwood silt loam, 2 to 6 percent slopes, in a cultivated field in Newberry Township, Miami County, NE¼NW¼ sec. 33, T. 8 N., R. 5 E:

Ap-0 to 8 inches, dark brown (10YR 4/3) silt loam; weak, fine, subangular blocky structure; friable; common roots; neutral; abrupt, smooth boundary.

B1t-8 to 11 inches, yellowish brown (10YR 5/4) silty clay loam; few, medium, distinct, grayish brown (10YR 5/2) mottles; weak, fine and medium, subangular blocky structure; firm; few roots; thin patchy clay films on ped faces; neutral; clear, smooth boundary.

IIB21t-11 to 18 inches, olive brown (2.5Y 4/4) clay loam; few, medium, distinct, dark grayish brown (2.5Y 4/2) mottles; strong, fine and medium, angular blocky structure; firm; few roots; medium continuous clay films on ped faces; few dark concretions; 5 percent pebbles; medium acid; clear, wavy boundary.

IIB22t-18 to 22 inches, dark yellowish brown (10YR 4/4) clay; few, medium, distinct, grayish brown (2.5Y 5/2) mottles; strong, medium, angular blocky structure; firm; medium continuous clay films on ped faces; 5 percent pebbles; neutral; clear, wavy boundary.

IIB3t-22 to 29 inches, brown (10YR 5/3) clay loam; few, fine, faint, grayish brown (10YR 5/2) mottles; weak, very thick, platy structure parting to moderate, fine and medium, subangular blocky; firm; thin patchy clay films on ped faces; 5 percent pebbles; mildly alkaline, weakly calcareous; clear, wavy boundary.

IIC-29 to 60 inches, olive brown (2.5Y 4/4) clay loam; many, coarse, distinct, dark grayish brown (2.5Y 4/2) mottles; massive; firm; 5 to 10 percent pebbles; moderately alkaline, calcareous.

The solum is 20 to 36 inches thick. The depth to calcareous material ranges mainly from 16 to 32 inches and in severely eroded areas is less than 10 inches. The loess capping is 0 to 14 inches thick. The part of the solum below the loess and the C horizon are 2 to 15 percent coarse fragments.

The Ap horizon is dark grayish brown (10YR 4/2) or dark brown (10YR 4/3). In undisturbed areas there is a 3- to 5-inch A1 horizon that is very dark gray (10YR 3/1) or very dark grayish brown (10YR 3/2) and a 4- to 6-inch A2 horizon that is grayish brown (10YR 5/2, 2.5Y 5/2) or dark grayish brown (10YR 4/2). The A horizon is mainly silt loam, but in severely eroded areas it is clay loam. The Ap horizon has weak, medium, granular structure or weak, fine or medium, subangular blocky.

The Bt horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 3 to 6. It is silty clay loam, clay loam, silty clay, or clay. Its structure is weak to strong, fine to coarse, angular or subangular blocky or prismatic. The B horizon is strongly acid to medium acid in the upper part and neutral to mildly alkaline in the lower part. In some places the B3 horizon is weakly calcareous.

The C horizon is clay loam or silty clay loam.

Glynwood soils are moderately well drained members of a drainage sequence that includes the somewhat poorly drained Blount soils and the very poorly drained Pewamo soils. They are similar to Celina and Miamian soils but contain more clay in the B horizon and C horizon.

Hennepin Series

The Hennepin series consists of well drained, steep to very steep soils. These soils are shallow to calcareous, medium textured glacial till. They are on uplands along the Miami and Stillwater Rivers and their larger tributaries. The native vegetation was mixed stands of deciduous hardwoods.

In a representative profile the surface layer is dark brown silt loam about 4 inches thick. The subsoil is brown silt loam in the upper 10 inches and is yellowish brown loam in the lower 4 inches. Brown, calcareous loam glacial till is between depths of 18 and 60 inches.

Hennepin soils are used for pasture and woodland. They are too steep to be cultivated.

Representative profile of Hennepin silt loam, in an area of Miamian and Hennepin silt loams, 25 to 50 percent slopes, in a wooded area, in Newton Township, Miami County, SE¼SE¼ sec. 13, T 8 N., R. 4 E:

O1-¼ inch to 0, ash and oak leaves.

A1-0 to 4 inches, dark brown (10YR 3/3) silt loam; moderate, fine and medium, granular structure; friable; mildly alkaline, weakly calcareous; abrupt, smooth boundary.

B1-4 to 14 inches, brown (10YR 4/3) silt loam; moderate, medium and coarse, subangular blocky structure; friable; many fine roots; 5 to 10 percent pebbles; common pores and root channels, 1 to 2 millimeters in diameter; moderately alkaline, calcareous; clear, smooth boundary.

B2-14 to 18 inches, yellowish brown (10YR 5/4) loam; moderate, medium, subangular blocky structure; friable; few fine roots; 10 percent pebbles; moderately alkaline, calcareous; clear, smooth boundary.

C-18 to 60 inches, brown (10YR 5/3) loam till; massive; firm; 10 percent pebbles; moderately alkaline, calcareous.

The solum is 10 to 18 inches thick. Reaction of the solum is mildly alkaline or moderately alkaline, and most of the solum is weakly calcareous or moderately calcareous.

The A1 horizon is dark brown (10YR 3/3), very dark grayish brown (10YR 3/2), or dark grayish brown (10YR 4/2). In a few areas the A horizon is as much as 5 to 10 percent pebbles.

The B horizon is brown (10YR 4/3), yellowish brown (10YR 5/4) , or dark yellowish brown (10YR 3/4 or 10YR 4/4) silt loam, loam, or clay loam. It generally is 5 to 10 percent pebbles. Its structure is weak or moderate, medium or coarse, subangular blocky, or granular.

The C horizon is dark brown (10YR 4/3), brown (10YR 5/3), or yellowish brown (10YR 5/4). It is mainly loam, but is clay loam in a few places. The C horizon is 5 to 15 percent pebbles.

Hennepin soils are near Miamian, Rodman, and Ritchey soils. Hennepin soils are shallower to calcareous till than the Miamian soils. They are underlain by loam till, Rodman soils are underlain by sand and gravel, and Ritchey soils are underlain by limestone bedrock.

In Miami County, Hennepin soils are mapped only with Miamian soils.

Kokomo Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderately slow
Parent material: Glacial till
Landform: Till plains
Position on the landform: Footslopes, open depressions, drainageways
Slope range: 0 to 2 percent
Adjacent soils: Celina, Crosby, Miamian
Taxonomic classification: Fine, mixed, mesic Typic Argiaquolls

Typical Pedon

Kokomo silty clay loam, about 4 miles south of Springfield, in Greene Township, Clark County; about 265 feet south and 265 feet west of the northeast corner of sec. 6, T. 4, R. 8:

Ap—0 to 11 inches; very dark gray (10YR 3/1) silty clay loam, grayish brown (10YR 5/2) dry; moderate fine subangular blocky structure; firm; common fine roots; few pebbles; slightly acid; abrupt smooth boundary.

A—11 to 19 inches; very dark gray (10YR 3/1) silty clay loam, grayish brown (10YR 5/2) dry; common fine distinct dark yellowish brown (10YR 4/4) mottles; moderate medium subangular blocky structure; firm; common fine roots; few pebbles; slightly acid; clear wavy boundary.

Btg1—19 to 27 inches; grayish brown (10YR 5/2) silty clay loam; common fine distinct yellowish brown (10YR 5/4) and common medium distinct grayish brown (2.5Y 5/2) mottles; moderate medium subangular blocky structure; firm; few fine roots; common faint grayish brown (2.5Y 5/2) clay films on faces of peds; few pebbles; slightly acid; clear wavy boundary.

Btg2—27 to 38 inches; light brownish gray (10YR 6/2) silty clay loam; many medium distinct yellowish brown (10YR 5/4 and 5/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; common faint grayish brown (2.5Y 5/2) clay films on faces of peds; common distinct black (10YR 2/1) coatings on faces of peds (iron and manganese oxides); few pebbles; neutral; clear wavy boundary.

Btg3—38 to 52 inches; light brownish gray (10YR 6/2) silty clay loam; many medium distinct yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; firm; common faint light brownish gray (10YR 6/2) clay films on faces of peds; common distinct black (10YR 2/1) coatings on faces of peds (iron and manganese oxides); few rock fragments; slightly alkaline; clear wavy boundary.

C1—52 to 60 inches; yellowish brown (10YR 5/4) loam; common fine faint yellowish brown (10YR 5/6) and many medium distinct gray (10YR 5/1) mottles; massive; firm; about 5 percent rock fragments; strongly effervescent; moderately alkaline; clear wavy boundary.

C2—60 to 80 inches; yellowish brown (10YR 5/4) loam; massive; firm; about 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 36 to 60 inches
Thickness of the mollic epipedon: 10 to 24 inches
Content of rock fragments: Btg horizon—0 to 5 percent; C horizon—5 to 10 percent
A horizon: Color—hue of 10YR, value of 2 or 3, chroma of 1 or 2; Texture—silty clay loam
Btg horizon: Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 or 2; Texture—silty clay loam or clay loam
C horizon: Color—hue of 10YR or 2.5Y, value of 5, chroma of 2 to 4; Texture—loam, clay loam

Linwood Series

The Linwood series consists of very poorly drained, level, organic soils. These soils are in bogs and swamps, generally on terraces, and in swales on moraines. They consist of layers of muck that are underlain by loamy material at a depth of 16 to 50 inches. The muck is the partly decomposed remains of plants, mostly trees, fibrous grasses, sedges, and reeds.

In a representative profile the surface layer is black or very dark gray muck 28 inches thick. Calcareous, greenish gray silty clay loam mineral soil is between depths of 28 and 60 inches.

The wetness hazard is moderate. In drained areas, the water table is high throughout most of the year. Drained areas are suited to cultivated crops. Some areas are difficult to drain because drainage outlets are inadequate. If the surface is dry, these soils are subject to soil blowing.

Representative profile of Linwood muck in woodland in Staunton Township, Miami County, SE¼SW¼ sec. 5, T. 1 E., R. 10 N:

Oa1-0 to 3 inches, black (10YR 2/1 on broken face) and black (N 2/0 when rubbed and pressed) sapric material; 5 percent fiber when broken, none when rubbed; moderate, medium, granular structure; friable; many shell fragments; mildly alkaline, calcareous; clear, smooth boundary.

Oa2-3 to 11 inches, black (10YR 2/1 on broken face and when rubbed and pressed) sapric material; 15 percent fiber when broken, 2 percent when rubbed; weak, medium, subangular blocky structure; friable; common shell fragments; mildly alkaline, calcareous; clear, wavy boundary.

Oa3-11 to 16 inches, black (10YR 2/1 on broken face and when rubbed and pressed) sapric material; 30 percent fiber when broken, 2 percent when rubbed; weak, coarse, subangular blocky structure; friable; few shell fragments; moderately alkaline, calcareous; clear, wavy boundary.

Oa4-16 to 28 inches, very dark gray (10YR 3/1 or broken face and when rubbed and pressed) sapric material; 35 percent fiber when broken, 5 percent when rubbed; weak, medium, subangular blocky structure; friable, nonsticky when wet; few shell fragments; moderately alkaline, calcareous; clear, wavy boundary.

IICg-28 to 60 inches, greenish gray (5GY 5/1) silty clay loam; massive; sticky when wet; few pebbles, 1/8 to 1/4 inch in diameter; moderately alkaline, calcareous.

The thickness of the organic material or depth to the IIC horizon ranges from 16 to 50 inches. Reaction of the organic material is mildly alkaline or moderately alkaline, and in most places the organic material is calcareous.

The surface tier of the organic material is black (N 2/0 or 10YR 2/1) or very dark brown (10YR 2/2). The subsurface and bottom tiers of the organic material are similar in color to the surface tier but are also very dark gray (10YR 3/1) or very dark grayish brown (10YR 3/2). In a few places the chroma of broken faces differs from that of rubbed and pressed material by one or two units. Structure of the surface tier is moderate, granular or crumb, and that of the subsurface and bottom tiers is weak or moderate, medium or coarse, subangular blocky.

The IICg horizon has hue of 10YR to 5GY, value of 4 to 6, and chroma of 1 or 2. It ranges from fine sandy loam to silty clay loam and averages less than 35 percent clay. In some places there are 2- to 4-inch layers of silty clay or fine sand.

Linwood soils are near Shoals, Montgomery, Edwards, and Wallkill soils. Linwood soils differ from Shoals and Montgomery soils by having an organic surface layer instead of a mineral surface layer. They are underlain by loamy mineral materials, and Edwards soils are underlain by marl. Linwood soils lack the mineral soil overburden which Wallkill soils have.

Lorenzo Series

The Lorenzo series consists of well drained, steep to very steep soils. These soils are shallow to sand and gravel. They formed in loamy glacial outwash. They are on gravelly stream terraces along the Miami River and its larger tributaries and on kames and eskers on uplands, mainly in Bethel Township. The native vegetation was tall prairie grasses. .

In a representative profile the surface layer is very dark grayish brown gravelly loam about 7 inches thick. The subsoil is dark brown gravelly clay loam in the upper 9 inches and is dark brown loamy sand in the lower 4 inches. Calcareous, yellowish brown sand and gravel is between depths of 20 and 60 inches.

Lorenzo soils are subject to drought and are warm and dry early in spring.

Representative profile of Lorenzo gravelly loam, in an area of Lorenzo-Rodman gravelly loams, 18 to 50 percent slopes, moderately eroded, in Bethel Township, Miami County, SW¼NE¼ sec. 11, T. 2 N., R. 2 E:

A1-0 to 7 inches, very dark grayish brown (10YR 3/2) gravelly loam; weak, medium, granular structure; friable; 20 percent gravel; mildly alkaline; clear, smooth boundary.

B2t-7 to 16 inches, dark brown (7.5YR 4/4) gravelly clay loam; moderate, medium, subangular blocky structure; firm; thin patchy clay films on ped faces; 20 percent gravel; mildly alkaline; clear, smooth boundary.

B3t-16 to 20 inches, dark brown (7.5YR 4/4) loamy sand; weak, medium subangular blocky structure; friable; thin very patchy clay films along channels and bridging sand grains; 10 percent gravel; mildly alkaline, calcareous; abrupt, smooth boundary.

C-20 to 60 inches, yellowish brown (10YR 5/4) stratified sand and gravel; single grained; loose; moderately alkaline, calcareous.

The solum is 12 to 24 inches thick, and the depth to calcareous material ranges from 10 to 20 inches. Reaction of the solum is neutral or mildly alkaline.

The A horizon is 6 to 9 inches thick. It is dark brown (10YR 3/3) or very dark grayish brown (10YR 3/2).

The B2t horizon is 6 to 9 inches thick. It is dark yellowish brown (10YR 3/4, 10YR 4/4) or dark brown to brown (10YR 4/3, 7.5YR 4/2, 7.5YR 4/4) clay loam, gravelly clay loam, or gravelly sandy clay loam. It is less than 35 percent gravel. The B3 horizon is gravelly loam, loamy sand, or sandy loam. It is 2 to 5 inches thick. In some places it contains clay films on ped faces and sand bridging. The B3 horizon is mildly alkaline or moderately alkaline and in most places is weakly calcareous.

The proportion of sand and gravel in the C horizon varies greatly within short distances. The C horizon is yellowish brown (10YR 5/4) or brown (10YR 5/3).

Lorenzo soils are near Eldean, Casco, Rodman, Wea, and Warsaw soils. Lorenzo soils are shallower to sand and gravel than Eldean, Wea, and Warsaw soils. They have a darker colored A horizon than Casco soils. Lorenzo soils have a better developed B horizon and contain more clay than Rodman soils.

Martinsville Series

The Martinsville series consists of well drained, gently sloping soils. These soils formed in thin deposits of loamy outwash. Medium textured glacial till is at a depth of 42 to 66 inches. The soils are on till plains and moraines scattered throughout the county. The native vegetation was mixed hardwoods, but most areas have been cleared and used for crops.

In a representative profile the surface layer is dark brown loam about 8 inches thick. The subsoil is firm, dark yellowish brown and brown clay loam, sandy clay loam, and gravelly clay loam 26 inches thick. The underlying material is calcareous, stratified dark yellowish brown fine sandy loam and brown silt loam between depths of 34 and 54 inches and is calcareous, yellowish brown loam till between depths of 54 to 60 inches.

These soils are used mainly for crops and are suited to most crops commonly grown in the county. They are in small areas and their use is often determined by the larger areas of adjacent soils. The soils dry and warm earlier in spring than nearby Celina, Crosby, and Brookston soils. Erosion is the main hazard if the soils are used for crops.

Representative profile of Martinsville loam, in an area of Martinsville and Ockley loams, till substratum, 2 to 6 percent slopes, in a cultivated field in Monroe Township, Miami County, NE¼NW¼ sec. 12, T. 6 N., R. 5 E:

Ap-0 to 8 inches, dark brown (10YR 4/3) loam; weak, fine, subangular blocky structure; friable; many roots; neutral; abrupt, smooth boundary.

B21t-8 to 19 inches, dark yellowish brown (10YR 4/4) clay loam; moderate, medium, subangular blocky

structure; firm; many roots; thin very patchy brown (7.5YR 4/4) clay films on ped faces; slightly acid; clear, wavy boundary.

B22t-19 to 24 inches, dark yellowish brown (10YR 4/4) sandy clay loam; weak, medium, subangular blocky structure; firm; few roots; thin very patchy brown, (7.5YR 4/4) clay films on ped faces; medium acid; clear, wavy boundary.

B23t-24 to 30 inches, dark yellowish brown (10YR 4/4) clay loam; moderate, medium, subangular blocky structure; firm; few roots; thin, continuous, brown (7.5YR 4/4) clay films on ped faces; medium acid; clear, wavy boundary.

IIB3-30 to 34 inches, brown (7.5YR 4/4) gravelly clay loam; weak, fine, subangular blocky structure; firm; neutral; clear, irregular boundary.

IICl-34 to 50 inches, dark yellowish brown (10YR 4/4) fine sandy loam and thin strata of sand and fine gravel; weak, coarse, subangular blocky structure; friable; moderately alkaline, calcareous; abrupt, irregular boundary.

IIIC2-50 to 54 inches, brown (10YR 5/3) silt loam; few, fine and medium, faint, gray (10YR 6/1) and yellowish brown (10YR .5/6) mottles; massive; friable; moderately alkaline, calcareous; clear, wavy boundary.

IVC3-54 to 60 inches, yellowish brown (10YR &/4) loam till; massive; friable; 10 percent pebbles; moderately alkaline, calcareous.

The solum is 24 to 40 inches thick. Depth to calcareous glacial till is 40 to 66 inches. Reaction of the solum is medium acid to neutral in the upper part and is neutral to mildly alkaline in the lower part.

The Ap horizon is dark brown or brown (10YR 4/3) or dark grayish brown (10YR 4/2). In some places there is a 2- to 4-inch A2 horizon that is dark brown (10YR 4/3) or brown (10YR 5/3).

The B2t horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. It is clay loam or sandy clay loam, and in places there are thin strata of sandy loam or loam. The IIB3 horizon is generally 3 to 6 inches thick; some profiles do not have a IIB3 horizon. This horizon is similar in color to the B2t horizon, but its color includes hue of 5YR. It is clay loam or gravelly clay loam.

The C1 horizon and C2 horizon are 16 to 26 inches thick combined. They are yellowish brown (10YR 5/4), dark yellowish brown (10YR 4/4), or brown (10YR 5/3) stratified silt loam, loam, fine sandy loam, sandy loam, or fine sand. The calcareous glacial till is yellowish brown (10YR 5/4) or brown (10YR 5/3) silt loam or loam. Some areas show evidence of water sorting. The till is weakly calcareous to strongly calcareous and is 5 to 15 percent coarse fragments.

The A horizon and B horizon of these Martinsville soils are slightly thinner than is defined as the range for the series, but this difference does not alter the use or behavior of the soils.

Martinsville soils are near Celina and Miamian soils, and they are mapped with Ockley till substratum soils. Martinsville soils contain less clay and more sand in the subsoil and are deeper to calcareous till than Celina and Miamian soils. They contain less sand and gravel in the lower part of the B horizon and in the C horizon than Ockley soils.

Medway Series

The Medway series consists of moderately well drained, level to nearly level soils. These soils formed in medium textured alluvial deposits. They are on bottom lands in stream valleys throughout the county. The native vegetation was scattered, mixed hardwoods and prairie grasses.

In a representative profile the surface layer is very dark grayish brown silt loam in the upper 14 inches and is very dark gray silty clay loam in the lower 6 inches. The subsoil is brown loam mottled with grayish brown and is 11 inches thick. The underlying material is grayish brown clay loam and light olive brown loam mottled with gray and olive to a depth of 60 inches.

These soils are used mainly for pasture and meadow. A limited acreage is used for row crops, and a few areas are used for woods and wildlife habitat. These soils are subject to occasional flooding that restricts their use at times. The water table is often high in winter and early in spring. The soils are suited to intensive cropping if they are protected from floods.

Representative profile of Medway silt loam, in a pasture field in Union Township, Miami County, NE¼SE¼ sec. 23, T. 6 N., R. 5 E:

Ap-0 to 9 inches, very dark grayish brown (10YR 3/2) silt loam; weak, medium, granular structure; friable; many roots; mildly alkaline, weakly calcareous; clear, smooth boundary.

A1-9 to 14 inches, very dark grayish brown (10YR 3/2) silt loam; weak, medium, subangular blocky structure; friable; common roots; mildly alkaline, weakly calcareous; clear, smooth boundary.

A3-14 to 20 inches, very dark gray (10YR 3/1) silty clay loam; few, medium, distinct, dark grayish brown (2.5Y 4/2) mottles; moderate, fine and medium, subangular blocky structure; friable; common roots; mildly alkaline, weakly calcareous; clear, wavy boundary.

B2-20 to 31 inches, brown (10YR 4/3) loam; many, medium, distinct, grayish brown (2.5Y 5/2) mottles; moderate, medium, subangular blocky structure; slightly firm to friable; few roots; some very dark grayish brown (10YR 3/2) organic coatings on vertical ped faces; mildly alkaline, weakly calcareous; clear, wavy boundary.

Cl-31 to 40 inches, grayish brown (2.5Y 5/2) clay loam; many, medium, faint, olive brown (2.5Y 4/4) mottles; massive; friable; moderately alkaline, calcareous; clear, wavy boundary.

C2-40 to 60 inches, light olive brown (2.5Y 5/4) loam; common, medium, distinct, light gray (2.5Y 7/2) mottles and few, medium, faint, olive yellow (2.5Y 6/6) mottles; massive; friable; 3 to 5 percent pebbles, 1/16 to 1/4 inch in diameter; moderately alkaline, calcareous.

The solum is 28 to 36 inches thick. The solum is mildly alkaline or moderately alkaline and in places is calcareous.

The A horizon is 16 to 24 inches thick. It is very dark gray (10YR 3/1) to dark brown (10YR 3/3).

The B horizon is 4 to 20 inches thick. It has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4. It is mainly silt loam or loam, but in some places there are thin strata of clay loam or sandy clay loam.

The C horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 1 to 6. It is loam, silt loam, sandy loam, silty clay loam, and clay loam. In some areas, stratified sand and gravel are common at a depth of 40 inches or more.

Medway soils are near Eel, Shoals, Ross, Algiers, and Shoals variant soils. Medway soils are moderately well drained members of a drainage sequence which includes the well drained Ross soils. They have a darker colored A horizon than Eel, Shoals, and Algiers soils. They have a mottled B horizon, which is lacking in Ross soils. They lack the dark colored, buried soil that is characteristic of Algiers soils. Medway soils lack the moderately deep limestone bedrock of Shoals variant soils.

Miamian Series

The Miamian series consists of well drained, level to very steep soils. These soils formed in medium textured glacial till. In some areas, the till is mantled with as much as 12 inches of loess. The soils are on uplands, are extensive, and are in every township in the county. The native vegetation was mixed hardwoods, but most wooded areas have been cleared.

In a representative profile the surface layer is dark grayish brown silt loam 10 inches thick. The subsoil is firm, dark yellowish brown clay loam in the upper 16 inches and is brown loam in the lower 12 inches. Calcareous, yellowish brown loam till is between depths of 38 and 80 inches.

Miamian soils are used mainly for field crops. In some areas they are used for truck and nursery crops. The soils dry and warm earlier in spring than nearby Crosby, Celina, and Brookston soils. Urban development is currently taking place in some areas of Miamian soils.

Representative profile of Miamian silt loam, 2 to 6 percent slopes, in Union Township, Miami County, SE¼NE¼ sec. 23, T. 6 N., R. 5 E:

Ap-0 to 10 inches, dark grayish brown (10YR 4/2) silt loam; weak, medium, subangular blocky structure parting to weak, very fine, subangular blocky; friable; many roots; slightly acid; abrupt, smooth boundary.

B21t-10 to 16 inches, dark yellowish brown (10YR 4/4) clay loam; moderate, medium, angular blocky structure parting to weak, very fine, subangular blocky; firm; common roots; thin, very patchy, dark brown (7.5YR 4/4) clay films on vertical ped faces; medium acid; gradual, wavy boundary.

B22t-16 to 26 inches, dark yellowish brown (10YR 4/4) clay loam; weak, medium, prismatic structure parting to moderate, medium, angular blocky; firm; common roots; thin, patchy, dark brown (7.5YR 4/4) clay films on ped faces; medium acid; clear, wavy boundary.

B3t-26 to 38 inches, brown (10YR 5/3) loam; weak, coarse, subangular blocky structure; firm; few fine roots; dark yellowish brown (10YR 3/4) clay films on some ped faces; mildly alkaline, calcareous; gradual, wavy boundary.

C1-38 to 50 inches, yellowish brown (10YR 5/4) loam; massive; firm; moderately alkaline, calcareous; gradual, wavy boundary.

C2-50 to 80 inches, yellowish brown (10YR 5/4) loam; gray (10YR 6/1) lime streaks; massive; firm; moderately alkaline, calcareous.

The solum is 20 to 40 inches thick. Depth to calcareous material is mainly 18 to 38 inches, but in severely eroded areas it is as shallow as 10 inches. The loess capping is 0 to 12 inches thick. The solum is mainly medium acid to slightly acid, but the B3t horizon is mildly alkaline and is mainly weakly calcareous.

The Ap horizon is dark grayish brown (10YR 4/2), dark brown to brown (10YR 4/3), or brown (10YR 5/3). In undisturbed areas there is a 3- to 4-inch A1 horizon that is very dark gray (10YR 3/1) or black (10YR 2/1) and a 4- to 8-inch A2 horizon that is brown (10YR 5/3) or yellowish brown (10YR 5/4). The A horizon is mainly silt loam, but in severely eroded areas it is clay loam.

In some areas there is a 1- to 5-inch B1 horizon that is yellowish brown (10YR 5/4) silty clay loam or silt loam. The B2t horizon is dark yellowish brown (10YR 4/4), yellowish brown (10YR 5/4), or brown (7.5YR 4/4 or 7.5YR 5/4) silty clay loam, clay loam, silty clay, or clay. Structure is mainly moderate or strong, medium or coarse, subangular blocky or angular blocky, but in some places it is weak, prismatic. The B3t horizon is loam to clay loam.

The C horizon is brown (10YR 5/3) or yellowish brown (10YR 5/4) loam or silt loam. It commonly is 5 to 15 percent coarse fragments.

Miamian soils are the well drained member of a drainage sequence that includes the very poorly drained Brookston soils, the somewhat poorly drained Crosby soils, and the moderately well drained Celina soils. Miamian soils are near these soils and also are near Milton, Eldean, Corwin, Hennepin, Glynwood, Martinsville, and Ritchey soils. Miamian soils are less mottled and are generally at a higher elevation than Crosby and Celina soils. They are deeper to limestone bedrock than Milton and Ritchey soils. They are underlain by glacial till, and Eldean soils are underlain by sand and gravel. They have a lighter colored A horizon than Corwin soils. They are deeper to calcareous till than Hennepin soils. Miamian soils are similar to Glynwood soils but have less clay in the B horizon and C horizon. They have less sand in the B horizon than Martinsville soils.

Millsdale Series

The Millsdale series consists of moderately deep, very poorly drained and poorly drained, level to gently sloping soils. These soils formed in a thin mantle of glacial till that is 20 to 40 inches thick over limestone bedrock. They are in depressions on uplands in the west-central and southwestern parts of the county. The native vegetation was mixed hardwoods and marsh grasses.

In a representative profile the surface layer is very dark gray silty clay loam about 14 inches thick. The subsoil is 16 inches thick. It is very dark gray and grayish brown silty clay mottled with yellowish brown. Very pale brown and light yellowish brown limestone bedrock is at a depth of 30 inches.

Millsdale soils are used mainly for pasture and crops. Most cultivated areas are artificially drained. In some areas, drainage is difficult because the depth to limestone bedrock is variable and adequate drainage outlets are not available. Millsdale soils warm and dry later in spring than the nearby Randolph and Milton soils.

Representative profile of Millsdale silty clay loam, 0 to 2 percent slopes, in a cultivated field in

Union Township, Miami County, SE¼NE¼ sec. 16, T. 6 N., R. 5 E:

Ap-0 to 9 inches, very dark gray (10YR 3/1) silty clay loam; weak, medium, subangular blocky structure; firm; many roots; neutral; abrupt, smooth boundary.

A1-9 to 14 inches, very dark gray (N 3/0) silty clay loam; weak, fine, subangular blocky structure; firm; many roots; neutral; clear, wavy boundary.

B1g-14 to 18 inches, very dark gray (10YR 3/1) silty clay; common, medium, distinct, yellowish brown (10YR 5/4) mottles; weak, medium, subangular blocky structure; firm; few roots; neutral; clear, smooth boundary.

B21tg-18 to 26 inches, grayish brown (2.5Y 5/2) silty clay; many, coarse, distinct, yellowish brown (10YR 5/6) mottles; moderate, medium and fine, subangular blocky structure; firm; few roots; organic fillings in old root channels; thin patchy clay films on vertical ped faces; 5 percent glacial pebbles; mildly alkaline; abrupt, smooth boundary.

IIB22tg-26 to 30 inches, grayish brown (10YR 5/2) silty clay; many, coarse, faint, yellowish brown (10Y 5/6) mottles; weak, medium, subangular blocky structure; firm; 10 percent igneous and limestone fragments; medium patchy clay films on vertical ped faces; mildly alkaline; abrupt, smooth boundary.

IIR-30 inches, very pale brown (10YR 7/4) and light yellowish brown (10YR 6/4) limestone bedrock.

The solum is 20 to 40 inches thick. The depth to bedrock ranges from 20 to 40 inches and varies within short distances. Reaction ranges from slightly acid to neutral in the A horizon and the upper part of the B horizon and from neutral to mildly alkaline, and in places weakly calcareous, in the lower part of the B horizon.

The Ap horizon is silt loam or silty clay loam. It is very dark gray (10YR 3/1), black (10YR 2/1), or very dark brown (10YR 2/2).

The B horizon has hue of 10YR or 5Y or is neutral; has value of 3 to 5; and has chroma of 4 or less. It is clay loam, silty clay loam, silty clay, or clay. Its structure is mainly weak or moderate, subangular or angular blocky, but in some places it is weak, prismatic. There is no IIB2t horizon in some places. Calcareous loam till 3 to 6 inches thick is above bedrock in some places. The lower part of the B horizon and the C horizon are 10 to 15 percent limestone fragments.

In some places the limestone bedrock is very dense and hard, but in other places it is thinly bedded and fractured and has soil material mixed in the upper part.

Millsdale soils are the poorly drained and very poorly drained member of a drainage sequence that includes the somewhat poorly drained Randolph soils and the well drained Milton soils. Millsdale soils are near these soils and near Odell and Ritchey soils. In a few areas the Millsdale soils are near Brookston and Pewamo soils. Millsdale soils are underlain by limestone bedrock, and Odell, Brookston, and Pewamo soils are underlain by glacial till. They are deeper to limestone bedrock and more poorly drained than Ritchey soils.

Milton Series

The Milton series consists of well drained, level to moderately steep soils. These soils are moderately deep to limestone bedrock. They formed in medium textured glacial till and in material weathered from limestone bedrock. The depth to limestone bedrock ranges from 20 to 40 inches. The soils are on uplands adjacent to bottom lands and outwash terraces. Most areas are along the Miami and Stillwater Rivers, in the western and southern parts of the county. The native vegetation was mixed hardwoods, but most wooded areas have been cleared.

In a representative profile the surface layer is dark brown silt loam about 8 inches thick. The subsoil is dark yellowish brown silty clay loam, clay loam, and clay. It is 21 inches thick and contains some limestone fragments in the lower 10 inches. Limestone bedrock is at a depth of 29 inches.

Milton soils are used mainly for field crops. In some areas they are used for truck and nursery crops. Some areas, especially the sloping areas, are used for pasture or are left wooded. In the vicinity of Tipp City and West Milton, these soils are being used for housing developments. The soils dry and warm earlier in spring than most of the other well drained soils on uplands.

Representative profile of Milton silt loam, 0 to 2 percent slopes, in a cultivated field in Union Township, Miami County, southeast corner of SE¼NE¼ sec. 21, T. 6 N., R. 5 E:

Ap-0 to 8 inches, dark brown (10YR 4/3) silt loam; weak, fine, granular structure; friable; slightly acid; abrupt, smooth boundary.

B1t-8 to 12 inches, dark yellowish brown (10YR 4/4) silty clay loam; moderate, medium, subangular blocky structure; firm; thin patchy clay films on ped faces; medium acid; clear, smooth boundary.

B21t-12 to 19 inches, dark yellowish brown (10YR 4/4) clay loam; strong, medium, subangular blocky structure; very firm; dark brown (7.5YR 4/4) coatings; thin continuous clay films on ped faces; medium acid; gradual, smooth boundary.

B22t-19 to 25 inches, dark yellowish brown (10YR 4/4) clay; strong, coarse, subangular and angular blocky structure; very firm; dark brown (7.5YR 3/2) coatings; medium continuous clay films on ped faces; few small fragments of limestone; slightly acid; clear, wavy boundary.

IIB23t-25 to 29 inches, dark yellowish brown (10YR 4/4) clay; strong, coarse, subangular blocky structure; very firm; dark brown (7.5YR 3/2) coatings; thick clay flows on ped faces; few fragments of weathered limestone; neutral; abrupt, wavy boundary.

IIR-29 inches, limestone bedrock.

The thickness of the solum and the depth to limestone bedrock range from 20 to 40 inches, but in some places the depth to bedrock is greater than the thickness of the solum. The depth to bedrock varies within short distances. In some places there is a loess capping that is as thick as 12 inches. The solum below the loess capping is as much as 15 percent coarse fragments. The solum is very strongly acid to neutral in the upper part and neutral to mildly alkaline in the lower part.

The Ap horizon is brown (10YR 4/3) or dark grayish brown (10YR 4/2). In undisturbed areas there is a 2- to 4-inch A1 horizon that is very dark gray (10YR 3/1) or very dark brown (10YR 2/2) and a 4- to 6-inch A2 horizon that is brown (10YR 5/3) or pale brown (10YR 6/3).

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. It is clay loam, silty clay loam, or clay. In some places there is a 2- to 6-inch horizon just above the bedrock that is darker in color and higher in clay content than the B horizon above it. In some places there is 2 to 5 inches of calcareous loam till above the bedrock.

In some places the limestone bedrock is very dense and hard, and in other places it is thinly bedded and fractured. It has intermixed soil material in the upper part in many places.

Milton soils are well drained members of a drainage sequence that includes the somewhat poorly drained Randolph soils and the poorly drained and very poorly drained Millsdale soils. Milton soils are near these soils and are also near Ritchey and Miamian soils. Milton soils are deeper to limestone bedrock than Ritchey soils. They are shallower to limestone bedrock than Miamian soils.

Montgomery Series

The Montgomery series consists of very poorly drained, level to nearly level soils. These soils formed in water-laid silty clay, clay, and silty clay loam materials. They are mainly in large depressions in the Honey, Indian, and Leatherwood Creek valleys. Scattered small areas are in depressions on uplands throughout the county. The native vegetation was marsh grasses, sedges, and widely spaced hardwoods. Most areas have been cleared and used for crops.

In a representative profile, the surface layer is silty clay loam about 16 inches thick. It is very dark gray in the upper 11 inches and black in the lower 5 inches. The subsoil is mottled, dark gray silty clay and silty clay loam 17 inches thick. The underlying material is mottled, gray silty clay loam to a depth of 68 inches.

Montgomery soils are used mainly for crops. A few areas are in pasture or woodland. These soils dry and warm late in spring. Most cultivated areas are artificially drained.

Representative profile of Montgomery silty clay loam, in a cultivated field in Bethel Township, Miami County, SW¼SE¼ sec. 24, T. 2 E., R. 9 N:

Ap-0 to 11 inches, very dark gray (10YR 3/1) silty clay loam; weak, medium, subangular blocky structure; slightly firm; few roots; neutral; clear, smooth boundary.

A1-11 to 16 inches, black (10YR 2/1) silty clay loam; weak, fine, angular blocky structure; firm; few roots; neutral; clear, smooth boundary.

B21-16 to 27 inches, dark gray (5Y 4/1) silty clay; few, fine, distinct, yellowish brown (10YR 5/4) mottles and few, fine, faint, olive gray (5Y 4/2) mottles; moderate, fine, angular blocky structure; firm; few roots; mildly alkaline; clear, wavy boundary.

B22g-27 to 33 inches, dark gray (5Y 4/1) silty clay loam; common, medium, distinct, olive brown (2.5Y 4/4) mottles; weak, fine and medium, prismatic structure parting to moderate, medium, angular blocky; slightly firm; mildly alkaline; clear, wavy boundary.

C-33 to 68 inches, gray (5Y 5/1) silty clay loam; many, medium, distinct, olive brown (2.5Y 4/4) mottles; massive; firm; mildly alkaline.

The solum is 30 to 42 inches thick. It is neutral or mildly alkaline in the upper part and mildly alkaline or moderately alkaline in the lower part. In places it is weakly calcareous in the lower part.

The Ap horizon is very dark grayish brown (10YR 3/2), very dark gray (10YR 3/1), or very dark brown (10YR 2/2).

The B2g horizon has hue of 5Y or 2.5Y, value of 4 to 6, and chroma of 2 or less. In some places there is a 6- to 10-inch B3 horizon that is the same color as the B2 horizon. The Bg horizon is mainly silty clay or silty clay loam, but in places there are 2- to 4-inch lenses of loam or clay loam.

The C horizon is gray (10YR 5/1) or (5Y 5/1) or olive !!ray (5Y 5/2). It is mainly stratified silty clay loam, silty clay, and loam, but in some places there are 4- to 8-inch layers of fine sandy loam and silt loam.

Montgomery soils are near Linwood, Edwards, Algiers, and Westland soils. In a few areas they are also near Brookston and Pewamo soils. Montgomery soils lack the organic surface layers of Linwood and Edwards soils. They have a darker colored A horizon and are finer textured than Algiers soils. They are finer textured and contain more clay and less sand than Westland soils. Montgomery soils are underlain by lake bed sediments, and Brookston and Pewamo soils are underlain by glacial till.

Ockley Series

The Ockley series consists of well drained, nearly level to gently sloping soils. These soils formed in silty or loamy glacial outwash. They are underlain by stratified, calcareous sand and gravel at a depth of 40 to 60 inches. They are on outwash terraces bordering rivers and major streams in the county and are above normal flood levels. The native vegetation was mixed hardwoods, but most wooded areas have been cleared.

In a representative profile the surface layer is brown and dark brown silt loam 12 inches thick. The subsoil is brown to dark brown silty clay loam and clay loam in the upper 11 inches, reddish brown clay loam and dark reddish brown clay in the next 14 inches, and dark reddish brown gravelly loam in the lower 10 inches. Yellowish brown, calcareous, stratified sand and gravel is between depths of 47 and 60 inches.

Ockley soils are used mainly for field crops. In a few areas they are used for nursery plants. The soils have few limitations that restrict their use, and they are suited to most crops commonly grown in the county.

Representative profile of Ockley silt loam, 0 to 2 percent slopes, in a cultivated field in Lost Creek Township, Miami County, SW¼SE¼ sec. 34, T. 2 E., R. 11 N:

Ap-0 to 9 inches, brown (10YR 4/3) silt loam; weak, medium, subangular blocky structure; friable; few roots; slightly acid; abrupt, smooth boundary.

A&B-9 to 12 inches, 60 percent brown (10YR 4/3) and 40 percent dark brown (7 .5YR 4/4) silt loam; weak,

medium, angular blocky structure; friable; few roots; slightly acid; clear, wavy boundary.

B21t-12 to 17 inches, brown (7.5YR 4/4) silty clay loam; weak, medium, prismatic structure parting to moderate, medium, angular blocky; firm; few roots; thin very patchy clay films on ped faces; slightly acid; clear, wavy boundary.

IIB22t-17 to 23 inches, dark brown (7.5YR 4/4) clay loam; weak, medium, prismatic structure parting to moderate, fine and medium, angular blocky; firm; thin patchy clay films on ped faces; few roots; 5 percent gravel, 1/8 to 1 inch in diameter; slightly acid; clear, wavy boundary.

IIB23t-23 to 30 inches, reddish brown (5YR 4/4) clay loam; moderate, medium, subangular blocky structure; firm; thin, very patchy, dark reddish brown (5YR 3/4) clay films on ped faces; few dark brown (7.5YR 4/4) rust stains on sand grains; 5 percent gravel, 1/8 to 1 inch in diameter; neutral; clear, irregular boundary.

IIB24t-30 to 37 inches, dark reddish brown (5YR 3/3) clay; weak, coarse, subangular blocky structure; firm; medium patchy clay films on ped faces; 10 percent gravel, 1/8 to 1 inch in diameter; few pale brown (10YR 6/3) weathered limestone fragments; mildly alkaline; abrupt, irregular boundary.

IIB3t-37 to 47 inches, dark reddish brown (5YR 3/3) gravelly loam; weak, coarse, sub angular blocky structure; friable; thin very patchy clay films on vertical ped faces; common pale brown (10YR 6/3) lime streaks; 25 percent gravel, 1/8 to 2 inches in diameter; mildly alkaline, calcareous; clear, irregular boundary.

IIC-47 to 60 inches, yellowish brown (10YR 5/4) stratified sand and gravel; single grained; loose; moderately alkaline, calcareous.

The solum is 40 to 60 inches thick. The depth to calcareous material ranges from 34 to 53 inches. The loess mantle is 12 to 20 inches thick. The solum is medium acid to slightly acid in the upper part and neutral to mildly alkaline in the lower part. In many places it is weakly calcareous in the lower part.

The Ap horizon is brown (10YR 4/3) or dark grayish brown (10YR 4/2) silt loam or loam.

In some places there is a 3- to 6-inch B1 horizon that is a dark yellowish brown (10YR 4/4). The Bt horizon and IIBt horizon have hue of 10YR to 5YR and value and chroma of 3 or 4. The IIB2t horizon is mainly clay loam or sandy clay loam and is 5 to 15 percent coarse fragments. The lower part of the IIB2t horizon in many places is clay 6 to 8 inches thick. The IIB3t horizon is 4 to 12 inches thick. It is dark reddish brown (5YR 3/3) or reddish brown (5YR 4/3 or 4/4) gravelly clay loam, gravelly loam, or gravelly sandy clay loam. It is 15 to 35 percent coarse fragments. The C horizon is commonly stratified sand and gravel, but in some places it is calcareous loam till. It is yellowish brown (10YR 5/4) or brown (10YR 5/3).

Ockley soils are well drained members of a drainage sequence that includes the somewhat poorly drained Sleeth soils and the very poorly drained Westland soils. Ockley soils are commonly near Eldean and Wea soils. They are mapped with Martinsville soils in some areas. Ockley soils are deeper to sand and gravel than Eldean soils. They have a lighter colored A horizon than Wea soils. They contain more sand and gravel in the lower part of the B horizon and in the C horizon than Martinsville soils.

Odell Series

The Odell series consist of somewhat poorly drained, level to gently sloping soils. These soils formed in calcareous loam till. They are in scattered areas on uplands. The native vegetation was tall prairie grasses and some scattered mixed hardwoods, but most areas have been cleared.

In a representative profile the surface layer is silt loam about 16 inches thick. It is very dark brown in the upper 10 inches and very dark gray in the lower 6 inches. The subsoil is mottled, firm clay loam 22 inches thick. It is dark brown in the upper 5 inches, light olive brown in the next 13 inches, and yellowish brown in the lower 4 inches. Light olive brown loam till is between depths of 38 and 60 inches.

Odell soils are used mainly for crops. Most cultivated areas have been artificially drained. The soils drain well with tile. They dry and warm late in spring if they are not artificially drained.

Representative profile of Odell silt loam, 0 to 2 percent slopes, in Union Township, Miami County, NW¼NW¼ sec. 5, T. 6 N., R. 5 E:

Ap-0 to 10 inches, very dark brown (10YR 2/2) silt loam; weak, fine, subangular blocky structure; friable; many roots; slightly acid; abrupt, smooth boundary.

A1-10 to 16 inches, very dark gray (10YR 3/1) silt loam; few, medium, distinct, dark grayish brown (2.5Y 4/2) mottles; moderate, fine, angular blocky structure; friable; common roots; slightly acid; clear, smooth boundary.

B21t-16 to 21 inches, dark brown (10YR 4/3) clay loam; common, coarse, faint, dark grayish brown (2.5Y 4/2) mottles and few, fine, distinct, yellowish brown (10YR 5/6) mottles; moderate, medium, subangular blocky and angular blocky structure; firm; common roots; thin, very patchy, very dark grayish brown (10YR 3/2) clay films on ped faces; 2 percent pebbles; neutral; clear, smooth boundary.

B22t-21 to 34 inches, light olive brown (2.5Y 5/4) clay loam; few, fine, faint, grayish brown (2.5Y 5/2) mottles; weak, medium, prismatic structure parting to moderate, medium, subangular blocky; firm; common roots; thin, very patchy, very dark grayish brown (10YR 3/2) clay films on ped faces; 5 percent pebbles; neutral; clear, wavy boundary.

B3-34 to 38 inches, yellowish brown (10YR 5/4) clay loam; many, coarse, distinct, light brownish gray (2.5Y 6/2) mottles; very weak, fine, subangular blocky structure; firm; 5 percent pebbles; mildly alkaline; clear, wavy boundary.

C-38 to 60 inches, light olive brown (2.5Y 5/6) loam till; common, medium, distinct, yellowish brown (10YR 5/4) mottles and few, fine, distinct, pale brown (10YR 6/3) mottles; massive; friable; 10 percent pebbles; moderately alkaline, calcareous.

The solum is 24 to 42 inches thick. The depth to calcareous material ranges from 20 to 40 inches. The solum is slightly acid or neutral in the upper part and neutral or mildly alkaline and, in some places, weakly calcareous in the lower part.

The A horizon is very dark gray (10YR 3/1), very dark grayish brown (10YR 3/2), or very dark brown (10YR 2/2).

The B horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4. It is loam, clay loam, or silty clay loam.

The C horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 to 6. It is loam or silt loam.

Odell soils are near Brookston, Crosby, Celina and Corwin soils. In a few areas Odell soils are near Millsdale soils. Odell soils have a more brownish and less grayish B horizon than Brookston soils. They have a darker colored A horizon than Celina and Crosby soils. They are more mottled than Corwin soils. Odell soils are underlain by glacial till and are deeper to limestone bedrock than Millsdale soils.

Pewamo Series

The Pewamo series consists of very poorly drained, level to nearly level soils. These soils formed in clay loam or silty clay loam glacial till. They are in depressions or along narrow drainageways on uplands in the northwestern part of the county. The native vegetation was mixed hardwoods and marsh grasses, but most areas have been cleared and are used for crops.

In a representative profile the surface layer is very dark grayish brown silty clay loam about 10 inches thick. The subsoil is dark gray silty clay loam in the upper 6 inches, dark gray silty clay in the next 14 inches, and light olive brown silty clay loam in the lower 5 inches. The underlying material is light olive brown and olive brown silty clay loam till between depths of 35 and 60 inches. The subsoil and underlying material are mottled with yellowish brown to olive gray.

Pewamo soils are used mainly for crops, but a few areas are in pasture or woods. Most cultivated areas have been artificially drained, and most crops grow well in these areas. The soils dry and warm late in the spring. They are not extensive in the county.

Representative profile of Pewamo silty clay loam, in a cultivated field in Newberry Township, Miami County, SW¼NE¼ sec. 1, T. 9 N., R. 4 E:

Ap-0 to 10 inches, very dark grayish brown (10YR 3/2) silty clay loam; very weak, fine, subangular blocky structure; firm; slightly acid; abrupt, smooth boundary.

B21tg-10 to 16 inches, dark gray (10YR 4/1) silty clay loam; few, fine, faint, yellowish brown (10YR 5/4) mottles; weak, fine, angular blocky structure; firm; very dark gray (10YR 3/1) ped coatings; thin patchy clay films on ped faces; 2 percent pebbles; neutral; clear, smooth boundary.

B22tg-16 to 30 inches, dark gray (10YR 4/1) silty clay; common, medium, distinct, olive (5Y 5/4) mottles; moderate, fine and medium, angular blocky structure; firm; very dark gray (5Y 3/1) coatings on peds; thin continuous clay films on ped faces; 5 percent pebbles; neutral; clear, wavy boundary.

B3-30 to 35 inches, light olive brown (2.5Y 5/4) silty clay loam; many, medium, distinct, olive gray (5Y 5/2) mottles; weak, medium, angular blocky structure; firm; 5 percent pebbles; mildly alkaline; clear, wavy boundary.

C1-35 to 44 inches, light olive brown (2.5Y 5/4) silty clay loam; many, medium, distinct, olive gray (5Y 5/2) mottles; massive; firm; 5 percent pebbles; moderately alkaline, calcareous; clear, wavy boundary.

C2-44 to 60 inches, olive brown (2.5Y 4/4) silty clay loam; many, medium, faint, grayish brown (10YR 5/2) mottles; massive; firm; 10 percent pebbles; few light gray (10YR 7/2) lime nodules; moderately alkaline, calcareous.

The solum is 30 to 50 inches thick. It is slightly acid or neutral in the upper part and neutral or mildly alkaline in the lower part. The lower part is weakly calcareous in some places. The solum is 0 to 15 percent coarse fragments.

The A horizon is very dark grayish brown (10YR 3/2) or very dark gray (10YR 3/1). In some profiles there is a 2- to 3-inch A1 horizon that is black (10YR 2/1) or very dark brown (10YR 2/2) silty clay loam and is below the Ap horizon.

The B2tg horizon has hue of 2.5Y or 10YR, value of 4 to 6, and chroma of 1 or 2. It is silty clay loam, clay loam, silty clay, or clay. The B3 horizon is 3 to 6 inches thick and in some places it is absent.

The C horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 to 4. It is silty clay loam or clay loam and is 5 to 15 percent coarse fragments.

Pewamo soils are very poorly drained members of a drainage sequence that includes the somewhat poorly drained Blount soils and the moderately well drained Glynwood soils. They are also near Brookston, Montgomery, and Millsdale soils. Pewamo soils have a finer textured B horizon and C horizon than Brookston soils. They are underlain by calcareous glacial till, and Montgomery soils are underlain by lakebed sediment. Pewamo soils lack the limestone bedrock that Millsdale soils have.

Randolph Series

The Randolph series consists of somewhat poorly drained, level to gently sloping soils. These soils are moderately deep to limestone bedrock. They formed in medium textured glacial till and material that weathered from the limestone bedrock. They are on uplands adjoining the flood plains and outwash terraces of the Miami and Stillwater Rivers in the western and southern parts of the county. The native vegetation was a mixed stand of hardwoods.

In a representative profile the surface layer is dark grayish brown silt loam about 8 inches thick. The subsoil is dark gray silty clay loam mottled with yellowish brown in the upper 3 inches and is yellowish brown silty clay and clay mottled with gray in the lower 18 inches. The underlying material is mottled, light olive gray very gravelly clay loam about 5 inches thick. Limestone bedrock is at a depth of 34 inches.

Randolph soils are used for pasture and crops. Most cultivated areas are artificially drained. The moderate depth to bedrock makes the installation of drainage tile difficult in some areas. The soils dry and warm later in spring than nearby Milton soils.

Representative profile of Randolph silt loam, 0 to 2 percent slopes, in a cultivated field in Union Township, Miami County, NW¼SE¼ sec. 19, T. 6 N., R. 5 E:

Ap-0 to 8 inches dark grayish brown (10YR 4/2) silt loam; weak, fine and medium, granular structure; friable; many fine roots; 3 percent black concretions; medium acid; abrupt, smooth boundary.
B1tg-8 to 11 inches, dark gray (10YR 4/1) silty clay loam; common, fine, distinct, yellowish brown (10YR 5/4) mottles; moderate, fine, subangular blocky structure; friable; common fine roots; thin, very patchy, yellowish brown (10YR 5/4) clay films in pores; 60 percent patchy, dark grayish brown (10YR 4/2), silty coatings on ped surfaces; 2 percent black concretions; medium acid; clear, smooth boundary.
B21tg-11 to 14 inches, yellowish brown (10YR 5/4) silty clay; many, medium, distinct, gray (10YR 5/1) mottles; moderate, medium, angular blocky structure; firm; common fine roots; thin patchy clay films; gray (10YR 5/1) coatings on peds; 3 percent glacial pebbles; 1 percent black concretions; medium acid; clear, smooth boundary.
B22tg-14 to 22 inches, yellowish brown (10YR 5/4) silty clay; common, fine, distinct, gray (10YR 5/1) mottles and few, fine, faint, yellowish brown (10YR 5/6) mottles; weak, medium, prismatic structure parting to moderate, medium, angular blocky; firm; common fine roots; thin patchy clay films; gray (10YR 5/1) coatings on peds; 3 percent glacial pebbles; 1 percent fine black concretions; neutral; clear, smooth boundary.
B23tg-22 to 29 inches, yellowish brown (10YR 5/4) clay; many, fine and medium, distinct, gray (10YR 5/1) mottles; moderate, medium, prismatic structure parting to moderate, medium, angular blocky; firm; thin, continuous, dark gray (10YR 4/1) clay films on faces of peds; 5 percent glacial pebbles; neutral; abrupt, smooth boundary.
IIC-29 to 34 inches, light olive brown (2.5Y 5/4) very gravelly clay loam; common, fine, distinct, light yellowish brown (10YR 6/4) and yellowish brown (10YR 5/6) mottles; massive; friable; 60 percent limestone fragments with rounded edges; 1 percent glacial pebbles; moderately alkaline, calcareous; abrupt, wavy boundary.
IIR-34 inches, light gray (10YR 7/1, 7/2) limestone bedrock.

The solum is 20 to 40 inches thick. The depth to bedrock ranges from 20 to 40 inches, and it varies within short distances. Reaction ranges from neutral to medium acid in the A horizon and upper part of the B horizon and from neutral to mildly alkaline in the lower part of the B horizon.

The Ap horizon is dark grayish brown (10YR 4/2), brown (10YR 4/3), or dark gray (10YR 4/1). There is an A2 horizon in some places.

The B2t horizon is silty clay loam, clay loam, silty clay, or clay. It has a hue of 10YR or 2.5Y, a value of 4 to 6, and a chroma of 2 to 4.

In some places the limestone bedrock is hard and dense, but in other places it is fractured. In some places irregular tongues of clayey material extend into the partly weathered limestone.

Randolph soils are the somewhat poorly drained members of a drainage sequence that includes the poorly drained and very poorly drained Millsdale soils and the well drained Milton soils. Randolph soils are near these soils and also near Blount, Crosby, and Ritchey soils. They are underlain by limestone bedrock, but Blount and Crosby soils are underlain by glacial till. Randolph soils are deeper to limestone bedrock and are more poorly drained than Ritchey soils.

Ritchey Series

The Ritchey series consists of well drained, gently sloping to very steep soils. These soils are shallow to limestone bedrock. They formed in medium textured glacial till and material that weathered from limestone bedrock. The depth to limestone bedrock ranges from 10 to 20 inches. The soils are on long, narrow side slopes on uplands, along the Miami and Stillwater valleys. The native vegetation was mixed hardwoods.

In a representative profile the surface layer is dark brown silt loam about 6 inches thick. The subsoil is brown and is 10 inches thick. It is silt loam in the upper 3 inches, silty clay loam in the next 5 inches, and silty clay in the lower 2 inches. Limestone bedrock is at a depth of 16 inches.

Ritchey soils are used mainly for pasture and woodland. A few less sloping areas are used for crops. The soils dry and warm early in spring. They are more shallow and droughty than most of the surrounding till soils on uplands.

Representative profile of Ritchey silt loam, 6 to 18 percent slopes, in Union Township, Miami County, NE¼SW¼ sec. 27, T. 6 N., R. 5 E:

Ap-0 to 6 inches, dark brown (10YR 4/3) silt loam; weak, fine, subangular blocky structure; friable; many roots; slightly acid; clear, smooth boundary.
B1-6 to 9 inches, brown (7.5YR 4/4) silt loam; moderate, fine, subangular blocky structure; friable; many fine roots; dark grayish brown (10YR 4/2) fillings in root channels and worm tunnels; neutral; clear, smooth boundary.
B21t-9 to 14 inches, brown (7.5YR 4/4) silty clay loam; moderate, medium, subangular blocky structure; firm; common fine roots; thin patchy clay films on ped faces; few glacial pebbles; mildly alkaline; gradual, smooth boundary.
IIB22t-14 to 16 inches, brown (7.5YR 4/4) silty clay; moderate, medium, subangular blocky structure; firm; few fine roots; thin very patchy clay films on ped faces; 5 to 10 percent limestone fragments; moderately alkaline; abrupt, wavy boundary.
IIR-16 inches, hard limestone bedrock.

The thickness of the solum and the depth to limestone bedrock range from 10 to 20 inches. The solum is medium acid to neutral in the upper part and neutral to moderately alkaline and, in places, calcareous in the lower part.

The Ap horizon is dark brown (10YR 4/3) or dark grayish brown (10YR 4/2). In uncultivated areas there is a 2- to 4-inch A1 horizon that is very dark grayish brown (10YR 3/2) and a 2- to 3-inch A2 horizon that is brown (10YR 4/3) or pale brown (10YR 6/3).

Some profiles lack a B1 horizon. The Bt horizon is brown (7.5YR 4/4) or dark yellowish brown (10YR 4/4) silty clay loam, clay loam, silty clay, or clay. The B horizon commonly is 2 to 10 percent glacial pebbles. In some profiles there is a 1- to 4-inch B3 horizon that is limestone cobbles intermixed with loam. Tongues of the B3 horizon commonly extend down between the limestone flags and into the fractured limestone bedrock.

These Ritchey soils have slightly more clay in the B horizon than is defined as the range for the series, but this difference does not alter their use or behavior.

Ritchey soils are near Milton, Randolph, and Millsdale soils. A few areas of Ritchey soils are near Miamian and

Hennepin soils. Ritchey soils are shallower to limestone bedrock than Milton, Randolph, and Millsdale soils. They are better drained than the Randolph and Millsdale soils. Ritchey soils are underlain by limestone bedrock, and Miamian and Hennepin soils are underlain by glacial till.

Rodman Series

The Rodman series consists of well drained, steep and very steep soils. These soils are very shallow or shallow to calcareous sand and gravel. They formed in loamy and sandy glacial outwash. They are on gravelly outwash terraces and on kames and eskers, mainly in the Honey Creek area in Bethel Township.

In a representative profile the surface layer is very dark grayish brown gravelly loam about 7 inches thick. The subsoil is dark yellowish brown gravelly loam 8 inches thick. Brown, calcareous, stratified sand and gravel is between depths of 15 and 60 inches.

Representative profile of Rodman gravelly loam, in an area of Lorenzo-Rodman gravelly loams, 18 to 50 percent slopes, moderately eroded, in a wooded area in Bethel Township, Miami County, NW¼SE¼ sec. 6, T. 2 E., R. 9 N:

A1-0 to 7 inches, very dark grayish brown (10YR 3/2) gravelly loam; weak, fine, granular structure; friable; many roots; 20 percent gravel; mildly alkaline; clear, wavy boundary.
B-7 to 15 inches, dark yellowish brown (10YR 3/4) gravelly loam; weak, fine, subangular blocky structure; friable; few roots; 40 percent gravel, moderately alkaline, calcareous; abrupt, wavy boundary.
C-15 to 60 inches, brown (10YR 5/3) stratified sand and gravel; single grained; loose; 15 percent cobbles; moderately alkaline, calcareous.

The solum is 8 to 16 inches thick. Reaction of the solum is mildly alkaline or moderately alkaline, and the soil is mainly calcareous throughout.

The A horizon is very dark brown (10YR 2/2), very dark gray (10YR 3/1), or very dark grayish brown (10YR 3/2).

The B horizon is brown (10YR 5/3 or 7.5YR 5/4), dark yellowish brown (10YR 3/4), or dark brown (7.5YR 4/4) loam, gravelly loam, or gravelly sandy loam. Structure of the B horizon is weak or moderate, fine or medium, granular or subangular blocky.

The C horizon is brown (10YR 5/3) or yellowish brown (10YR 5/4).

Rodman soils are near Lorenzo, Eldean, Casco, and Hennepin soils. They have a weakly developed B horizon and contain less clay and more sand than Lorenzo, Eldean, and Casco soils. Rodman soils have a darker colored A horizon than Eldean and Casco soils. They are underlain by stratified sand and gravel, and Hennepin soils are underlain by glacial till. In Miami County, Rodman soils are mapped only with Lorenzo soils.

Ross Series

The Ross series consists of well drained, level to nearly level soils. These soils formed in medium textured alluvium. They are on flood plains along the Miami and Stillwater Rivers. The native vegetation was prairie grasses and some scattered mixed hardwoods.

In a representative profile the surface layer is very dark grayish brown silt loam about 18 inches thick. The subsoil is dark brown silt loam 8 inches thick. Brown silt loam and light yellowish brown loam mottled with some grayish brown is between depths of 26 and 60 inches.

Ross soils are used mainly for row crops, but in some areas they are used for small grain and meadow. They are highly suited to row crops. A large acreage is protected from flooding by levees along the Miami River.

Representative profile of Ross silt loam, in Bethel Township, Miami County, SW¼NW¼ sec. 36, T. 2 E., R. 9 N:

Ap-0 to 8 inches, very dark grayish brown (10YR 3/2) silt loam; weak, fine, subangular blocky structure; friable; mildly alkaline; clear, smooth boundary.
A1-8 to 18 inches, very dark grayish brown (10YR 3/2) silt loam; moderate, fine and medium, angular blocky structure; friable; very dark brown (10YR 2/2) organic stains on some ped faces; neutral; clear, smooth boundary.
B-18 to 26 inches, dark brown (10YR 3/3) silt loam; weak, medium, subangular blocky structure; friable; mildly alkaline; abrupt, wavy boundary.
C1-26 to 45 inches, brown (10YR 4/3) silt loam; massive; friable; 5 percent pebbles; moderately alkaline, calcareous; abrupt, wavy boundary.
C2-45 to 60 inches, light yellowish brown (2.5Y 6/4) loam; common, fine, faint, grayish brown (2.5Y 5/2) mottles; massive; friable; 10 percent pebbles; moderately alkaline, calcareous.

The A horizon and the B horizon are neutral or mildly alkaline, and the C horizon is mildly alkaline or moderately alkaline. In some places the soil is calcareous throughout.

The A horizon is very dark grayish brown (10YR 3/2), dark brown (10YR 3/3), or very dark gray (10YR 3/1). It is 24 to 28 inches thick.

The B horizon is dark brown (10YR 3/3, or 4/3) or dark yellowish brown (10YR 3/4) silt loam or loam. In some places there is a 2- to 4-inch subhorizon of sandy clay loam or clay loam.

The C horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 3 or 4. It is loam, silt loam, sandy loam, or clay loam. In some areas stratified sand and gravel are common at a depth of 40 inches or more.

Ross soils are well drained members of the drainage sequence that includes the moderately well drained Medway soils. Ross soils are near Medway, Eel, Genesee, Shoals, and Wea soils. They are also near Ross variant soils. Ross soils lack the mottled B horizon that is in Medway, Eel, and Shoals soils. They have a darker colored A horizon than Eel, Genesee, and Shoals soils. Ross soils are weakly developed and contain less clay in the B horizon than Wea soils. They lack the limestone bedrock that underlies the Ross variant soils at a depth of 10 to 20 inches.

Ross Variant

The Ross variant consists of shallow, well drained, level to nearly level soils. These soils formed in alluvium that is 10 to 20 inches deep to limestone bedrock. They are along the Stillwater River, mainly in Newberry Township. The soils formed under tall prairie grasses and some scattered, mixed hardwoods.

In a representative profile the surface layer is very dark gray silt loam in the upper 7 inches and black silty clay loam in the lower 6 inches. Fractured, light gray sandy limestone bedrock is between depths of 13 and 20 inches. Hard limestone bedrock is at a depth of 20 inches.

These soils are used for cultivated crops and pasture. A few areas are wooded. The soils are droughty during summer in most years.

Representative profile of Ross silt loam, shallow variant, in Newberry Township, Miami County, NE¼NE¼ sec. 13, T. 9 N., R. 4 E:

Ap-0 to 7 inches, very dark gray (10YR 3/1) silt loam; moderate, medium, granular structure; friable; many roots; few limestone cobbles; mildly alkaline; clear, smooth boundary.

A1-7 to 13 inches, black (10YR 2/1) silty clay loam; moderate, medium, angular blocky structure; slightly firm; few roots; few limestone flagstones and cobbles; moderately alkaline, slightly calcareous; abrupt, wavy boundary.

IIR1-13 to 20 inches, light gray (2.5Y 7/2) sandy limestone rock material; pale yellow (2.5Y 7/4) streaks and brown (7.5YR 4/4) stains; rock surface is coated and horizontal cracks (¼ to ½ inch wide) are filled with dark brown (10YR 3/3) silty clay loam; rippable; moderately alkaline, calcareous; clear, wavy boundary.

IIR2-20 inches, hard limestone bedrock.

The A horizon is 10 to 20 inches thick. It is very dark gray (10YR 3/1), black (10YR 2/1), or very dark grayish brown (10YR 3/2). It has moderate, fine to medium, granular structure or weak to moderate, fine to medium, subangular or angular blocky structure. It is mildly or moderately alkaline.

The IIR1 horizon is 4 to 8 inches thick. Some profiles do not have a IIR1 horizon.

Bedrock is at a depth of 10 to 20 inches.

Ross variant soils are near Ross and Genesee soils. Unlike the Ross and Genesee soils, which are underlain by alluvium, the Ross variant soils are underlain by limestone bedrock.

Shoals Series

The Shoals series consists of somewhat poorly drained, level to nearly level soils. These soils formed in medium textured alluvium. They are on stream flood plains throughout the county and are generally adjacent to uplands. The native vegetation was mixed hardwoods.

In a representative profile the surface layer is dark grayish brown silt loam about 8 inches thick. The subsoil is dark grayish brown and grayish brown silt loam mottled with brown and dark brown. It is 20 inches thick. The underlying material is mottled dark brown silt loam between depths of 28 and 40 inches and is pale brown, stratified, medium sand and fine gravel to a depth of 60 inches.

Representative profile of Shoals silt loam, in a cultivated field in Bethel Township, Miami County, SE¼SE¼ sec. 11, T. 2 E., R. 9 N.:

Ap-0 to 8 inches, dark grayish brown (10YR 4/2) silt loam; weak, fine, subangular blocky structure; friable; many roots; mildly alkaline, weakly calcareous; abrupt, smooth boundary.

B1g-8 to 14 inches, dark grayish brown (2.5Y 4/2) silt loam; few, fine, distinct, brown (10YR 5/3) mottles; weak, medium, subangular blocky structure; friable; many roots; mildly alkaline, calcareous; clear, wavy boundary.

B2g-14 to 28 inches, grayish brown (10YR 5/2) silt loam; common, medium, faint, dark brown (10YR 4/3) mottles; weak, medium, subangular blocky structure; friable; few roots; 5 percent pebbles; moderately alkaline, calcareous; clear, wavy boundary.

C1-28 to 40 inches, dark brown (10YR 4/3) silt loam; common, medium, faint, dark grayish brown (10YR 4/2) mottles and few, fine, distinct, strong brown (7.5YR 5/6) mottles; massive; friable; moderately alkaline, calcareous; abrupt, irregular boundary.

IIC2-40 to 60 inches, pale brown (10YR 6/3) stratified medium sand and fine gravel; few, fine, faint, light yellowish brown (10YR 6/4) mottles; single grained; loose; moderately alkaline, strongly calcareous.

The solum is 24 to 36 inches thick. The reaction of the solum is mildly alkaline or moderately alkaline, and in most places the soil is calcareous.

The Ap horizon is mainly dark grayish brown (10YR 4/2) but is also brown (10YR 5/3) or grayish brown (10YR 5/2).

The B horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 or 3. It has few to common, faint to distinct mottles. The B horizon is loam, silt loam, or clay loam.

The C horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4. It is loam, silt loam, and fine sandy loam. Stratified layers of sand and gravel are common at a depth of 40 inches or more.

These Shoals soils dominantly have carbonates throughout and are slightly higher in reaction in the upper part of the solum than is defined as the range for the series, but this difference does not alter their use or behavior.

Shoals soils are somewhat poorly drained members of a drainage sequence that includes the well drained Genesee soils and the moderately well drained Eel soils. Shoals soils are near these soils and also near Ross, Medway, Linwood, Algiers, Wallkill, and Shoals variant soils. Shoals soils are more poorly drained and are mottled nearer the surface than the Genesee, Eel, and Ross soils. They are not so dark colored as the Ross and Medway soils. Shoals soils lack the organic surface layer that is characteristic of Linwood soils and the dark colored, buried soil that occurs in Algiers soils. They lack the organic underlying material that is characteristic of Wallkill soils and the underlying bedrock of the Shoals variant.

Shoals Variant

The Shoals variant consists of moderately deep, somewhat poorly drained, level to nearly level soils. These soils formed in medium textured alluvium. They are similar to the Shoals soils, but they are underlain by limestone bedrock at a depth of 20 to 40 inches. These soils are on narrow flood plains along small creeks near the

Stillwater River, mainly in the southwestern part of the county. They are mostly adjacent to uplands.

In a representative profile the surface layer is dark gray silt loam about 3 inches thick. The subsoil is grayish brown and is mottled with brown, light brownish gray, and yellowish brown. It is silt loam in the upper 5 inches, clay loam in the next 7 inches, and loam in the lower 7 inches. The underlying material is yellowish brown loam mottled with gray. It is about 14 inches thick. Limestone bedrock is at a depth of 36 inches.

These soils are used mainly for pasture and woods. Frequent flooding and seasonal wetness limit their use for cultivated crops. Artificial drainage is more difficult to install on these soils than on the other Shoals soils because of the underlying limestone bedrock.

Representative profile of Shoals silt loam, moderately shallow variant, in a pasture field in Monroe Township, Miami County, SE¼SW¼ sec. 36, T. 7 N., R. 5 E:

A1-0 to 3 inches, dark gray (10YR 4/1) silt loam; weak, medium, granular structure; friable; mildly alkaline, weakly calcareous; clear, wavy boundary.

B21g-3 to 8 inches, grayish brown (2.5Y 5/2) silt loam; few, fine, faint, brown (10YR 4/3) mottles; moderate, fine, subangular blocky structure; friable; 3 percent pebbles; mildly alkaline, weakly calcareous; clear, wavy boundary.

B22g-8 to 15 inches, grayish brown (2.5Y 5/2) clay loam; common, medium, faint, light brownish gray (10YR 6/2) and yellowish brown (10YR 5/6) mottles; weak, fine, subangular blocky structure; friable; 5 percent pebbles; mildly alkaline, weakly calcareous; clear, irregular boundary.

B23g-15 to 22 inches, grayish brown (10YR 5/2) loam; many, coarse, distinct, yellowish brown (10YR 5/4) mottles; weak, coarse, subangular blocky structure; friable; 5 percent pebbles; mildly alkaline, weakly calcareous; clear, irregular boundary.

C-22 to 36 inches, yellowish brown (10YR 5/4) loam; many, fine, distinct, gray (10YR 5/1) mottles; massive; friable; moderately alkaline, calcareous; abrupt, irregular boundary.

IIR-36 inches, light gray (5Y 7/2) limestone bedrock.

The solum is 20 to 36 inches thick. The depth to limestone bedrock ranges from 20 to 40 inches but is variable within short distances. Reaction of the solum is mildly alkaline or moderately alkaline, and in most places the soil is calcareous.

The A horizon is dark gray (10YR 4/1), dark grayish brown (10YR 4/2), or very dark grayish brown (10YR 3/2).

The Bg horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4. It is silt loam, loam, or clay loam.

The C horizon is loam, silt loam, or fine sandy loam.

Shoals variant soils are near Shoals, Eel, and Medway soils on flood plains. They are shallower to limestone bedrock than all those soils.

Sleeth Series

The Sleeth series consists of somewhat poorly drained, level to nearly level soils. These soils formed in outwash material on terraces. They are underlain by stratified, calcareous sand and gravel at a depth of 40 to 56 inches. They are along drainageways and on low terraces bordering the rivers and major streams above the normal level of flooding. The native vegetation was mixed hardwoods, but most wooded areas have been cleared.

In a representative profile the surface layer is dark grayish brown silt loam about 10 inches thick. The subsoil is olive brown clay loam in the upper 16 inches, yellowish brown clay loam in the next 6 inches, and grayish brown sandy clay loam in the lower 10 inches. It has grayish brown and olive brown mottles. Light olive brown, stratified calcareous sand and gravel is between depths of 42 and 60 inches.

Sleeth soils are used mainly for crops. Most cultivated areas have been artificially drained. The soils generally drain well with tile.

Representative profile of Sleeth silt loam, 0 to 2 percent slopes, in a cultivated field in Concord Township, Miami County, NE¼SE¼ sec. 33, T. 5 N., R. 6 E:

Ap-0 to 10 inches, dark grayish brown (10YR 4/2) silt loam; weak, fine, subangular blocky structure; friable; many roots; neutral; abrupt, smooth boundary.

B1t-10 to 16 inches, olive brown (2.5Y 4/4) clay loam; moderate, medium, angular blocky structure; firm; few roots; thin, patchy, grayish brown (10YR 5/2) clay films on ped faces; 5 percent pebbles; neutral; clear, smooth boundary.

B21t-16 to 26 inches, olive brown (2.5Y 4/4) clay loam; many, medium, distinct, dark grayish brown (10YR 4/2) mottles; moderate, fine and medium, subangular blocky structure; firm; few roots; thin, patchy, grayish brown (10YR 5/2) clay films on ped faces; 10 percent gravel; neutral; clear, wavy boundary.

B22t-26 to 32 inches, yellowish brown (10YR 5/4) clay loam; common, medium, distinct, grayish brown (10YR 5/2) mottles; moderate, medium, subangular blocky structure; firm; few roots; thin, patchy, dark grayish brown (10YR 4/2) clay films on ped faces; 10 percent gravel; few dark concretions; mildly alkaline; clear, wavy boundary.

B3t-32 to 42 inches, grayish brown (10YR 5/2) sandy clay loam; many, medium, distinct, olive brown (2.5Y 4/4) mottles; weak, coarse, subangular blocky structure; friable; thin, very patchy, dark grayish brown (10YR 4/2) clay films on pebbles and ped faces; 5 percent gravel; mildly alkaline, weakly calcareous; clear, irregular boundary.

C-42 to 60 inches, light olive brown (2.5Y 5/4) stratified sand and gravel; single grained; loose; moderately alkaline, calcareous.

The solum is 40 to 56 inches thick. The depth to calcareous material ranges from 30 to 50 inches. The solum is neutral or slightly acid in the upper part and mildly alkaline in the lower part. In some places the B3 horizon is weakly calcareous.

The Ap horizon is dark grayish brown (10YR 4/2), dark gray (10YR 4/1), or grayish brown (10YR 5/2). In some places there is a grayish brown (10YR 5/2) A2 horizon that is 2 to 3 inches thick.

The Bt horizon has hue of 10YR or 2.5Y, value of 4 or 5, chroma of 2 to 4, and it is mottled. The B2t horizon is clay loam or silty clay loam in the upper part and clay loam or sandy clay loam in the lower part. It mainly has moderate, fine or medium, subangular or angular blocky structure. In some places the primary structure is weak, medium, and prismatic. The B3 horizon is gravelly clay loam, sandy clay loam, or gravelly loam.

The C horizon is dark grayish brown (10YR 4/2) to light olive brown (2.5Y 5/4).

Sleeth soils are somewhat poorly drained members of a drainage sequence that includes the very poorly drained Westland soils and the well drained Ockley soils. Sleeth soils are commonly near Eldean, Westland, and Casco soils. Sleeth soils are deeper to sand and gravel than Eldean and Casco soils, and they have mottles in the B horizon.

Stonelick Series

The Stonelick series consists of well drained, level to nearly level soils. These soils formed in coarse textured alluvial deposits. They are on flood plains next to and paralleling the Miami and Stillwater Rivers. The native vegetation was mixed hardwoods.

In a representative profile the surface layer is dark grayish brown loam about 15 inches thick. The underlying material is friable, brown sandy loam between depths of 15 and 38 inches and is brown stratified sand and loamy sand to a depth of 60 inches.

Stonelick soils are used for mainly row crops and meadow. A few areas are in woods and pasture. The soils are droughty if they are used for crops. They are subject to occasional flooding that sometimes restricts their use. They are suited to crops if they are protected from floods. A large acreage is protected from flooding by levees along the Miami River.

Representative profile of Stonelick loam, in a cultivated field in Staunton Township, Miami County, SE¼NE¼ sec. 4, T. 1 E., R. 10 N.:

Ap-0 to 6 inches. dark grayish brown (10YR 4/2) loam; weak, fine and medium, granular structure; friable; many roots; dark brown (10YR 3/3) coatings on ped faces; mildly alkaline, weakly calcareous; clear, smooth boundary.

A1-6 to 15 inches, dark grayish brown (10YR 4/2) loam; weak, medium, subangular blocky structure; friable; 5 percent shell fragments; few roots; 10 percent worm casts; moderately alkaline, calcareous; abrupt, smooth boundary.

C1-15 to 38 inches, brown (10YR 4/3) sandy loam; very weak, medium, subangular blocky structure in upper part, massive in lower part; friable; few roots; 5 percent shell fragments; moderately alkaline, strongly calcareous; abrupt, wavy boundary.

C2-38 to 60 inches, brown (10YR 5/3) stratified sand and loamy sand; single grained; loose; 10 to 15 percent gravel; moderately alkaline, strongly calcareous.

The reaction is mildly alkaline or moderately alkaline, and this soil is calcareous throughout.

The Ap horizon is dark grayish brown (10YR 4/2) or brown (10YR 4/3 or 10YR 5/3).

The C horizon is loam, sandy loam, fine sandy loam, or silt loam. Stratified layers of sand, loamy sand, or gravel are common at a depth of 36 or more inches. The C horizon ranges from brown (10YR 5/3, 10YR 4/3) to dark yellowish brown (10YR 4/4). In some places mottles that have a chroma of 2 or less are at a depth of 36 or more inches.

Stonelick soils are near Genesee and Eel soils. Stonelick Foils are coarser textured and are sandier than Genesee and Eel soils. They lack the mottles that are characteristic of Eel soils.

Tremont Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate
Parent material: Alluvium
Landform: Flood plains
Position on the landform: Steps
Slope range: 0 to 2 percent
Adjacent soils: Lippincott, Ross, Sloan
Taxonomic classification: Fine-loamy, mixed (calcareous), mesic Cumulic Haplaquolls

Typical Pedon

Tremont silty clay loam, rarely flooded, about 2 miles west of Enon, in Mad River Township, Clark County; about 130 feet north and 460 feet west of the southeast corner of sec. 13, T. 3, R. 9:

Ap—0 to 7 inches; very dark gray (10YR 3/1) silty clay loam, very dark grayish brown (10YR 3/2) dry; firm; few medium and fine roots; few pebbles; slightly effervescent; moderately alkaline; abrupt wavy boundary.

A—7 to 13 inches; very dark gray (10YR 3/1) clay loam, very dark grayish brown (10YR 3/2) dry; weak coarse and medium subangular blocky structure; firm; few medium and fine roots; few pebbles; slightly effervescent; moderately alkaline; abrupt wavy boundary.

Ab1—13 to 21 inches; black (10YR 2/1) clay loam, very dark gray (10YR 3/1) dry; weak fine and very fine granular structure; friable; few medium and fine roots; few pebbles; slightly effervescent; slightly alkaline; clear wavy boundary.

Ab2—21 to 29 inches; very dark gray (10YR 3/1) loam, very dark grayish brown (10YR 3/2) dry; weak medium prismatic structure parting to moderate medium and fine subangular blocky; firm; few medium and fine roots; few pebbles; slightly effervescent; moderately alkaline; clear wavy boundary.

Bgb1—29 to 37 inches; dark gray (10YR 4/1) loam; common medium prominent olive brown (2.5Y 4/4) and light olive brown (2.5Y 5/4) mottles; moderate medium and fine subangular blocky structure; firm; about 5 percent gravel; few black (10YR 2/1) krotovinas; slightly effervescent; moderately alkaline; clear wavy boundary.

Bgb2—37 to 54 inches; gray (10YR 5/1) clay loam; common medium distinct yellowish brown (10YR 5/4) mottles; weak coarse subangular blocky structure; firm; about 5 percent gravel; few black (10YR 2/1)

krotovinas; slightly effervescent; slightly alkaline; clear wavy boundary.

2Cg1—54 to 64 inches; dark grayish brown (10YR 4/2) gravelly loam; single grain; loose; about 15 percent gravel; slightly effervescent; moderately alkaline; gradual wavy boundary.

2Cg2—64 to 80 inches; dark gray (10YR 4/1) very gravelly coarse sandy loam; single grain; loose; about 40 percent gravel; slightly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 72 inches

Thickness of the mollic epipedon: 24 to 36 inches

Content of rock fragments: A horizon—0 to 5 percent; C or Cg horizon—0 to 10 percent; 2C or 2Cg horizon—15 to 60 percent

Ap and A horizons: Color—hue of 10YR, value of 3 (4 or 5 dry), chroma of 1 to 3; Texture—silt loam, silty clay loam, clay loam

Ab horizon: Color—hue of 10YR, value of 2 or 3, chroma of 1or 2; Texture—clay loam, silty clay loam, silt loam, loam

Bgb horizon: Color—hue of 10YR, value of 4 or 5, chroma of 1or 2; Texture—clay loam, silty clay loam, silt loam, loam

Cg or C horizon (if it occurs): Color—hue of 10YR or 2.5Y, value of 4 to 6,chroma of 1 to 4; Texture—clay loam, silty clay loam, silt loam, loam, and subhorizons of sandy loam or coarse sandy loam

2Cg or 2C horizon: Color—hue of 10YR, 2.5Y, or neutral, value of 4 to 6, chroma of 0 to 4; Texture—the gravelly or very gravelly analogs of silt loam, loam, sandy loam, or coarse sandy loam; subhorizons of gravelly or very gravelly loamy sand

Wallkill Series

The Wallkill series consists of very poorly drained, nearly level to depressional soils that have a mineral surface layer underlain by muck. The muck formed in wet areas as the result of partial decomposition of the remains of plants, mainly trees, fibrous grasses, sedges, and reeds. The overlying alluvium was washed from nearby uplands. These soils are in scattered small areas on stream terraces or moraines, mainly in the southeastern part of the county.

In a representative profile the soil is dark grayish brown silt loam to a depth of 27 inches. Gray mottles are below a depth of 10 inches. The underlying material is black, well decomposed muck to a depth of 60 inches.

The hazard of wetness is moderate. Unless the soils have been artificially drained, they have a high water table for long periods during the year. Drained areas are suited to cultivated crops, pasture, and meadow. Undrained areas are too wet for crops, but are suited to wildlife habitat in places. Tile and open ditches are used for drainage.

Representative profile of Wallkill silt loam, in a cultivated field in Elizabeth Township, Miami County, NW¼SE¼ sec. 25, T. 2 E., R. 10 N.:

Ap-0 to 10 inches, dark grayish brown (10YR 4/2) silt loam; moderate, medium, subangular blocky structure; friable; many roots; mildly alkaline; clear, smooth boundary.

Bg-10 to 21 inches, dark grayish brown (10YR 4/2) silt loam; few, fine, faint, gray (10YR 5/1) mottles; weak, medium, angular blocky structure; firm; few roots; mildly alkaline; clear, wavy boundary.

Cg-21 to 27 inches, dark grayish brown (10YR 4/2) silt loam; common, fine, faint, gray (10YR 5/1) mottles; very weak, coarse, subangular blocky structure in the upper part, massive in the lower part; friable; few roots; very dark grayish brown (10YR 3/2) organic stains; few dark concretions; mildly alkaline; abrupt, wavy boundary.

IIOa1-27 to 36 inches black (10YR/2/1) on broken face or when rubbed and pressed sapric material; 10 percent fiber when broken, none when rubbed and pressed; weak, coarse, subangular blocky structure; nonsticky when wet; neutral; clear, wavy boundary.

IIOa2-36 to 60 inches, black (10YR 2/1) on broken face or when rubbed and pressed sapric material; 30 percent fiber when broken, 5 percent when rubbed and pressed; massive; non sticky when wet; mildly alkaline.

The thickness of the mineral alluvial material over the organic material ranges from 16 to 40 inches. The thickness of the organic layers ranges from 20 to 40 inches or more. The reaction is neutral or mildly alkaline throughout.

The Ap horizon is dark grayish brown (10YR 4/2) or dark gray (10YR 4/1).

In some places the Bg horizon is weakly expressed or is lacking. The B horizon and C horizon are dark grayish brown (10YR 4/2 or 2.5Y 4/2) or grayish brown (10YR 5/2 or 2.5Y 5/2).

The organic material is mostly sapric, but a few areas are hemic below a depth of 30 inches. The organic layers are black (10YR 2/1), very dark brown (10YR 2/2), or very dark grayish brown (10YR 3/2).

Wallkill soils are near Algiers, Linwood, and Shoals soils. Wallkill soils are underlain by muck, and Algiers and Shoals soils are underlain by mineral alluvium. The upper layers of Wallkill soils are mineral alluvium, which is lacking in Linwood soils.

Warsaw Series

The Warsaw series consists of well drained, nearly level soils. These soils are moderately deep to sand and gravel. They formed in loamy glacial outwash material along the Miami and Stillwater Rivers. The native vegetation was tall prairie grasses and a few scattered hardwoods, but now most areas are cultivated.

In a representative profile the surface layer is silt loam about 18 inches thick. It is very dark grayish brown in the upper 9 inches and is black in the lower 9 inches. The subsoil is dark yellowish brown and dark brown clay loam and loam 19 inches thick. It is firm and contains some gravel in the lower part. Pale brown stratified sand and gravel is between depths of 37 and 60 inches.

These soils are used mainly for field crops. In some areas they are used for truck and nursery crops. A few areas are used as a source of sand and gravel. The drought hazard is moderate.

Crops are damaged by lack of moisture during most growing seasons. These soils dry and warm early in spring. Irrigation is used in some areas, and the Roils are well suited to irrigation. The soils have good tilth within a wide range of moisture content.

Representative profile of Warsaw silt loam, 0 to 2 percent slopes, in Monroe Township, Miami County, SE¼SE¼ sec. 35, T. 4 N., R. 6 E.:

Ap-0 to 9 inches, very dark grayish brown (10YR 3/2) silt loam; weak, fine and medium, subangular blocky structure; friable; many roots; mildly alkaline; clear, wavy boundary.
A1-9 to 18 inches, black (10YR 2/1) silt loam; moderate, fine and medium, angular blocky structure; slightly firm; common roots; mildly alkaline; clear, wavy boundary.
B1-18 to 23 inches, dark yellowish brown (10YR 3/4) clay loam; moderate, medium, angular blocky structure; slightly firm; few roots; mildly alkaline; clear, wavy boundary.
B21t-23 to 28 inches, dark brown (10YR 4/3) loam; moderate, medium, angular blocky structure; firm; few roots; thin very patchy clay films on ped faces; mildly alkaline; clear, wavy boundary.
IIB22t-28 to 34 inches, dark yellowish brown (10YR 3/4) loam; moderate, medium and coarse, subangular blocky structure; firm; few roots; thin very patchy clay films on ped faces; 10 percent pebbles; mildly alkaline; clear, irregular boundary.
IIB3t-34 to 37 inches, dark yellowish brown (10YR 3/4) gravelly loam; weak, coarse, subangular blocky structure; firm; few roots; thin very patchy clay films on pebbles; 25 percent gravel; moderately alkaline, calcareous; abrupt, irregular boundary.
IIC-37 to 60 inches, pale brown (10YR 6/3) stratified sand and gravel; single grained; loose; moderately alkaline, calcareous.

The solum is 24 to 40 inches thick. It is slightly acid to mildly alkaline in the upper part and mildly alkaline or moderately alkaline in the lower part. In most places the IIB3 horizon is calcareous. The depth to carbonates ranges from 20 to 38 inches.

The A horizon is 12 to 20 inches thick. The Ap horizon is very dark grayish brown (10YR 3/2), very dark brown (10YR 2/2), or very dark gray (10YR 3/1).

The B2t horizon is loam, clay loam, sandy clay loam, or gravelly clay loam. In some places tongues of the B2t horizon extend 2 to 3 feet into the C horizon, and in some places a 2- to 4-inch, darker colored, strongly illuviated horizon is at the contact of the C horizon.

The proportion of sand and gravel in the C horizon varies greatly within short horizontal distances. The C horizon is pale brown (10YR 6/3) or brown (10YR 5/3).

Warsaw soils are near Westland, Eldean, Lorenzo, Ockley, Wea, and Casco soils. Warsaw soils are better drained than Westland soils and lack the mottles that those soils have. They have a darker colored A horizon than Eldean, Casco, and Ockley soils. Warsaw soils are deeper to sand and gravel than Lorenzo and Casco soils and are thinner to sand and gravel than Wea soils.

Wea Series

The Wea series consists of well drained, level to nearly level soils. These soils formed in loamy glacial outwash materials. In some areas the outwash is mantled with a thin loess deposit. The soils are underlain by calcareous stratified sand and gravel at a depth of 40 to 66 inches. They are on the slightly higher positions adjacent to flood plains along the Miami and Stillwater Rivers. The native vegetation was tall prairie grasses.

In a representative profile the surface layer is silt loam about 18 inches thick. It is very dark grayish brown in the upper 10 inches and is dark brown in the lower 8 inches. The subsoil is dark brown clay loam, is 26 inches thick, and is gravelly in the lower 3 inches. Brown stratified sand and gravel is between depths of 44 and 60 inches.

These soils are used mainly for field crops, but some truck and nursery crops are grown. The soils have few limitations that restrict their use. The soils are well suited to irrigation, and some areas are irrigated.

Representative profile of Wea silt loam, 0 to 2 percent slopes, in a cultivated field in Bethel Township, Miami County, SW¼NE¼ sec. 6, T. 1 E., R. 9 N.:

Ap-0 to 10 inches, very dark grayish brown (10YR 3/2) silt loam; weak, medium, granular structure; friable; many roots; neutral; clear, smooth boundary.
A1-10 to 18 inches, dark brown (10YR 3/3) silt loam; weak, medium, subangular blocky structure; friable; many roots; neutral; clear, smooth boundary.
IIB21t-18 to 27 inches, dark brown (10YR 4/3) clay loam; moderate, medium, subangular blocky structure; firm; few roots; thin, patchy, dark brown (7.5YR 3/2) clay films on ped faces; 5 percent gravel; few, very dark brown (10YR 2/2), organic coatings on ped faces; neutral; clear, smooth boundary.
IIB22t-27 to 41 inches, dark brown (7.5YR 4/4) clay loam; moderate, medium, subangular blocky structure; firm; few roots; thin, patchy, dark reddish brown (5YR 3/3) clay films; 5 to 10 percent gravel; few, very dark brown (10YR 2/2), organic coatings on ped faces and in root channels; neutral; clear, irregular boundary.
IIB3-41 to 44 inches, dark brown (7.5YR 3/2) gravelly clay loam; massive; firm; 25 percent gravel; few weathered fragments of limestone; moderately alkaline; abrupt, irregular boundary.
IIC-44 to 60 inches, brown (10YR 5/3) stratified sand and gravel; single grained; loose; moderately alkaline, calcareous.

The solum is 40 to 66 inches thick. The depth to calcareous material ranges from 36 to 64 inches. In some places there is a silty loess capping that is 10 to 18 inches thick. The reaction of the solum is neutral or slightly acid in the upper part and neutral to moderately alkaline in the lower part. In some places the B3 horizon is weakly calcareous.

The A horizon is 16 to 20 inches thick. The Ap horizon is very dark grayish brown (10YR 3/2), very dark brown (10YR 2/2), or very dark gray (10YR 3/1).

The Bt horizon has hue of 10YR to 7.5YR, value of 4 or 5, and chroma of 3 or 4. It is clay loam, silty clay loam, or sandy clay loam and is 5 to 15 percent gravel in places. The B3 horizon is gravelly clay loam or gravelly loam and generally is 15 to 25 percent gravel. It has hue of 7.5YR, value of 3, and chroma of 2 or 3.

The C horizon is yellowish brown (10YR 5/4), brown (10YR 5/3), or pale brown (10YR 6/3). Wea soils are near Casco, Eldean, Ross, Genesee, Warsaw, Lorenzo, Ockley, and Westland soils. Wea soils have a darker colored A horizon than Casco, Eldean, Genesee, and Ockley soils. They have more distinctly developed horizons and have a finer textured B horizon than Ross soils. They are deeper to the underlying sand and gravel than Casco, Eldean, Warsaw, and Lorenzo soils. Wea soils are better drained than Westland soils and do not have mottles in the B horizon.

Westland Series

The Westland series consists of very poorly drained, level to nearly level soils. These soils formed in loamy outwash material. Calcareous sand and gravel are at a depth of 40 to 60 inches. The soils are in slight depressions on outwash terraces, mainly in Bethel Township. The native vegetation was mixed hardwoods and marsh grasses.

In a representative profile the surface layer is black silty clay loam about 18 inches thick. The subsoil is dark gray clay loam in the upper 3 inches, dark gray gravelly clay loam in the next 11 inches, and grayish brown gravelly loam in the lower 13 inches. Light brownish gray stratified sand and gravel is between depths of 45 and 60 inches.

These soils are used mainly for crops. A few areas are in woods and pasture. Most cultivated areas are artificially drained. These soils generally drain well with tile and open ditches.

Representative profile of Westland silty clay loam, in a cultivated field in Bethel Township, Miami County, SE¼SE¼ sec. 4, T. 2 E., R. 9 N:

Ap-0 to 7 inches, black (10YR 2/1) silty clay loam; weak, medium, subangular blocky structure; friable; slightly acid; abrupt, smooth boundary.

A1-7 to 18 inches, black (10YR 2/1) silty clay loam; moderate, fine and medium, angular blocky structure; friable; neutral; clear, wavy boundary.

B2tg-18 to 21 inches, dark gray (10YR 4/1) clay loam; few, fine, distinct, light olive brown (2.5Y 5/4) mottles; moderate, medium, sub angular blocky structure; firm; thin very patchy clay films on ped faces; neutral; clear, wavy boundary.

IIB2tg-21 to 32 inches, dark gray (5Y 4/1) gravelly clay loam; many, medium, distinct, light olive brown (2.5Y 5/4) mottles; moderate, medium, subangular blocky structure; firm; thin patchy clay films on ped faces; 15 percent gravel; neutral; clear, irregular boundary.

IIB3g-32 to 45 inches, grayish brown (2.5Y 5/2) gravelly loam; few, fine, faint, light olive brown (2.5Y 5/6) mottles; weak, medium, subangular blocky structure; friable; 20 percent gravel; mildly alkaline, weakly calcareous; abrupt, irregular boundary.

IIC-45 to 60 inches, light brownish gray (10YR 6/2) stratified sand and gravel; single grained; loose; moderately alkaline, calcareous.

The solum is 40 to 60 inches thick. Depth to calcareous material ranges from 32 to 54 inches. The reaction of the solum is slightly acid or neutral in the upper part and neutral to moderately alkaline in the lower part. In most places the lower part of the solum is weakly calcareous.

The A horizon is very dark brown (10YR 2/2), black (10YR 2/1), or very dark grayish brown (10YR 3/2). The Bt horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 or less. It is clay loam, gravelly clay loam, and silty clay loam. In many places there are 3- to 5-inch subhorizons of loam or sandy clay loam. The B3g horizon is the same color as the Bt horizon.

The C horizon is light brownish gray (10YR 6/2), grayish brown (10YR 5/2), or dark gray (10YR 4/1).

Westland soils are poorly drained members of a drainage sequence that includes the somewhat poorly drained Sleeth soils and the well drained Ockley soils. Westland soils are near these soils and also near Elden, Wea, Warsaw, and Montgomery soils. They have more mottles in the B horizon than Eldean, Warsaw, and Wea soils and have a darker colored A horizon than Eldean soils. Westland soils are coarser textured and contain more sand than Montgomery soils.

Formation of the Soils

This section relates the factors of soil formation to the soils in Miami 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 Miami 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 Miami 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 Miami County. The soils that formed in this kind of till generally are compact and are slowly or moderately slowly permeable. Blount, Brookston, Celina, and Crosby 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 Miami 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 Miami County were derived from limestone influenced glacial drift. 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 Miami 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 Miami 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.

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, 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, and Shoals 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. Edwards soils formed in decomposed plant material.

Climate

The climate in Miami 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 their 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 Miami 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. 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 Glynwood soils both formed in loamy till. The sloping to steep Glynwood 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 Miami 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 Miami 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 Miami 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 Brookston, Crosby, and Miamian, 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 Miami 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 Miami 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 and Brookston 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 Miami 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 10YR, value 6, and chroma 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	28 °F or lower	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	842	0.3
BlA	Blount silt loam, 0 to 2 percent slopes	2,218	0.8
BlB	Blount silt loam, 2 to 6 percent slopes	5,236	2.0
BlB2	Blount silt loam, 2 to 6 percent slopes, moderately eroded	291	0.1
Bs	Brookston silty clay loam	36,028	13.7
CcD2	Casco gravelly loam, 12 to 20 percent slopes, eroded	4	*
CeA	Celina silt loam, 0 to 2 percent slopes	2,293	0.9
CeB	Celina silt loam, 2 to 6 percent slopes	13,717	5.2
CeB2	Celina silt loam, 2 to 6 percent slopes, moderately eroded	1,278	0.5
CoA	Corwin silt loam, 0 to 2 percent slopes	136	*
CoB	Corwin silt loam, 2 to 6 percent slopes	108	*
CrA	Crosby silt loam, 0 to 2 percent slopes	65,396	24.9
CrB	Crosby silt loam, 2 to 6 percent slopes	20,928	8.0
Ed	Edwards muck	107	*
Ee	Eel silt loam	1,163	0.4
ElA	Eldean loam, 0 to 2 percent slopes	4,575	1.7
ElB	Eldean loam, 2 to 6 percent slopes	4,714	1.8
ElB2	Eldean loam, 2 to 6 percent slopes, moderately eroded	1,113	0.4
EmA	Eldean silt loam, 0 to 2 percent slopes	1,117	0.4
EmB	Eldean silt loam, 2 to 6 percent slopes	1,283	0.5
EmB2	Eldean silt loam, 2 to 6 percent slopes, eroded	4	*
EoC2	Eldean-Casco gravelly loams, 6 to 12 percent slopes, moderately eroded	1,623	0.6
EoD2	Eldean-Casco gravelly loams, 12 to 18 percent slopes, moderately eroded	535	0.2
EpD3	Eldean-Casco complex, 6 to 18 percent slopes, severely eroded	158	*
EqC2	Eldean-Casco complex, 6 to 12 percent slopes, eroded	49	*
ErB	Eldean-Miamian complex, 2 to 6 percent slopes	1,179	0.4
ErC	Eldean-Miamian complex, 6 to 12 percent slopes	525	0.2
Gn	Genesee silt loam	4,511	1.7
GwB	Glynwood silt loam, 2 to 6 percent slopes	1,503	0.6
GwB2	Glynwood silt loam, 2 to 6 percent slopes, moderately eroded	1,870	0.7
GwC2	Glynwood silt loam, 6 to 12 percent slopes, moderately eroded	1,119	0.4
GwD2	Glynwood silt loam, 12 to 18 percent slopes, moderately eroded	240	*
GyC3	Glynwood clay loam, 6 to 12 percent slopes, severely eroded	289	0.1
GyD3	Glynwood clay loam, 12 to 18 percent slopes, severely eroded	102	*
HeE2	Hennepin and Miamian silt loams, 18 to 25 percent slopes, moderately eroded	12	*
HeF2	Hennepin and Miamian silt loams, 25 to 50 percent slopes, moderately eroded	16	*
Ko	Kokomo silty clay loam	120	*
Ln	Linwood muck	317	0.1
LrE2	Lorenzo-Rodman gravelly loams, 18 to 50 percent slopes, moderately eroded	409	0.2
MaB	Martinsville and Ockley loams, till substratum, 2 to 6 percent slopes	262	*
Md	Medway silt loam	1,807	0.7
MhA	Miamian silt loam, 0 to 2 percent slopes	2,117	0.8
MhB	Miamian silt loam, 2 to 6 percent slopes	16,373	6.2
MhB2	Miamian silt loam, 2 to 6 percent slopes, moderately eroded	7,208	2.7
MhC2	Miamian silt loam, 6 to 12 percent slopes, moderately eroded	7,522	2.9
MhD2	Miamian silt loam, 12 to 18 percent slopes, moderately eroded	1,592	0.6
MkA	Miamian silt loam, limestone substratum, 0 to 2 percent slopes	3,206	1.2
MkB	Miamian silt loam, limestone substratum, 2 to 6 percent slopes	2,539	1.0
MkB2	Miamian silt loam, limestone substratum, 2 to 6 percent slopes, moderately eroded	492	0.2
MkC2	Miamian silt loam, limestone substratum, 6 to 12 percent slopes, moderately eroded	216	*
MlC3	Miamian clay loam, 6 to 12 percent slopes, severely eroded	633	0.2
MlD3	Miamian clay loam, 12 to 18 percent slopes, severely eroded	334	0.1
MmE	Miamian and Hennepin silt loams, 18 to 25 percent slopes	596	0.2
MmF	Miamian and Hennepin silt loams, 25 to 50 percent slopes	1,250	0.5
MnA	Millsdale silt loam, 0 to 2 percent slopes	541	0.2
MnB	Millsdale silt loam, 2 to 6 percent slopes	90	*
MoA	Millsdale silty clay loam, 0 to 2 percent slopes	2,982	1.1
MoB	Millsdale silty clay loam, 2 to 6 percent slopes	192	*
MpA	Milton silt loam, 0 to 2 percent slopes	3,557	1.4
MpB	Milton silt loam, 2 to 6 percent slopes	4,917	1.9
MpB2	Milton silt loam, 2 to 6 percent slopes, moderately eroded	214	*
MpC2	Milton silt loam, 6 to 12 percent slopes, moderately eroded	689	0.3
MpD2	Milton silt loam, 12 to 18 percent slopes, moderately eroded	122	*
Mt	Montgomery silty clay loam	1,664	0.6
OcA	Ockley silt loam, 0 to 2 percent slopes	829	0.3
OcB	Ockley silt loam, 2 to 6 percent slopes	220	*
OdA	Odell silt loam, 0 to 2 percent slopes	2,838	1.1
OdB	Odell silt loam, 2 to 6 percent slopes	725	0.3
Pe	Pewamo silty clay loam	1,350	0.5
Pg	Pits, gravel	554	0.2
Pq	Pits, quarry	346	0.1

*See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE MAP UNITS--Continued

Map symbol	Soil name	Acres	Percent
RdA	Randolph silt loam, 0 to 2 percent slopes	4,156	1.6
RdB	Randolph silt loam, 2 to 6 percent slopes	179	*
RgE	Rodman gravelly loam, 18 to 35 percent slopes	23	*
RhB	Ritchey silt loam, 2 to 6 percent slopes	170	*
RhC	Ritchey silt loam, 6 to 18 percent slopes	134	*
RhE	Ritchey silt loam, 18 to 50 percent slopes	269	0.1
Rs	Ross silt loam	2,876	1.1
Rt	Ross silt loam, shallow variant	131	*
Sh	Shoals silt loam	2,909	1.1
Sk	Shoals silt loam, moderately shallow variant	210	*
SlA	Sleeth silt loam, 0 to 2 percent slopes	227	*
St	Stonelick loam	611	0.2
Ts	Tremont silt loam, occasionally flooded	9	*
Ud	Udorthents	702	0.3
Uf	Udorthents, Sanitary landfill	237	*
W	Water	1,378	0.5
Wa	Wallkill silt loam	71	*
WdA	Warsaw silt loam, 0 to 2 percent slopes	850	0.3
WeA	Wea silt loam, 0 to 2 percent slopes	789	0.3
Wt	Westland silty clay loam	1,185	0.5
	Total	262,221	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 144 for additional information.)

Map symbol	Soil name
Ag	Algiers silt loam (Prime farmland if drained)
BlA	Blount silt loam, 0 to 2 percent slopes (Prime farmland if drained)
BlB	Blount silt loam, 2 to 6 percent slopes (Prime farmland if drained)
BlB2	Blount silt loam, 2 to 6 percent slopes, moderately eroded (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
CoA	Corwin silt loam, 0 to 2 percent slopes
CoB	Corwin silt loam, 2 to 6 percent slopes
CrA	Crosby silt loam, 0 to 2 percent slopes (Prime farmland if drained)
CrB	Crosby silt loam, 2 to 6 percent slopes (Prime farmland if drained)
Ee	Eel silt loam
ElA	Eldean loam, 0 to 2 percent slopes
ElB	Eldean loam, 2 to 6 percent slopes
ElB2	Eldean loam, 2 to 6 percent slopes, moderately eroded
EmA	Eldean silt loam, 0 to 2 percent slopes
EmB	Eldean silt loam, 2 to 6 percent slopes
EmB2	Eldean silt loam, 2 to 6 percent slopes, eroded
ErB	Eldean-Miamian complex, 2 to 6 percent slopes
Gn	Genesee silt loam
GwB	Glynwood silt loam, 2 to 6 percent slopes
GwB2	Glynwood silt loam, 2 to 6 percent slopes, moderately eroded
Ko	Kokomo silty clay loam (Prime farmland if drained)
MaB	Martinsville and Ockley loams, till substratum, 2 to 6 percent slopes
Md	Medway silt loam
MhA	Miamian silt loam, 0 to 2 percent slopes
MhB	Miamian silt loam, 2 to 6 percent slopes
MhB2	Miamian silt loam, 2 to 6 percent slopes, moderately eroded
MkA	Miamian silt loam, limestone substratum, 0 to 2 percent slopes
MkB	Miamian silt loam, limestone substratum, 2 to 6 percent slopes
MkB2	Miamian silt loam, limestone substratum, 2 to 6 percent slopes, moderately eroded
MnA	Millsdale silt loam, 0 to 2 percent slopes (Prime farmland if drained)
MnB	Millsdale silt loam, 2 to 6 percent slopes (Prime farmland if drained)
MoA	Millsdale silty clay loam, 0 to 2 percent slopes (Prime farmland if drained)
MoB	Millsdale silty clay loam, 2 to 6 percent slopes (Prime farmland if drained)
MpA	Milton silt loam, 0 to 2 percent slopes
MpB	Milton silt loam, 2 to 6 percent slopes
MpB2	Milton silt loam, 2 to 6 percent slopes, moderately eroded
Mt	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
OdA	Odell silt loam, 0 to 2 percent slopes (Prime farmland if drained)
OdB	Odell silt loam, 2 to 6 percent slopes (Prime farmland if drained)
Pe	Pewamo silty clay loam (Prime farmland if drained)
RdA	Randolph silt loam, 0 to 2 percent slopes (Prime farmland if drained)
RdB	Randolph silt loam, 2 to 6 percent slopes (Prime farmland if drained)
Rs	Ross silt loam
Sh	Shoals silt loam (Prime farmland if drained)
Sk	Shoals silt loam, moderately shallow variant (Prime farmland if drained)
SlA	Sleeth silt loam, 0 to 2 percent slopes (Prime farmland if drained)
St	Stonelick loam
Ts	Tremont silt loam, occasionally flooded
WdA	Warsaw silt loam, 0 to 2 percent slopes
WeA	Wea silt loam, 0 to 2 percent slopes
Wt	Westland silty clay loam (Prime farmland if drained)

TABLE 6.--HYDRIC SOILS LIST

(See text on page 146 for additional information)

Map symbol	Soil name
Bs	Brookston silty clay loam
Ed	Edwards muck
Ko	Kokomo silty clay loam
Ln	Linwood muck
MnA	Millsdale silt loam, 0 to 2 percent slopes
MnB	Millsdale silt loam, 2 to 6 percent slopes
MoA	Millsdale silty clay loam, 0 to 2 percent slopes
MoB	Millsdale silty clay loam, 2 to 6 percent slopes
Mt	Montgomery silty clay loam
Pe	Pewamo silty clay loam
Wa	Wallkill silt loam
Wt	Westland silty clay loam

TABLE 7.--NON-HYDRIC MAPUNITS WITH HYDRIC COMPONENTS

(See text on page 146 for additional information)

Map symbol and map unit name	Hydric Component	Landform
Ag: Algiers silt loam		
	Sloan	slough, oxbow, flood plain
	Brookston	depression, drainageway, ground moraine
	Montgomery	depression, terrace
BlA: Blount silt loam, 0 to 2 percent slopes		
	Pewamo	depression, drainageway, ground moraine
BlB: Blount silt loam, 2 to 6 percent slopes		
	Pewamo	depression, drainageway, ground moraine
BlB2: Blount silt loam, 2 to 6 percent slopes, moderately eroded		
	Pewamo	depression, drainageway, ground moraine
CeA: Celina silt loam, 0 to 2 percent slopes		
	Brookston	depression, drainageway, ground moraine
CeB: Celina silt loam, 2 to 6 percent slopes		
	Brookston	depression, drainageway, ground moraine
CeB2: Celina silt loam, 2 to 6 percent slopes, moderately eroded		
	Brookston	depression, drainageway, 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
CrA: Crosby silt loam, 0 to 2 percent slopes		
	Brookston	depression, drainageway, ground moraine

TABLE 7.--NON-HYDRIC MAPUNITS WITH HYDRIC COMPONENTS--Continued

Map symbol and map unit name	Hydric Component	Landform
CrB:		
Crosby silt loam, 2 to 6 percent slopes		
	Brookston	drainageway, depression, ground moraine
Ee:		
Eel silt loam		
	Sloan	oxbow, slough, flood plain
EmB2:		
Eldean silt loam, 2 to 6 percent slopes, eroded		
	Westland	depression, draw
Gn:		
Genesee silt loam		
	Sloan	slough, oxbow, flood plain
GwB:		
Glynwood silt loam, 2 to 6 percent slopes		
	Pewamo	drainageway, depression, ground moraine
GwB2:		
Glynwood silt loam, 2 to 6 percent slopes, moderately eroded		
	Pewamo	drainageway, depression, ground moraine
GwC2:		
Glynwood silt loam, 6 to 12 percent slopes, moderately eroded		
	Pewamo	drainageway, ground moraine
GyC3:		
Glynwood clay loam, 6 to 12 percent slopes, severely eroded		
	Pewamo	drainageway, ground moraine
Md:		
Medway silt loam		
	Sloan	slough, oxbow, flood plain
MhA:		
Miamian silt loam, 0 to 2 percent slopes		
	Brookston	depression, drainageway, ground moraine
MhB:		
Miamian silt loam, 2 to 6 percent slopes		
	Brookston	depression, drainageway, ground moraine
MhB2:		
Miamian silt loam, 2 to 6 percent slopes, moderately eroded		
	Brookston	drainageway, ground moraine

TABLE 7.--NON-HYDRIC MAPUNITS WITH HYDRIC COMPONENTS--Continued

Map symbol and map unit name	Hydric Component	Landform
MhC2: Miamian silt loam, 6 to 12 percent slopes, moderately eroded		
	Brookston	drainageway, ground moraine
MkA: Miamian silt loam, limestone substratum, 0 to 2 percent slopes		
	Millsdale	depression, drainageway, ground moraine
MkB: Miamian silt loam, limestone substratum, 2 to 6 percent slopes		
	Millsdale	depression, drainageway, ground moraine
MkB2: Miamian silt loam, limestone substratum, 2 to 6 percent slopes, moderately eroded		
	Millsdale	drainageway, ground moraine
MkC2: Miamian silt loam, limestone substratum, 6 to 12 percent slopes, moderately eroded		
	Millsdale	drainageway, ground moraine
MlC3: Miamian clay loam, 6 to 12 percent slopes, severely eroded		
	Brookston	drainageway, ground moraine
OdA: Odell silt loam, 0 to 2 percent slopes		
	Brookston	depression, drainageway, ground moraine
OdB: Odell silt loam, 2 to 6 percent slopes		
	Brookston	depression, drainageway, ground moraine
RdA: Randolph silt loam, 0 to 2 percent slopes		
	Millsdale	depression, drainageway, ground moraine
RdB: Randolph silt loam, 2 to 6 percent slopes		
	Millsdale	depression, drainageway, ground moraine
Sh: Shoals silt loam		
	Sloan	oxbow, slough, flood plain

TABLE 7.--NON-HYDRIC MAPUNITS WITH HYDRIC COMPONENTS--Continued

Map symbol and map unit name	Hydric Component	Landform
Sk:		
Shoals silt loam, moderately shallow variant		
	Sloan	oxbow, slough, flood plain
SlA:		
Sleeth silt loam, 0 to 2 percent slopes		
	Westland	depression, drainageway, terrace
Ts:		
Tremont silt loam, occasionally flooded		
	Sloan	slough, oxbow

TABLE 8.--CROPLAND LIMITATIONS AND HAZARDS

(See text on page 151 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,
BlA:	
Blount	Seasonal high water table, surface compaction, frost action, surface crusting, high clay content,
BlB:	
Blount	Seasonal high water table, surface compaction, frost action, surface crusting, erosion hazard, high clay content,
BlB2:	
Blount	Part of the surface layer removed by erosion, seasonal high water table, surface compaction, frost action, fair tilth, surface crusting, erosion hazard, high clay content,
Bs:	
Brookston	Ponding, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth,
CcD2:	
Casco	Part of the surface layer removed by erosion, high potential for ground-water pollution, easily eroded, erosion hazard, wind erosion, limited available water capacity,
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,
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,
CrA:	
Crosby	Seasonal high water table, surface compaction, frost action, surface crusting, high clay content,
CrB:	
Crosby	Seasonal high water table, surface compaction, frost action, surface crusting, erosion hazard, high clay content,
Ed:	
Edwards	Ponded for extended periods, moderate potential for ground-water pollution, excessive acidity, frost action, subsidence of the muck, very high organic matter content, wind erosion, limited available water capacity, restricted permeability,

TABLE 8.--CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations and hazards
Ee:	
Eel	Occasional flooding, surface compaction, high potential for ground-water pollution, frost action, surface crusting,
ElA:	
Eldean	High potential for ground-water pollution, limited available water capacity, high clay content,
ElB:	
Eldean	High potential for ground-water pollution, erosion hazard, limited available water capacity, high clay content,
ElB2:	
Eldean	Part of the surface layer removed by erosion, high potential for ground-water pollution, fair tilth, erosion hazard, limited available water capacity, high clay content,
EmA:	
Eldean	Surface compaction, high potential for ground-water pollution, surface crusting, limited available water capacity, high clay content,
EmB:	
Eldean	Surface compaction, high potential for ground-water pollution, surface crusting, erosion hazard, limited available water capacity, high clay content,
EmB2:	
Eldean	Part of the surface layer removed by erosion, surface compaction, high potential for ground-water pollution, fair tilth, surface crusting, erosion hazard, limited available water capacity, high clay content,
EoC2:	
Eldean	Part of the surface layer removed by erosion, high potential for ground-water pollution, easily eroded, erosion hazard, limited available water capacity, high clay content,
Casco	Part of the surface layer removed by erosion, high potential for ground-water pollution, poor tilth, erosion hazard, limited available water capacity,
EoD2:	
Eldean	Part of the surface layer removed by erosion, high potential for ground-water pollution, easily eroded, erosion hazard, limited available water capacity, high clay content,
Casco	Part of the surface layer removed by erosion, high potential for ground-water pollution, poor tilth, easily eroded, erosion hazard, limited available water capacity,
EpD3:	
Casco	Most of the surface layer removed by erosion, high potential for ground-water pollution, poor tilth, easily eroded, erosion hazard, limited available water capacity,
Eldean	Most of the surface layer removed by erosion, high potential for ground-water pollution, poor tilth, easily eroded, erosion hazard, limited available water capacity,
EqC2:	
Eldean	Part 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, high clay content,
Casco	Part of the surface layer removed by erosion, high potential for ground-water pollution, erosion hazard, limited available water capacity,

TABLE 8.--CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations and hazards
ErB:	
Eldean	High potential for ground-water pollution, erosion hazard, limited available water capacity, high clay content,
Miamian	Surface compaction, surface crusting, erosion hazard, high clay content,
ErC:	
Eldean	High potential for ground-water pollution, easily eroded, erosion hazard, limited available water capacity, high clay content,
Miamian	Surface compaction, surface crusting, easily eroded, erosion hazard, high clay content,
Gn:	
Genesee	Occasional flooding, surface compaction, high potential for ground-water pollution, surface crusting,
GwB:	
Glynwood	Surface compaction, frost action, surface crusting, erosion hazard, high clay content,
GwB2:	
Glynwood	Part of the surface layer removed by erosion, surface compaction, frost action, fair tilth, surface crusting, erosion hazard, high clay content,
GwC2:	
Glynwood	Part of the surface layer removed by erosion, surface compaction, frost action, fair tilth, surface crusting, easily eroded, erosion hazard, high clay content,
GwD2:	
Glynwood	Part of the surface layer removed by erosion, surface compaction, frost action, fair tilth, surface crusting, easily eroded, erosion hazard, high clay content,
GyC3:	
Glynwood	Most of the surface layer removed by erosion, surface compaction, poor tilth, frost action, easily eroded, erosion hazard, clodding, high clay content,
Ko:	
Kokomo	Ponded for extended periods, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth,
Ln:	
Linwood	Ponded for extended periods, high potential for ground-water pollution, excessive acidity, frost action, subsidence of the muck, very high organic matter content, wind erosion,
MaB:	
Martinsville	Erosion hazard,
Ockley	Surface compaction, high potential for ground-water pollution, surface crusting, erosion hazard,
Md:	
Medway	Occasional flooding, surface compaction, moderate potential for ground-water pollution, frost action,
MhA:	
Miamian	Surface compaction, surface crusting, high clay content,

TABLE 8.--CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations and hazards
MhB:	
Miamian	Surface compaction, surface crusting, erosion hazard, high clay content,
MhB2:	
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, erosion hazard, high clay content,
MhC2:	
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard, high clay content,
MhD2:	
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard, high clay content,
MkA:	
Miamian	Surface compaction, surface crusting, erosion hazard, high clay content,
MkB:	
Miamian	Surface compaction, surface crusting, erosion hazard, high clay content,
MkB2:	
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, erosion hazard, high clay content,
MkC2:	
Miamian	Part of the surface layer removed by erosion, surface compaction, fair tilth, surface crusting, easily eroded, erosion hazard, high clay content,
MlC3:	
Miamian	Most of the surface layer removed by erosion, surface compaction, poor tilth, easily eroded, erosion hazard, clodding, high clay content,
MnA:	
Millsdale	Ponding, surface compaction, depth to bedrock, high potential for ground-water pollution, frost action, limited available water capacity, high clay content,
MnB:	
Millsdale	Ponding, surface compaction, depth to bedrock, high potential for ground-water pollution, frost action, erosion hazard, limited available water capacity, high clay content,
MoA:	
Millsdale	Ponding, surface compaction, depth to bedrock, high potential for ground-water pollution, frost action, fair tilth, limited available water capacity, clodding, high clay content,
MoB:	
Millsdale	Ponding, surface compaction, depth to bedrock, high potential for ground-water pollution, frost action, fair tilth, erosion hazard, limited available water capacity, clodding, high clay content,
MpA:	
Milton	Surface compaction, depth to bedrock, high potential for ground-water pollution, surface crusting, limited available water capacity, high clay content,

TABLE 8.--CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations and hazards
MpB:	
Milton	Surface compaction, depth to bedrock, high potential for ground-water pollution, surface crusting, erosion hazard, limited available water capacity, high clay content,
MpB2:	
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,
MpC2:	
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,
MpD2:	
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,
Mt:	
Montgomery	Ponding, surface compaction, moderate potential for ground-water pollution, poor tilth, frost action, 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,
OdA:	
Odell	Seasonal high water table, surface compaction, moderate potential for ground-water pollution, frost action, surface crusting,
OdB:	
Odell	Seasonal high water table, surface compaction, moderate potential for ground-water pollution, frost action, surface crusting, erosion hazard,
Pe:	
Pewamo	Ponded for extended periods, surface compaction, moderate potential for ground-water pollution, frost action, fair tilth, clodding, high clay content,
RdA:	
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,
RdB:	
Randolph	Seasonal high water table, surface compaction, depth to bedrock, high potential for ground-water pollution, frost action, surface crusting, erosion hazard, limited available water capacity, high clay content,
RhB:	
Ritchey	Surface compaction, depth to bedrock, high potential for ground-water pollution, surface crusting, erosion hazard, limited available water capacity,

TABLE 8.--CROPLAND LIMITATIONS AND HAZARDS--Continued

Soil name and map symbol	Cropland limitations and hazards
RhC:	
Ritchey	Surface compaction, depth to bedrock, high potential for ground-water pollution, surface crusting, easily eroded, erosion hazard, limited available water capacity,
Rs:	
Ross	Occasional flooding, surface compaction,
Rt:	
Ross Variant	Surface compaction, depth to bedrock, high potential for ground-water pollution, limited available water capacity,
Sh:	
Shoals	Occasional flooding, seasonal high water table, surface compaction, high potential for ground-water pollution, frost action,
Sk:	
Shoals Variant	Frequent flooding, seasonal high water table, surface compaction, depth to bedrock, high potential for ground-water pollution, frost action, surface crusting,
SlA:	
Sleeth	Seasonal high water table, surface compaction, high potential for ground-water pollution, frost action, surface crusting,
St:	
Stonelick	Occasional flooding, moderate potential for ground-water pollution, limited available water capacity,
Ts:	
Tremont	Occasional flooding, surface compaction, moderate potential for ground-water pollution, frost action,
Wa:	
Wallkill	Ponded for extended periods, surface compaction, high potential for ground-water pollution, frost action,
WdA:	
Warsaw	Surface compaction, high potential for ground-water pollution, limited available water capacity,
WeA:	
Wea	Surface compaction, high potential for ground-water pollution,
Wt:	
Westland	Ponding, surface compaction, high potential for ground-water pollution, frost action, fair tilth, clodding,

TABLE 9.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE

(Yields are those that can be expected under a high level of management. They are for nonirrigated areas. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil. See text on page 151 for additional information.)

Map symbol and soil name	Land capability	Corn	Oats	Orchardgrass-alfalfa hay	Soybeans	Winter wheat
		Bu	Bu	Tons	Bu	Bu
Ag: Algiers	2w	110.0	80.0	4.0	40.0	45.0
BlA: Blount	2w	100.0	75.0	3.5	35.0	45.0
BlB: Blount	2e	95.0	75.0	3.5	35.0	45.0
BlB2: Blount	2e	85.0	72.0	3.4	30.0	40.0
Bs: Brookston	2w	130.0	80.0	5.0	40.0	45.0
CcD2: Casco	6e	---	---	---	---	---
CeA: Celina	1	115.0	80.0	5.0	40.0	46.0
CeB: Celina	2e	110.0	75.0	5.0	38.0	45.0
CeB2: Celina	2e	100.0	75.0	4.5	35.0	45.0
CoA: Corwin	1	120.0	80.0	5.0	40.0	48.0
CoB: Corwin	2e	110.0	80.0	5.0	38.0	45.0
CrA: Crosby	2w	115.0	80.0	5.0	40.0	45.0
CrB: Crosby	2e	110.0	80.0	5.0	38.0	45.0
Ed: Edwards	6w	---	---	---	---	---
Ee: Eel	2w	115.0	80.0	5.0	35.0	40.0
ElA: Eldean	2s	110.0	75.0	4.0	30.0	43.0
ElB: Eldean	2e	100.0	75.0	4.0	28.0	40.0
ElB2: Eldean	2e	90.0	70.0	4.0	26.0	38.0
EmA: Eldean	2e	100.0	75.0	4.0	30.0	43.0
EmB: Eldean	2e	100.0	75.0	4.0	28.0	40.0
EmB2: Eldean	2e	95.0	---	4.5	33.0	40.0
EoC2: Eldean Casco	4e	75.0	60.0	3.5	25.0	35.0

TABLE 9.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability	Corn	Oats	Orchardgrass-alfalfa hay	Soybeans	Winter wheat
		Bu	Bu	Tons	Bu	Bu
EoD2:	4e	---	---	3.0	---	---
Eldean------------------						
Casco-------------------						
EpD3:	6e	---	---	2.5	---	---
Eldean------------------						
Casco-------------------						
EqC2:	3e	75.0	---	3.5	20.0	30.0
Eldean------------------						
Casco-------------------						
ErB:	2e	100.0	75.0	4.5	30.0	45.0
Eldean------------------						
Miamian-----------------						
ErC:	3e	90.0	65.0	4.0	30.0	38.0
Eldean------------------						
Miamian-----------------						
Gn:		115.0	80.0	5.0	40.0	40.0
Genesee-----------------	2w					
GwB:		90.0	65.0	3.5	30.0	35.0
Glynwood----------------	2e					
GwB2:		80.0	60.0	3.5	25.0	35.0
Glynwood----------------	3e					
GwC2:		75.0	60.0	3.5	25.0	35.0
Glynwood----------------	4e					
GwD2:		65.0	45.0	3.0	---	28.0
Glynwood----------------	4e					
GyC3:		60.0	45.0	2.8	---	25.0
Glynwood----------------	4e					
GyD3:		---	---	2.5	---	---
Glynwood----------------	6e					
HeE2:	6e	---	---	2.5	---	---
Hennepin----------------						
Miamian-----------------						
HeF2:	7e	---	---	---	---	---
Hennepin----------------						
Miamian-----------------						
Ko:		135.0	---	---	47.0	54.0
Kokomo------------------	2w					
Ln:		115.0	---	---	---	---
Linwood-----------------	2w					
LrE2:	7s	---	---	2.0	---	---
Lorenzo-----------------						
Rodman------------------						
MaB:	2e	105.0	75.0	5.0	38.0	45.0
Martinsville------------						
Ockley------------------						
Md:		115.0	80.0	5.0	38.0	50.0
Medway------------------	2w					
MhA:		115.0	80.0	5.0	40.0	46.0
Miamian-----------------	1					

TABLE 9.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability	Corn	Oats	Orchardgrass-alfalfa hay	Soybeans	Winter wheat
		Bu	Bu	Tons	Bu	Bu
MhB:		100.0	75.0	5.0	38.0	45.0
Miamian	2e					
MhB2:		90.0	75.0	4.5	35.0	45.0
Miamian	2e					
MhC2:		85.0	65.0	4.5	30.0	38.0
Miamian	3e					
MhD2:		75.0	65.0	4.2	25.0	32.0
Miamian	4e					
MkA:		110.0	80.0	5.0	40.0	46.0
Miamian	1					
MkB:		100.0	75.0	5.0	38.0	45.0
Miamian	2e					
MkB2:		85.0	75.0	4.5	35.0	45.0
Miamian	2e					
MkC2:		85.0	65.0	4.5	30.0	38.0
Miamian	3e					
MlC3:		65.0	65.0	4.0	24.0	33.0
Miamian	4e					
MlD3:		---	---	2.5	---	---
Miamian	6e					
MmE:	6e	---	---	3.0	---	---
Miamian						
Hennepin						
MmF:	7e	---	---	2.5	---	---
Miamian						
Hennepin						
MnA:		100.0	75.0	4.0	40.0	40.0
Millsdale	3w					
MnB:		98.0	75.0	4.0	38.0	40.0
Millsdale	3w					
MoA:		100.0	74.0	4.0	40.0	40.0
Millsdale	3w					
MoB:		98.0	75.0	4.0	38.0	40.0
Millsdale	3w					
MpA:		80.0	65.0	3.5	30.0	40.0
Milton	2s					
MpB:		90.0	65.0	3.5	30.0	40.0
Milton	2e					
MpB2:		75.0	62.0	3.4	28.0	38.0
Milton	2e					
MpC2:		65.0	52.0	3.3	25.0	25.0
Milton	3e					
MpD2:		62.0	50.0	3.0	24.0	24.0
Milton	4e					
Mt:		110.0	---	4.5	40.0	45.0
Montgomery	3w					
OcA:		112.0	85.0	5.0	40.0	50.0
Ockley	1					

TABLE 9.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability	Corn	Oats	Orchardgrass-alfalfa hay	Soybeans	Winter wheat
		Bu	Bu	Tons	Bu	Bu
OcB: Ockley	2e	110.0	85.0	5.0	38.0	50.0
OdA: Odell	2w	110.0	75.0	5.0	40.0	45.0
OdB: Odell	2w	105.0	75.0	5.0	38.0	45.0
Pe: Pewamo	2w	115.0	80.0	5.0	40.0	45.0
RdA: Randolph	3w	105.0	70.0	3.5	35.0	35.0
RdB: Randolph	3w	95.0	70.0	3.5	33.0	35.0
RgE: Rodman	7s	---	---	---	---	---
RhB: Ritchey	3e	65.0	50.0	3.0	25.0	25.0
RhC: Ritchey	6e	---	---	2.5	---	---
RhE: Ritchey	7e	---	---	2.2	---	---
Rs: Ross	2w	120.0	80.0	5.0	38.0	50.0
Rt: Ross Variant	3s	65.0	50.0	3.0	25.0	25.0
Sh: Shoals	2w	105.0	70.0	4.0	38.0	30.0
Sk: Shoals Variant	5w	---	---	3.0	---	---
SlA: Sleeth	2w	100.0	80.0	5.0	40.0	45.0
St: Stonelick	2s	95.0	80.0	5.0	38.0	40.0
Ts: Tremont	2w	135.0	---	6.0	45.0	---
Wa: Wallkill	2w	110.0	75.0	4.0	40.0	35.0
WdA: Warsaw	2s	100.0	75.0	4.0	35.0	40.0
WeA: Wea	2s	120.0	85.0	5.0	45.0	50.0
Wt: Westland	2w	130.0	80.0	5.0	40.0	45.0

TABLE 10.--CROP YIELD INDEX

(This table is based on estimated yields for 1972. Estimated yields for soils with a yield index of 100 were: corn - 130 bushels; soybeans - 45 bushels; and wheat - 50 bushels. Refer to Crop Yield Index section in the text on page 155 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: Algiers	85	89	90
BlA: Blount	77	78	90
BlB: Blount	73	78	90
BlB2: Blount	65	67	80
Bs: Brookston	100	89	90
CcD2: Casco	---	---	---
CeA: Celina	88	89	92
CeB: Celina	85	84	90
CeB2: Celina	77	78	90
CoA: Corwin	92	89	96
CoB: Corwin	85	84	90
CrA: Crosby	88	89	90
CrB: Crosby	85	84	90
Ed: Edwards	---	---	---
Ee: Eel	88	78	80
ElA: Eldean	85	67	86
ElB: Eldean	77	62	80
ElB2: Eldean	69	58	76
EmA: Eldean	77	67	86

TABLE 9.--CROP YIELD INDEX--Continued

Map symbol and soil name	Corn	Soybeans	Winter Wheat
EmB:	77	62	80
Eldean			
EmB2:	73	73	80
Eldean			
EoC2:	58	56	70
Eldean			
Casco			
EoD2:	---	---	---
Eldean			
Casco			
EpD3:	---	---	---
Eldean			
Casco			
EqC2:	58	44	60
Eldean			
Casco			
ErB:	77	67	90
Eldean			
Miamian			
ErC:	69	67	76
Eldean			
Miamian			
Gn:	88	89	80
Genesee			
GwB:	69	67	70
Glynwood			
GwB2:	62	56	70
Glynwood			
GwC2:	58	56	70
Glynwood			
GwD2:	50	---	56
Glynwood			
GyC3:	46	---	50
Glynwood			
Ko:	100	100	100
Kokomo			
Ln:	88	---	---
Linwood			
MaB:	81	84	90
Martinsville			
Ockley			
Md:	88	84	100
Medway			
MhA:	88	89	92
Miamian			
MhB:	77	84	90
Miamian			

TABLE 9.--CROP YIELD INDEX--Continued

Map symbol and soil name	Corn	Soybeans	Winter Wheat
MhB2: Miamian	69	78	90
MhC2: Miamian	65	67	76
MhD2: Miamian	58	56	64
MkA: Miamian	85	89	92
MkB: Miamian	77	84	90
MkB2: Miamian	65	78	90
MkC2: Miamian	65	67	76
MlC3: Miamian	50	53	66
MnA: Millsdale	77	89	80
MnB: Millsdale	75	84	80
MoA: Millsdale	77	89	80
MoB: Millsdale	75	84	80
MpA: Milton	62	67	80
MpB: Milton	69	67	80
MpB2: Milton	58	62	76
MpC2: Milton	50	56	50
MpD2: Milton	48	53	48
Mt: Montgomery	85	89	90
OcA: Ockley	86	89	100
OcB: Ockley	85	84	100
OdA: Odell	85	89	90
OdB: Odell	81	84	90

TABLE 9.--CROP YIELD INDEX--Continued

Map symbol and soil name	Corn	Soybeans	Winter Wheat
Pe: Pewamo	88	89	90
RdA: Randolph	81	78	70
RdB: Randolph	73	73	70
RhB: Ritchey	50	56	50
RhC: Ritchey	---	---	---
Rs: Ross	92	84	100
Rt: Ross Variant	50	56	50
Sh: Shoals	81	84	60
Sk: Shoals Variant	---	---	---
SlA: Sleeth	77	89	90
St: Stonelick	73	84	80
Ts: Tremont	100	100	---
Wa: Wallkill	85	89	70
WdA: Warsaw	77	78	80
WeA: Wea	92	100	100
Wt: Westland	100	89	90

TABLE 11.--CAPABILITY CLASSES AND SUBCLASSES

(See text on page 155 for additional information.)

Capability class	Capability subclass	Acreage
Unclassified	---	3,217
1	---	8,581
2	e	84,434
	w	124,854
	s	10,382
3	e	11,041
	w	9,804
	s	131
4	e	6,153
5	w	210
6	e	1,340
	w	107
7	e	1,535
	s	432

TABLE 12.--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 157 for further explanation of ratings in this table.)

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
Ag:						
Algiers	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
BlA:						
Blount	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
BlB:						
Blount	Slight		High		Severe	
	Water erosion	0.10	Wetness	1.00	Low strength	1.00
BlB2:						
Blount	Slight		High		Severe	
	Water erosion	0.10	Wetness	1.00	Low strength	1.00
Bs:						
Brookston	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
CcD2:						
Casco	Moderate		Low		Moderate	
	Water erosion	0.27			Low strength	0.50
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
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
CrA:						
Crosby	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
CrB:						
Crosby	Slight		High		Severe	
	Water erosion	0.10	Wetness	1.00	Low strength	1.00
Ed:						
Edwards	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00

TABLE 12.--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
Ee:						
Eel	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
ElA:						
Eldean	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
ElB:						
Eldean	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
ElB2:						
Eldean	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
EmA:						
Eldean	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
EmB:						
Eldean	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
EmB2:						
Eldean	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
EoC2:						
Eldean	Slight		Low		Severe	
	Water erosion	0.13			Low strength	1.00
Casco	Slight		Low		Severe	
	Water erosion	0.13			Low strength	1.00
EoD2:						
Eldean	Moderate		Low		Severe	
	Water erosion	0.25			Low strength	1.00
Casco	Moderate		Low		Severe	
	Water erosion	0.25			Low strength	1.00
EpD3:						
Casco	Slight		Low		Severe	
	Water erosion	0.19			Low strength	1.00
Eldean	Slight		Low		Severe	
	Water erosion	0.19			Low strength	1.00
EqC2:						
Eldean	Slight		Low		Severe	
	Water erosion	0.13			Low strength	1.00
Casco	Slight		Low		Moderate	
	Water erosion	0.13			Low strength	0.50
ErB:						
Eldean	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
Miamian	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00

TABLE 12.--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
ErC:						
Eldean	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
Miamian	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
Gn:						
Genesee	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
GwB:						
Glynwood	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
GwB2:						
Glynwood	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
GwC2:						
Glynwood	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
GwD2:						
Glynwood	Moderate		Low		Severe	
	Water erosion	0.37			Low strength	1.00
GyC3:						
Glynwood	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
GyD3:						
Glynwood	Moderate		Low		Severe	
	Water erosion	0.37			Low strength	1.00
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
Ko:						
Kokomo	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Ln:						
Linwood	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
			Soil reaction	0.50		

TABLE 12.--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
LrE2:						
Lorenzo	Moderate		Low		Severe	
	Water erosion	0.55			Low strength	1.00
Rodman	Moderate		Low		Severe	
	Water erosion	0.58			Low strength	1.00
MaB:						
Martinsville	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
Ockley	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
Md:						
Medway	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
MhA:						
Miamian	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
MhB:						
Miamian	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
MhB2:						
Miamian	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
MhC2:						
Miamian	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
MhD2:						
Miamian	Moderate		Low		Severe	
	Water erosion	0.37			Low strength	1.00
MkA:						
Miamian	Slight		Low		Severe	
	Water erosion	0.07			Low strength	1.00
MkB:						
Miamian	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
MkB2:						
Miamian	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
MkC2:						
Miamian	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
MlC3:						
Miamian	Slight		Low		Severe	
	Water erosion	0.13			Low strength	1.00
MlD3:						
Miamian	Moderate		Low		Severe	
	Water erosion	0.25			Low strength	1.00

TABLE 12.--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
MmE:						
Hennepin	Moderate		Low		Severe	
	Water erosion	0.37			Low strength	1.00
Miamian	Moderate		Low		Severe	
	Water erosion	0.54			Low strength	1.00
MmF:						
Hennepin	Severe		Low		Severe	
	Water erosion	0.68			Low strength	1.00
Miamian	Severe		Low		Severe	
	Water erosion	0.93			Low strength	1.00
MnA:						
Millsdale	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
MnB:						
Millsdale	Slight		High		Severe	
	Water erosion	0.05	Wetness	1.00	Low strength	1.00
MoA:						
Millsdale	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
MoB:						
Millsdale	Slight		High		Severe	
	Water erosion	0.05	Wetness	1.00	Low strength	1.00
MpA:						
Milton	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
MpB:						
Milton	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
MpB2:						
Milton	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
MpC2:						
Milton	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
MpD2:						
Milton	Moderate		Low		Severe	
	Water erosion	0.37			Low strength	1.00
Mt:						
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

TABLE 12.--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
OdA:						
Odell	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
OdB:						
Odell	Slight		Low		Severe	
	Water erosion	0.05			Low strength	1.00
Pe:						
Pewamo	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Pg:						
Gravel Pits	Not rated		Not rated		Not rated	
Pq:						
Quarries	Not rated		Not rated		Not rated	
RdA:						
Randolph	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
RdB:						
Randolph	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
RgE:						
Rodman	Moderate		Moderate		Severe	
	Water erosion	0.46	Carbonate content	0.50	Low strength	1.00
			Soil reaction	0.50		
RhB:						
Ritchey	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
RhC:						
Ritchey	Moderate		Low		Severe	
	Water erosion	0.29			Low strength	1.00
RhE:						
Ritchey	Severe		Low		Severe	
	Water erosion	0.83			Low strength	1.00
Rs:						
Ross	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
Rt:						
Ross Variant	Slight		Moderate		Severe	
	Water erosion	0.01	Soil reaction	0.50	Low strength	1.00
Sh:						
Shoals	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Sk:						
Shoals Variant	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
			Soil reaction	0.50		
SlA:						
Sleeth	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00

TABLE 12.--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
St:						
Stonelick-----------	Slight		Moderate		Severe	
	Water erosion	0.01	Soil reaction	0.50	Low strength	1.00
Ts:						
Tremont-------------	Slight		Moderate		Severe	
	Water erosion	0.01	Soil reaction	0.50	Low strength	1.00
Ud:						
Udorthents----------	Not rated		Not rated		Not rated	
Uf:						
Udorthents----------	Not rated		Not rated		Not rated	
Wa:						
Wallkill------------	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
WdA:						
Warsaw--------------	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
WeA:						
Wea-----------------	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
Wt:						
Westland------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00

TABLE 13.--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 157 for further explanation of ratings in this table.)

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
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		
BlA:						
Blount	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
BlB:						
Blount	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
BlB2:						
Blount	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			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		
CcD2:						
Casco	Moderate		Poorly suited		Well suited	
	Slope	0.50	Slope	1.00		
	Too sandy	0.50				
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
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

TABLE 13.--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
CrA:						
Crosby	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
CrB:						
Crosby	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
Ed:						
Edwards	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		
Ee:						
Eel	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
ElA:						
Eldean	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
ElB:						
Eldean	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
ElB2:						
Eldean	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
EmA:						
Eldean	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
EmB:						
Eldean	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
EmB2:						
Eldean	Slight		Well suited		Well suited	
EoC2:						
Eldean	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
Casco	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		

TABLE 13.--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
EoD2:						
Eldean	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				
Casco	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				
EpD3:						
Casco	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
Eldean	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
EqC2:						
Eldean	Slight		Moderately suited		Well suited	
			Slope	0.50		
Casco	Slight		Moderately suited		Well suited	
			Slope	0.50		
ErB:						
Eldean	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Miamian	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
ErC:						
Eldean	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		
Gn:						
Genesee	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
GwB:						
Glynwood	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
GwB2:						
Glynwood	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
GwC2:						
Glynwood	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		

TABLE 13.--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
GwD2:						
Glynwood	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
GyC3:						
Glynwood	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
GyD3:						
Glynwood	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
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
Ko:						
Kokomo	Slight		Poorly suited		Well suited	
			Ponding	1.00		
			Depth to saturated zone	1.00		
Ln:						
Linwood	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		
LrE2:						
Lorenzo	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
Rodman	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
MaB:						
Martinsville	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
Ockley	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50

TABLE 13.--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
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		
MhA:						
Miamian-------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
MhB:						
Miamian-------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
MhB2:						
Miamian-------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
MhC2:						
Miamian-------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
MhD2:						
Miamian-------------	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
MkA:						
Miamian-------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
MkB:						
Miamian-------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
MkB2:						
Miamian-------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
MkC2:						
Miamian-------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
MlC3:						
Miamian-------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
MlD3:						
Miamian-------------	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
MmE:						
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

TABLE 13.--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
MmF:						
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
MnA:						
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		
MnB:						
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		
MoA:						
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		
MoB:						
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		
MpA:						
Milton	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
	Depth to bedrock	0.50				
MpB:						
Milton	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
	Depth to bedrock	0.50				
MpB2:						
Milton	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
	Depth to bedrock	0.50				
MpC2:						
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		
MpD2:						
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				

TABLE 13.--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
Mt:						
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
OdA:						
Odell---------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
OdB:						
Odell---------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
Pe:						
Pewamo--------------	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		
Pg:						
Gravel Pits---------	Not rated		Not rated		Not rated	
Pq:						
Quarries------------	Not rated		Not rated		Not rated	
RdA:						
Randolph------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
	Depth to bedrock	0.50	Depth to saturated zone	0.50		
RdB:						
Randolph------------	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
	Depth to bedrock	0.50	Depth to saturated zone	0.50		
RgE:						
Rodman--------------	Moderate		Poorly suited		Moderately suited	
	Slope	0.50	Slope	1.00	Slope	0.50
	Too sandy	0.50				
RhB:						
Ritchey-------------	Severe		Moderately suited		Moderately suited	
	Depth to bedrock	1.00	Low strength	0.50	Low strength	0.50
	Low strength	0.50				

TABLE 13.--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
RhC:						
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		
RhE:						
Ritchey	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
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:						
Ross Variant	Moderate		Moderately suited		Moderately suited	
	Depth to bedrock	0.50	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	1.00		
			Low strength	0.50		
Sk:						
Shoals Variant	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Depth to bedrock	0.50	Depth to saturated zone	1.00		
	Low strength	0.50	Low strength	0.50		
SlA:						
Sleeth	Moderate		Moderately suited		Moderately suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
St:						
Stonelick	Severe		Poorly suited		Moderately suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
Ts:						
Tremont	Severe		Poorly suited		Well suited	
	Flooding	1.00	Flooding	1.00		
Ud:						
Udorthents	Not rated		Not rated		Not rated	
Uf:						
Udorthents	Not rated		Not rated		Not rated	
Wa:						
Wallkill	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		

TABLE 13.--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
WdA:						
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
Wt:						
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		

TABLE 14.--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 157 for further explanation of ratings in this table.)

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
Ag:						
Algiers	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
BlA:						
Blount	Poorly suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
	Rock fragment content	0.01				
BlB:						
Blount	Poorly suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
	Rock fragment content	0.01				
BlB2:						
Blount	Poorly suited		Well suited		Moderate	
	Stickiness	0.50			Texture/rock fragments	0.50
	Rock fragment content	0.01				
Bs:						
Brookston	Well suited		Well suited		Low	
	Rock fragment content	0.03			Texture/rock fragments	0.30
CcD2:						
Casco	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.50
	Rock fragment content	0.35				
CeA:						
Celina	Poorly suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
	Rock fragment content	0.03				
CeB:						
Celina	Poorly suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
	Rock fragment content	0.03				
CeB2:						
Celina	Poorly suited		Well suited		Moderate	
	Stickiness	0.50			Texture/rock fragments	0.50
	Rock fragment content	0.03				

TABLE 14.--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
CoA:						
Corwin	Well suited		Well suited		Low	
	Rock fragment content	0.01			Texture/rock fragments	0.01
CoB:						
Corwin	Well suited		Well suited		Low	
	Rock fragment content	0.01			Texture/rock fragments	0.01
CrA:						
Crosby	Well suited		Well suited		Low	
	Rock fragment content	0.04			Texture/rock fragments	0.01
CrB:						
Crosby	Well suited		Well suited		Low	
	Rock fragment content	0.04			Texture/rock fragments	0.01
Ed:						
Edwards	Well suited		Well suited		Low	
Ee:						
Eel	Well suited		Well suited		Moderate	
	Rock fragment content	0.01			Texture/rock fragments	0.50
ElA:						
Eldean	Well suited		Well suited		Low	
	Rock fragment content	0.08			Texture/rock fragments	0.01
ElB:						
Eldean	Well suited		Well suited		Low	
	Rock fragment content	0.08			Texture/rock fragments	0.01
ElB2:						
Eldean	Well suited		Well suited		Moderate	
	Rock fragment content	0.08			Texture/rock fragments	0.50
EmA:						
Eldean	Well suited		Well suited		Low	
	Rock fragment content	0.08			Texture/rock fragments	0.01
EmB:						
Eldean	Well suited		Well suited		Low	
	Rock fragment content	0.08			Texture/rock fragments	0.01
EmB2:						
Eldean	Moderately suited		Well suited		Low	
	Rock fragment content	0.20			Texture/rock fragments	0.01

TABLE 14.--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
EoC2:						
Eldean	Poorly suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50
	Rock fragment content	0.08				
Casco	Poorly suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50
	Rock fragment content	0.14				
EoD2:						
Eldean	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.50
	Rock fragment content	0.08				
Casco	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.50
	Rock fragment content	0.14				
EpD3:						
Casco	Poorly suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50
	Rock fragment content	0.14				
Eldean	Poorly suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.70
	Rock fragment content	0.08				
EqC2:						
Eldean	Poorly suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50
	Stickiness	0.50				
	Rock fragment content	0.20				
Casco	Poorly suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50
	Rock fragment content	0.35				
ErB:						
Eldean	Well suited		Well suited		Low	
	Rock fragment content	0.08			Texture/rock fragments	0.01
Miamian	Well suited		Well suited		Low	
	Rock fragment content	0.03			Texture/rock fragments	0.01

TABLE 14.--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
ErC:						
Eldean	Poorly suited		Well suited		Low	
	Slope	0.50			Texture/rock fragments	0.01
	Rock fragment content	0.08				
Miamian	Poorly suited		Well suited		Low	
	Slope	0.50			Texture/rock fragments	0.01
	Rock fragment content	0.03				
Gn:						
Genesee	Well suited		Well suited		Low	
	Rock fragment content	0.01			Texture/rock fragments	0.01
GwB:						
Glynwood	Poorly suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
	Rock fragment content	0.03				
GwB2:						
Glynwood	Poorly suited		Well suited		Moderate	
	Stickiness	0.50			Texture/rock fragments	0.50
	Rock fragment content	0.03				
GwC2:						
Glynwood	Poorly suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50
	Stickiness	0.50				
	Rock fragment content	0.03				
GwD2:						
Glynwood	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.50
	Stickiness	0.50				
	Rock fragment content	0.03				
GyC3:						
Glynwood	Poorly suited		Well suited		Moderate	
	Slope	0.50			Texture/surface depth/rock fragments	0.50
	Stickiness	0.50				
	Rock fragment content	0.03				

TABLE 14.--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
GyD3:						
Glynwood	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.50
	Stickiness	0.50				
	Rock fragment content	0.03				
HeE2:						
Hennepin	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.50
	Rock fragment content	0.07				
Miamian	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/surface depth/rock fragments	0.30
	Stickiness	0.50				
	Rock fragment content	0.07				
HeF2:						
Hennepin	Unsuited		Unsuited		High	
	Slope	1.00	Slope	1.00	Texture/slope/surface depth/rock fragments	1.00
	Rock fragment content	0.07				
Miamian	Unsuited		Unsuited		Moderate	
	Slope	1.00	Slope	1.00	Texture/slope/surface depth/rock fragments	0.50
	Stickiness	0.50				
	Rock fragment content	0.07				
Ko:						
Kokomo	Poorly suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
	Rock fragment content	0.01				
Ln:						
Linwood	Well suited		Well suited		Low	
LrE2:						
Lorenzo	Unsuited		Poorly suited		Low	
	Slope	1.00	Slope	0.75	Texture/slope/rock fragments	0.30
	Rock fragment content	0.09				
Rodman	Unsuited		Poorly suited		Low	
	Slope	1.00	Slope	0.75	Texture/rock fragments	0.01
	Rock fragment content	0.20				

TABLE 14.--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
MaB:						
Martinsville	Well suited		Well suited		Moderate	
	Rock fragment content	0.01			Texture/rock fragments	0.50
Ockley	Well suited		Well suited		Moderate	
	Rock fragment content	0.01			Texture/rock fragments	0.50
Md:						
Medway	Well suited		Well suited		Low	
	Rock fragment content	0.01			Texture/rock fragments	0.01
MhA:						
Miamian	Well suited		Well suited		Low	
	Rock fragment content	0.01			Texture/rock fragments	0.01
MhB:						
Miamian	Well suited		Well suited		Moderate	
	Rock fragment content	0.01			Texture/rock fragments	0.50
MhB2:						
Miamian	Well suited		Well suited		Moderate	
	Rock fragment content	0.01			Texture/rock fragments	0.50
MhC2:						
Miamian	Poorly suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50
	Rock fragment content	0.01				
MhD2:						
Miamian	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.01
	Rock fragment content	0.01				
MkA:						
Miamian	Poorly suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
	Rock fragment content	0.07				
MkB:						
Miamian	Poorly suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
	Rock fragment content	0.07				
MkB2:						
Miamian	Poorly suited		Well suited		Moderate	
	Stickiness	0.50			Texture/rock fragments	0.50
	Rock fragment content	0.07				

TABLE 14.--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
MkC2:						
Miamian	Poorly suited		Well suited		Moderate	
	Stickiness	0.50			Texture/rock fragments	0.50
	Slope	0.50				
	Rock fragment content	0.04				
MlC3:						
Miamian	Poorly suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50
	Rock fragment content	0.01				
MlD3:						
Miamian	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.50
	Rock fragment content	0.01				
MmE:						
Hennepin	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.50
	Rock fragment content	0.04				
Miamian	Poorly suited		Poorly suited		Low	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.01
	Rock fragment content	0.01				
MmF:						
Hennepin	Unsuited		Unsuited		Moderate	
	Slope	1.00	Slope	1.00	Texture/rock fragments	0.50
	Rock fragment content	0.04				
Miamian	Unsuited		Unsuited		Low	
	Slope	1.00	Slope	1.00	Texture/slope/rock fragments	0.30
	Rock fragment content	0.01				
MnA:						
Millsdale	Poorly suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
	Rock fragment content	0.04				
MnB:						
Millsdale	Poorly suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
	Rock fragment content	0.04				

TABLE 14.--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
MoA:						
Millsdale	Well suited		Well suited		Low	
					Texture/rock fragments	0.30
MoB:						
Millsdale	Well suited		Well suited		Low	
					Texture/rock fragments	0.30
MpA:						
Milton	Well suited		Well suited		Low	
	Rock fragment content	0.01			Texture/rock fragments	0.01
MpB:						
Milton	Well suited		Well suited		Low	
	Rock fragment content	0.01			Texture/rock fragments	0.01
MpB2:						
Milton	Well suited		Well suited		Moderate	
	Rock fragment content	0.01			Texture/rock fragments	0.50
MpC2:						
Milton	Poorly suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50
	Rock fragment content	0.01				
MpD2:						
Milton	Poorly suited		Poorly suited		Moderate	
	Slope	0.75	Slope	0.75	Texture/rock fragments	0.50
	Rock fragment content	0.01				
Mt:						
Montgomery	Poorly suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
OcA:						
Ockley	Well suited		Well suited		Moderate	
	Rock fragment content	0.01			Texture/rock fragments	0.50
OcB:						
Ockley	Well suited		Well suited		Moderate	
	Rock fragment content	0.01			Texture/rock fragments	0.50
OdA:						
Odell	Well suited		Well suited		Low	
	Rock fragment content	0.01			Texture/rock fragments	0.01
OdB:						
Odell	Well suited		Well suited		Low	
	Rock fragment content	0.01			Texture/rock fragments	0.01

TABLE 14.--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
Pe:						
Pewamo	Poorly suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
	Rock fragment content	0.04				
Pg:						
Gravel Pits	Not rated		Not rated		Not rated	
Pq:						
Quarries	Not rated		Not rated		Not rated	
RdA:						
Randolph	Poorly suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
	Rock fragment content	0.01				
RdB:						
Randolph	Poorly suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
	Rock fragment content	0.01				
RgE:						
Rodman	Unsuited		Poorly suited		Low	
	Slope	1.00	Slope	0.75	Texture/rock fragments	0.01
	Rock fragment content	0.22				
RhB:						
Ritchey	Poorly suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.01
	Rock fragment content	0.10				
RhC:						
Ritchey	Poorly suited		Well suited		Low	
	Slope	0.50			Texture/rock fragments	0.01
	Stickiness	0.50				
	Rock fragment content	0.10				
RhE:						
Ritchey	Unsuited		Poorly suited		Moderate	
	Slope	1.00	Slope	0.75	Texture/slope/surface depth/rock fragments	0.50
	Rock fragment content	0.10				
Rs:						
Ross	Well suited		Well suited		Low	
	Rock fragment content	0.02			Texture/rock fragments	0.01

TABLE 14.--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
Rt:						
Ross Variant	Well suited		Well suited		Low	
	Rock fragment content	0.01			Texture/rock fragments	0.01
Sh:						
Shoals	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Sk:						
Shoals Variant	Well suited		Well suited		Low	
	Rock fragment content	0.01			Texture/rock fragments	0.01
SlA:						
Sleeth	Well suited		Well suited		Moderate	
	Rock fragment content	0.04			Texture/rock fragments	0.50
St:						
Stonelick	Well suited		Well suited		Low	
	Rock fragment content	0.08			Texture/rock fragments	0.01
Ts:						
Tremont	Well suited		Well suited		Low	
					Texture/rock fragments	0.01
Ud:						
Udorthents	Not rated		Not rated		Not rated	
Uf:						
Udorthents	Not rated		Not rated		Not rated	
Wa:						
Wallkill	Well suited		Well suited		Low	
	Rock fragment content	0.01			Texture/rock fragments	0.01
WdA:						
Warsaw	Well suited		Well suited		Low	
	Rock fragment content	0.06			Texture/rock fragments	0.01
WeA:						
Wea	Well suited		Well suited		Low	
	Rock fragment content	0.01			Texture/rock fragments	0.01
Wt:						
Westland	Well suited		Well suited		Low	
	Rock fragment content	0.01			Texture/rock fragments	0.30

TABLE 15.--WOODLAND PRODUCTIVITY

(See text on page 159 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	---	---	
BlA: Blount	bur oak	---	---	Scotch pine, eastern redcedar, eastern white pine, red pine, tuliptree
	green ash	---	---	
	northern red oak	65	43	
	pin oak	---	---	
	white oak	65	43	
BlB: Blount	bur oak	---	---	Scotch pine, eastern redcedar, eastern white pine, red pine, tuliptree
	green ash	---	---	
	northern red oak	65	43	
	pin oak	---	---	
	white oak	65	43	
BlB2: Blount	bur oak	---	---	Scotch pine, eastern redcedar, eastern white pine, red pine, tuliptree
	green ash	---	---	
	northern red oak	65	43	
	pin oak	---	---	
	white oak	65	43	
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	
CcD2: Casco	black oak	---	---	eastern redcedar, eastern white pine, northern white-cedar
	northern red oak	55	43	
	white oak	---	---	
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 15.--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	---	---	
CoA:				
Corwin	---	---	---	---
CoB:				
Corwin	---	---	---	---
CrA:				
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	
CrB:				
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	
Ed:				
Edwards	black willow	---	---	---
	quaking aspen	56	57	
	red maple	51	29	
	silver maple	76	29	
	white ash	51	29	
Ee:				
Eel	black walnut	---	---	black locust, black walnut, eastern white pine, tuliptree
	eastern cottonwood	---	---	
	tuliptree	108	114	
	white ash	---	---	
	white oak	---	---	
	northern red oak	80	57	
ElA:				
Eldean	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	

TABLE 15.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
ElB:				
Eldean	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	
ElB2:				
Eldean	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	
EmA:				
Eldean	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	
EmB:				
Eldean	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	
EmB2:				
Eldean	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	

TABLE 15.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
EoC2:				
Eldean	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	
Casco	eastern white pine	85	172	eastern white pine, jack pine, red pine
	jack pine	68	100	
	red pine	78	114	
	white oak	70	57	
EoD2:				
Eldean	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	
Casco	eastern white pine	85	172	eastern white pine, jack pine, red pine
	jack pine	68	100	
	red pine	78	114	
	white oak	70	57	
EpD3:				
Casco	eastern white pine	85	172	eastern white pine, jack pine, red pine
	jack pine	68	100	
	red pine	78	114	
	white oak	70	57	
Eldean	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	
EqC2:				
Eldean	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	---	
Casco	black oak	---	---	eastern redcedar, eastern white pine, northern white-cedar
	northern red oak	55	43	
	white oak	---	---	

TABLE 15.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
ErB:				
Eldean	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	
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	---	---	
ErC:				
Eldean	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black oak	80	57	
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	---	---	
	white ash	---	---	
	white oak	80	57	
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	---	---	
Gn:				
Genesee	tuliptree	100	114	black locust, black walnut, eastern white pine, tuliptree
GwB:				
Glynwood	black cherry	---	---	American sycamore, Austrian pine, black oak, eastern cottonwood, green ash, pin oak, red maple, tuliptree
	black oak	80	57	
	northern red oak	80	57	
	red maple	---	---	
	slippery elm	---	---	
	white ash	---	---	
	white oak	80	57	
GwB2:				
Glynwood	black cherry	---	---	American sycamore, Austrian pine, black oak, eastern cottonwood, green ash, pin oak, red maple, tuliptree
	black oak	80	57	
	northern red oak	80	57	
	red maple	---	---	
	slippery elm	---	---	
	white ash	---	---	
	white oak	80	57	

TABLE 15.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
GwC2:				
Glynwood	black cherry	---	---	American sycamore, Austrian pine, black oak, eastern cottonwood, green ash, pin oak, red maple, tuliptree
	black oak	80	57	
	northern red oak	80	57	
	red maple	---	---	
	slippery elm	---	---	
	white ash	---	---	
	white oak	80	57	
GwD2:				
Glynwood	black cherry	---	---	American sycamore, Austrian pine, black oak, eastern cottonwood, green ash, pin oak, red maple, tuliptree
	black oak	80	57	
	northern red oak	80	57	
	red maple	---	---	
	slippery elm	---	---	
	white ash	---	---	
	white oak	80	57	
GyC3:				
Glynwood	black cherry	---	---	American sycamore, Austrian pine, black oak, eastern cottonwood, green ash, pin oak, red maple, tuliptree
	black oak	80	57	
	northern red oak	80	57	
	red maple	---	---	
	slippery elm	---	---	
	white ash	---	---	
	white oak	80	57	
GyD3:				
Glynwood	black cherry	---	---	American sycamore, Austrian pine, black oak, eastern cottonwood, green ash, pin oak, red maple, tuliptree
	black oak	80	57	
	northern red oak	80	57	
	red maple	---	---	
	slippery elm	---	---	
	white ash	---	---	
	white oak	80	57	
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 15.--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	---	---	
Ko:				
Kokomo	northern red oak	75	57	Norway spruce, baldcypress, eastern white pine, red maple, sweetgum, white ash
	pin oak	85	72	
	sweetgum	90	100	
	white oak	75	57	
Ln:				
Linwood	American sycamore	---	---	American sycamore, baldcypress, eastern cottonwood, green ash, pin oak, red maple, swamp white oak, sweetgum
	eastern cottonwood	---	---	
	green ash	---	---	
	pin oak	---	---	
	red maple	46	29	
LrE2:				
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	
MaB:				
Martinsville	northern red oak	90	72	black walnut, eastern white pine, tuliptree, white ash
	tuliptree	98	100	
	white oak	90	72	
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	
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 15.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber	
			cu ft/ac	
MhA:				
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	---	---	
MhB:				
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	---	---	
MhB2:				
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	---	---	
MhC2:				
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	---	---	
MhD2:				
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	---	---	
MkA:				
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	---	---	
MkB:				
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 15.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
MkB2:				
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	---	---	
MkC2:				
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	---	---	
MlC3:				
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	---	---	
MlD3:				
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	---	---	
MmE:				
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 15.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
MmF:				
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	---	---	
MnA:				
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	---	---	
MnB:				
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	---	---	
MoA:				
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	---	---	
MoB:				
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	---	---	
MpA:				
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 15.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
MpB:				
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	---	---	
MpB2:				
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	---	---	
MpC2:				
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	---	---	
MpD2:				
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	---	---	
Mt:				
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	
OdA:				
Odell	---	---	---	---

TABLE 15.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
OdB:				
Odell-------------------	---	---	---	---
Pe:				
Pewamo------------------	eastern cottonwood--	98	---	Norway spruce, eastern white pine, green ash, red maple, white ash
	green ash-----------	---	---	
	pin oak-------------	90	72	
	red maple-----------	71	43	
	swamp white oak-----	---	---	
	white ash-----------	71	72	
Pg:				
Gravel Pits-------------	---	---	---	---
Pq:				
Quarries----------------	---	---	---	---
RdA:				
Randolph----------------	northern red oak----	75	57	eastern white pine, tuliptree
	sugar maple---------	90	57	
	tuliptree-----------	85	86	
RdB:				
Randolph----------------	northern red oak----	75	57	eastern white pine, tuliptree
	sugar maple---------	90	57	
	tuliptree-----------	85	86	

TABLE 15.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Trees to manage
			cu ft/ac	
RgE:				
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	
RhB:				
Ritchey	bur oak	---	---	eastern redcedar, shortleaf pine, white oak
	eastern redcedar	---	---	
	northern red oak	50	29	
	white oak	50	29	
RhC:				
Ritchey	bur oak	---	---	eastern redcedar, shortleaf pine, white oak
	eastern redcedar	---	---	
	northern red oak	50	29	
	white oak	50	29	
RhE:				
Ritchey	bur oak	---	---	eastern redcedar, shortleaf pine, white oak
	eastern redcedar	---	---	
	northern red oak	50	29	
	white oak	50	29	
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:				
Ross Variant	---	---	---	---
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	---	---	
Sk:				
Shoals Variant	American beech	---	---	Virginia pine, black oak, eastern white pine, red pine, tuliptree, white ash
	American sycamore	---	---	
	northern red oak	80	57	
	slippery elm	---	---	
	sugar maple	---	---	
	white ash	---	---	
	white oak	---	---	
SlA:				
Sleeth	pin oak	85	72	American sycamore, baldcypress, eastern white pine, red maple, tuliptree, white ash
	sweetgum	80	86	
	tuliptree	85	86	
	white oak	70	57	

TABLE 15.--WOODLAND PRODUCTIVITY--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber	
			cu ft/ac	
St:				
Stonelick	black cherry	---	---	black walnut, eastern white pine, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	80	57	
	sugar maple	---	---	
	tuliptree	95	100	
	white ash	---	---	
	white oak	---	---	
Ts:				
Tremont	black cherry	---	---	black walnut, eastern white pine, northern red oak, red pine, tuliptree, white ash, white oak
	black walnut	---	---	
	northern red oak	86	68	
	sugar maple	---	---	
	tuliptree	96	100	
	white ash	---	---	
	white oak	---	---	
Ud:				
Udorthents	---	---	---	---
Uf:				
Udorthents	---	---	---	---
Wa:				
Wallkill	black willow	---	---	eastern cottonwood, green ash, pin oak, red maple, swamp white oak, sweetgum
	pin oak	---	---	
	quaking aspen	---	---	
	red maple	---	---	
	silver maple	70	29	
	white ash	---	---	
WdA:				
Warsaw	---	---	---	---
WeA:				
Wea	---	---	---	---
Wt:				
Westland	pin oak	85	72	baldcypress, eastern white pine, red maple, sweetgum, white ash
	sweetgum	90	100	
	white oak	75	57	

TABLE 16.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS

(Absence of an entry indicates that trees generally do not grow to the given height. See text on page 160 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
BlA:					
Blount	American cranberrybush; silky dogwood	southern arrowwood	Austrian pine; eastern redcedar; green ash; osageorange; Washington hawthorn	eastern white pine; pin oak	---
BlB:					
Blount	American cranberrybush; silky dogwood	southern arrowwood	Austrian pine; eastern redcedar; green ash; osageorange; Washington hawthorn	eastern white pine; pin oak	---
BlB2:					
Blount	American cranberrybush; silky dogwood	southern arrowwood	Austrian pine; eastern redcedar; green ash; osageorange; Washington hawthorn	eastern white pine; 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
CcD2:					
Casco	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
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 pak
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
CrA:					
Crosby	American cranberrybush	southern arrowwood	Austrian pine; eastern redcedar; green ash; osageorange; Washington hawthorn	eastern white pine; pin oak	---

TABLE 16-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
CrB:					
Crosby	American cranberrybush	southern arrowwood	Austrian pine; eastern redcedar; green ash; osageorange; Washington hawthorn	eastern white pine; pin oak	---
Ed:					
Edwards	common ninebark; silky dogwood; whitebelle honeysuckle	nannyberry	tall purple willow	black willow; golden willow	imperial Carolina popular
Ee:					
Eel	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
ElA:					
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
ElB:					
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
ElB2:					
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
EmA:					
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
EmB:					
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
EmB2:					
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
EoC2:					
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
Casco	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
EoD2:					
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
Casco	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
EpD3:					
Casco	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
EqC2:					
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
Casco	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---

TABLE 16-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
ErB:					
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
ErC:					
Eldean	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Gn:					
Genesee	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
GwB:					
Glynwood	American cranberrybush	southern arrowwood	Austrian pine; eastern redcedar; green ash; osageorange; Washington hawthorn	eastern white pine; pin oak	---
GwB2:					
Glynwood	American cranberrybush	southern arrowwood	Austrian pine; eastern redcedar; green ash; osageorange; Washington hawthorn	eastern white pine; pin oak	---
GwC2:					
Glynwood	American cranberrybush	southern arrowwood	Austrian pine; eastern redcedar; green ash; osageorange; Washington hawthorn	eastern white pine; pin oak	---
GwD2:					
Glynwood	American cranberrybush	southern arrowwood	Austrian pine; eastern redcedar; green ash; osageorange; Washington hawthorn	eastern white pine; pin oak	---
GyC3:					
Glynwood	American cranberrybush	southern arrowwood	Austrian pine; eastern redcedar; green ash; osageorange; Washington hawthorn	eastern white pine; pin oak	---
GyD3:					
Glynwood	American cranberrybush	southern arrowwood	Austrian pine; eastern redcedar; green ash; osageorange; Washington hawthorn	eastern white pine; pin oak	---
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

TABLE 16-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
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
Ko:					
Kokomo	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	pin oak
Ln:					
Linwood	common ninebark; silky dogwood; whitebelle honeysuckle	nannyberry	tall purple willow	black willow; golden willow	imperial Carolina poplar
LrE2:					
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	black locust; jack pine; Virginia pine	---	---
MaB:					
Martinsville	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Ockley	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Md:					
Medway	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine
MhA:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
MhB:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
MhB2:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
MhC2:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
MhD2:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak

TABLE 16-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
MkA:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
MkB:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
MkB2:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
MkC2:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
MlC3:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
MlD3:					
Miamian	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
MmE:					
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
MmF:					
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
MnA:					
Millsdale	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	---
MnB:					
Millsdale	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	---

TABLE 16-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
MoA: Millsdale	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	---
MoB: Millsdale	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	---
MpA: Milton	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
MpB: Milton	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
MpB2: Milton	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
MpC2: Milton	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
MpD2: Milton	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
Mt: 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
OdA: Odell	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
OdB: Odell	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Pe: Pewamo	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	pin oak
Pg: Gravel pits	---	---	---	---	---
Pq: Quarries	---	---	---	---	---

TABLE 16-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
RdA: Randolph	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
RdB: Randolph	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
RgE: Rodman	gray dogwood; Siberian peashrub; silky dogwood	eastern redcedar; radiant crabapple; Washington hawthorn	black locust; jack pine; Virginia pine	---	---
RhB: Ritchey	---	---	---	---	---
RhC: Ritchey	---	---	---	---	---
RhE: Ritchey	---	---	---	---	---
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: Ross Variant	common lilac; Siberian peashrub	eastern redcedar; radiant crabapple; Washington hawthorn	Austrian pine; eastern white pine; jack pine; red pine	---	---
Sh: Shoals	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Sk: Shoals Variant	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
SlA: Sleeth	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
St: Stonelick	---	Siberian peashrub	eastern redcedar; green ash; nannyberry; northern white-cedar; osageorange; Washington hawthorn; white spruce	black willow	---
Ts: Tremont	silky dogwood	American cranberrybush	blue spruce; northern white-cedar; Washington hawthorn; white fir	Austrian pine; Norway spruce	eastern white pine; pin oak
Ud: Udorthents	---	---	---	---	---
Uf: Udorthents	---	---	---	---	---

TABLE 16-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
Wa: Wallkill	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	pin oak
WdA: 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
Wt: Westland	silky dogwood	American cranberrybush	Austrian pine; blue spruce; northern white-cedar; Washington hawthorn; white fir	eastern white pine; Norway spruce	pin oak

TABLE 17.—RECREATIONAL 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 160 for further explanation of ratings in this table.)

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
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	0.60
BlA:						
Blount	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Restricted permeability	0.96	Depth to saturated zone	1.00
	Restricted permeability	0.96	Depth to saturated zone	0.94	Restricted permeability	0.96
BlB:						
Blount	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Restricted permeability	0.96	Depth to saturated zone	1.00
	Restricted permeability	0.96	Depth to saturated zone	0.94	Restricted permeability	0.96
					Slope	0.50
BlB2:						
Blount	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Restricted permeability	0.96	Depth to saturated zone	1.00
	Restricted permeability	0.96	Depth to saturated zone	0.94	Restricted permeability	0.96
					Slope	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
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
CcD2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Gravel content	1.00
	Gravel content	0.18	Gravel content	0.18	Slope	1.00
CeA:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
CeB:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
CeB2:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21

TABLE 17.—RECREATIONAL DEVELOPMENT 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
CoA:						
Corwin	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
CoB:						
Corwin	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
CrA:						
Crosby	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
CrB:						
Crosby	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
Ed:						
Edwards	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
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
Ee:						
Eel	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
ElA:						
Eldean	Not limited		Not limited		Somewhat limited	
					Gravel content	0.06
ElB:						
Eldean	Not limited		Not limited		Somewhat limited	
					Slope	0.50
					Gravel content	0.06
ElB2:						
Eldean	Not limited		Not limited		Somewhat limited	
					Slope	0.50
					Gravel content	0.06
EmA:						
Eldean	Not limited		Not limited		Somewhat limited	
					Gravel content	0.06

TABLE 17.—RECREATIONAL DEVELOPMENT 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
EmB:						
Eldean	Not limited		Not limited		Somewhat limited	
					Slope	0.50
					Gravel content	0.06
EmB2:						
Eldean	Not limited		Not limited		Somewhat limited	
					Slope	0.50
EoC2:						
Eldean	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
					Gravel content	0.06
Casco	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
					Gravel content	0.94
EoD2:						
Eldean	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Gravel content	0.06
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Gravel content	0.94
EpD3:						
Casco	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.82	Slope	0.82	Slope	1.00
					Gravel content	0.94
Eldean	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.82	Slope	0.82	Slope	1.00
					Gravel content	0.06
EqC2:						
Eldean	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
					Gravel content	0.04
Casco	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
	Gravel content	0.01	Gravel content	0.01	Gravel content	1.00
ErB:						
Eldean	Not limited		Not limited		Somewhat limited	
					Slope	0.50
					Gravel content	0.06
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21

TABLE 17.—RECREATIONAL DEVELOPMENT PART 1--Continued

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
ErC:						
Eldean	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.32	Slope	0.32	Slope	1.00
					Gravel content	0.06
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
Gn:						
Genesee	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
GwB:						
Glynwood	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Slope	0.50
					Depth to saturated zone	0.10
GwB2:						
Glynwood	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Slope	0.50
					Depth to saturated zone	0.10
GwC2:						
Glynwood	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Slope	1.00
	Slope	0.32	Slope	0.32	Restricted permeability	0.96
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10
GwD2:						
Glynwood	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10
GyC3:						
Glynwood	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Slope	1.00
	Slope	0.32	Slope	0.32	Restricted permeability	0.96
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10

TABLE 17.—RECREATIONAL DEVELOPMENT 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
GyD3:						
Glynwood	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
	Depth to saturated zone	0.10	Depth to saturated zone	0.05	Depth to saturated zone	0.10
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
Ko:						
Kokomo	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
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Ln:						
Linwood	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	Gravel content	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
LrE2:						
Lorenzo	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Gravel content	0.78
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Gravel content	0.94
MaB:						
Martinsville	Not limited		Not limited		Somewhat limited	
					Slope	0.50
Ockley	Not limited		Not limited		Somewhat limited	
					Slope	0.50

TABLE 17.—RECREATIONAL DEVELOPMENT 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
Md:						
Medway	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
MhA:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
MhB:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
MhB2:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
MhC2:						
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
MhD2:						
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
MkA:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
					Slope	0.13
MkB:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
MkB2:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
MkC2:						
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

TABLE 17.—RECREATIONAL DEVELOPMENT 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
MlC3:						
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
MlD3:						
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
MmE:						
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
MmF:						
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
MnA:						
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
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
MnB:						
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
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Depth to bedrock	0.46
					Restricted permeability	0.21
MoA:						
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
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21

TABLE 17.—RECREATIONAL DEVELOPMENT 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
MoB:						
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
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Depth to bedrock	0.46
					Restricted permeability	0.21
MpA:						
Milton--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
MpB:						
Milton--------------	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
MpB2:						
Milton--------------	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
MpC2:						
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	0.54
					Restricted permeability	0.21
MpD2:						
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	0.54
					Restricted permeability	0.21
Mt:						
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
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
OcA:						
Ockley--------------	Not limited		Not limited		Not limited	
OcB:						
Ockley--------------	Not limited		Not limited		Somewhat limited	
					Slope	0.50

TABLE 17.—RECREATIONAL DEVELOPMENT 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
OdA:						
Odell	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.99	Depth to saturated zone	0.76	Depth to saturated zone	0.99
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
OdB:						
Odell	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.99	Depth to saturated zone	0.76	Depth to saturated zone	0.99
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
Pe:						
Pewamo	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
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Pg:						
Gravel Pits	Not Rated		Not Rated		Not Rated	
Pq:						
Quarries	Not Rated		Not Rated		Not Rated	
RdA:						
Randolph	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.99	Depth to saturated zone	0.76	Depth to saturated zone	0.99
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
RdB:						
Randolph	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.99	Depth to saturated zone	0.76	Depth to saturated zone	0.99
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
					Depth to bedrock	0.16
RgE:						
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Gravel content	0.07	Gravel content	0.07	Gravel content	1.00
RhB:						
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
RhC:						
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

TABLE 17.—RECREATIONAL DEVELOPMENT 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
RhE:						
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
Rs:						
Ross	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
Rt:						
Ross Variant	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
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
Sk:						
Shoals Variant	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.40	Flooding	1.00
SlA:						
Sleeth	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
St:						
Stonelick	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
Ts:						
Tremont	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	0.06	Flooding	0.60
	Depth to saturated zone	0.12			Depth to saturated zone	0.12
Ud:						
Udorthents	Not Rated		Not Rated		Not Rated	
Uf:						
Udorthents	Not Rated		Not Rated		Not Rated	
Wa:						
Wallkill	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
WdA:						
Warsaw	Not limited		Not limited		Not limited	
WeA:						
Wea	Not limited		Not limited		Not limited	

TABLE 17.—RECREATIONAL DEVELOPMENT 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
Wt:						
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
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21

TABLE 18.—RECREATIONAL 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 160 for further explanation of ratings in this table.)

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
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
BlA:						
Blount	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
BlB:						
Blount	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
BlB2:						
Blount	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
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
CcD2:						
Casco	Somewhat limited		Not limited		Very limited	
	Slope	0.19			Slope	1.00
					Droughty	1.00
					Gravel content	0.18
CeA:						
Celina	Not limited		Not limited		Not limited	
CeB:						
Celina	Not limited		Not limited		Not limited	
CeB2:						
Celina	Not limited		Not limited		Not limited	
CoA:						
Corwin	Not limited		Not limited		Not limited	
CoB:						
Corwin	Not limited		Not limited		Not limited	
CrA:						
Crosby	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
CrB:						
Crosby	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94

TABLE 18.—RECREATIONAL DEVELOPMENT 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
Ed:						
Edwards	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	Carbonate content	1.00
					Ponding	1.00
Ee:						
Eel	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
ElA:						
Eldean	Not limited		Not limited		Very limited	
					Carbonate content	1.00
					Droughty	0.07
ElB:						
Eldean	Not limited		Not limited		Very limited	
					Carbonate content	1.00
					Droughty	0.12
ElB2:						
Eldean	Not limited		Not limited		Very limited	
					Carbonate content	1.00
					Droughty	0.73
EmA:						
Eldean	Not limited		Not limited		Very limited	
					Carbonate content	1.00
					Droughty	0.07
EmB:						
Eldean	Not limited		Not limited		Very limited	
					Carbonate content	1.00
					Droughty	0.12
EmB2:						
Eldean	Not limited		Not limited		Very limited	
					Carbonate content	1.00
					Droughty	0.21
EoC2:						
Eldean	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Carbonate content	1.00
					Droughty	0.75
					Slope	0.04
Casco	Not limited		Not limited		Somewhat limited	
					Droughty	0.79
					Slope	0.04
EoD2:						
Eldean	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Carbonate content	1.00
	Slope	0.11			Slope	1.00
					Droughty	0.47
Casco	Somewhat limited		Not limited		Very limited	
	Slope	0.11			Slope	1.00
					Droughty	0.98

TABLE 18.—RECREATIONAL DEVELOPMENT 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
EpD3:						
Casco	Not limited		Not limited		Somewhat limited	
					Droughty	0.67
					Slope	0.63
Eldean	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Droughty	1.00
					Carbonate content	1.00
					Slope	0.63
EqC2:						
Eldean	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Carbonate content	1.00
					Droughty	0.27
					Slope	0.04
Casco	Not limited		Not limited		Very limited	
					Droughty	1.00
					Slope	0.04
					Gravel content	0.01
ErB:						
Eldean	Not limited		Not limited		Very limited	
					Carbonate content	1.00
					Droughty	0.10
Miamian	Not limited		Not limited		Not limited	
ErC:						
Eldean	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Carbonate content	1.00
					Droughty	0.65
					Slope	0.04
Miamian	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.04
Gn:						
Genesee	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
GwB:						
Glynwood	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
GwB2:						
Glynwood	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
GwC2:						
Glynwood	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.04
					Depth to saturated zone	0.03
GwD2:						
Glynwood	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11			Depth to saturated zone	0.03

TABLE 18.—RECREATIONAL DEVELOPMENT 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
GyC3:						
Glynwood	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.04
					Depth to saturated zone	0.03
GyD3:						
Glynwood	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11			Depth to saturated zone	0.03
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		
Ko:						
Kokomo	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
Ln:						
Linwood	Very limited		Very limited		Very limited	
	Gravel content	1.00	Gravel content	1.00	Gravel content	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
LrE2:						
Lorenzo	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Slope	0.44	Slope	1.00
					Droughty	0.99
Rodman	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Slope	0.68	Slope	1.00
					Droughty	1.00
MaB:						
Martinsville	Not limited		Not limited		Not limited	
Ockley	Not limited		Not limited		Not limited	
Md:						
Medway	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
MhA:						
Miamian	Not limited		Not limited		Not limited	

TABLE 18.—RECREATIONAL DEVELOPMENT 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
MhB:						
Miamian	Not limited		Not limited		Not limited	
MhB2:						
Miamian	Not limited		Not limited		Not limited	
MhC2:						
Miamian	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.04
MhD2:						
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11				
MkA:						
Miamian	Not limited		Not limited		Not limited	
MkB:						
Miamian	Not limited		Not limited		Not limited	
MkB2:						
Miamian	Not limited		Not limited		Not limited	
MkC2:						
Miamian	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.04
MlC3:						
Miamian	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.04
MlD3:						
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11				
MmE:						
Hennepin	Somewhat limited		Not limited		Very limited	
	Slope	0.89			Slope	1.00
					Droughty	0.01
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.89				
MmF:						
Hennepin	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Slope	0.96	Slope	1.00
					Droughty	0.01
Miamian	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	1.00	Slope	0.96		
MnA:						
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	0.46

TABLE 18.—RECREATIONAL DEVELOPMENT 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
MnB:						
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	0.46
MoA:						
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	0.46
MoB:						
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	0.46
MpA:						
Milton	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.54
MpB:						
Milton	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.54
MpB2:						
Milton	Not limited		Not limited		Somewhat limited	
					Depth to bedrock	0.54
MpC2:						
Milton	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Depth to bedrock	0.54
					Slope	0.04
MpD2:						
Milton	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.11			Depth to bedrock	0.54
Mt:						
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	
OdA:						
Odell	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
OdB:						
Odell	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75

TABLE 18.—RECREATIONAL DEVELOPMENT 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
Pe:						
Pewamo	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
Pg:						
Gravel Pits	Not Rated		Not Rated		Not Rated	
Pq:						
Quarries	Not Rated		Not Rated		Not Rated	
RdA:						
Randolph	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
					Depth to bedrock	0.16
RdB:						
Randolph	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
					Depth to bedrock	0.16
RgE:						
Rodman	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Slope	0.04	Slope	1.00
					Droughty	1.00
					Gravel content	0.07
RhB:						
Ritchey	Not limited		Not limited		Very limited	
					Depth to bedrock	1.00
					Droughty	0.82
RhC:						
Ritchey	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to bedrock	1.00
					Droughty	0.82
					Slope	0.63
RhE:						
Ritchey	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to bedrock	1.00
	Slope	1.00	Slope	0.68	Slope	1.00
					Droughty	0.97
Rs:						
Ross	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
Rt:						
Ross Variant	Not limited		Not limited		Very limited	
					Depth to bedrock	1.00
					Droughty	0.91
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 18.—RECREATIONAL DEVELOPMENT 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
Sk:						
Shoals Variant------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	1.00
					Depth to bedrock	0.06
SlA:						
Sleeth--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
St:						
Stonelick-----------	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
Ts:						
Tremont-------------	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
					Depth to saturated zone	0.05
Ud:						
Udorthents----------	Not Rated		Not Rated		Not Rated	
Uf:						
Udorthents----------	Not Rated		Not Rated		Not Rated	
Wa:						
Wallkill------------	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
WdA:						
Warsaw--------------	Not limited		Not limited		Not limited	
WeA:						
Wea-----------------	Not limited		Not limited		Not limited	
Wt:						
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

TABLE 19.--WILDLIFE HABITAT

(See text on page 161 for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable.)

Map symbol and soil name	Potential for habitat elements							Potential as habitat for		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetlnd wildlife
Ag: Algiers	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
BlA: Blount	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
BlB: Blount	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
BlB2: Blount	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Bs: Brookston	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
CcD2: Casco	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
CeA: Celina	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
CeB: Celina	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CeB2: Celina	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CoA: Corwin	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
CoB: Corwin	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
CrA: Crosby	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
CrB: Crosby	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ed: Edwards	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Ee: Eel	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
ElA: Eldean	Fair	Good	Good	Fair	Good	Poor	Very poor.	Good	Fair	Very poor.
ElB: Eldean	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
ElB2: Eldean	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.

TABLE 19.--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
EmA:										
Eldean------------	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
EmB:										
Eldean------------	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
EmB2:										
Eldean------------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
EoC2:										
Eldean------------	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
Casco-------------	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
EoD2:										
Eldean------------	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Casco-------------	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
EpD3:										
Casco-------------	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Eldean------------	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
EqC2:										
Eldean------------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Casco-------------	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
ErB:										
Eldean------------	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
Miamian-----------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ErC:										
Eldean------------	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
Miamian-----------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Gn:										
Genesee-----------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
GwB:										
Glynwood----------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
GwB2:										
Glynwood----------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
GwC2:										
Glynwood----------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

TABLE 19.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetlnd wildlife
GwD2:										
Glynwood	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
GyC3:										
Glynwood	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
GyD3:										
Glynwood	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
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.
Ko:										
Kokomo	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Ln:										
Linwood	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
LrE2:										
Lorenzo	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
Rodman	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
MaB:										
Martinsville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ockley	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Md:										
Medway	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
MhA:										
Miamian	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MhB:										
Miamian	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MhB2:										
Miamian	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MhC2:										
Miamian	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

TABLE 19.--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
MhD2:										
Miamian-----------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
MkA:										
Miamian-----------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MkB:										
Miamian-----------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MkB2:										
Miamian-----------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MkC2:										
Miamian-----------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MlC3:										
Miamian-----------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MlD3:										
Miamian-----------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
MmE:										
Hennepin----------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Miamian-----------	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
MmF:										
Hennepin----------	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Miamian-----------	Very poor.	Very poor.	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
MnA:										
Millsdale---------	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
MnB:										
Millsdale---------	Very poor.	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor.
MoA:										
Millsdale---------	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
MoB:										
Millsdale---------	Very poor.	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Poor.
MpA:										
Milton------------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MpB:										
Milton------------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

TABLE 19.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetlnd wildlife
MpB2: Milton	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MpC2: Milton	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MpD2: Milton	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Mt: Montgomery	Very poor.	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.
OdA: Odell	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
OdB: Odell	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Pe: Pewamo	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Pg: Gravel pits	---	---	---	---	---	---	---	---	---	---
Pq: Quarries	---	---	---	---	---	---	---	---	---	---
RdA: Randolph	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
RdB: Randolph	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RgE: Rodman	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
RhB: Ritchey	Poor	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
RhC: Ritchey	Poor	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
RhE: Ritchey	Very poor.	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Rs: Ross	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

TABLE 19.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetlnd wildlife
Rt: Ross Variant	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
Sh: Shoals	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Sk: Shoals Variant	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
SlA: Sleeth	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
St: Stonelick	Poor	Fair	Fair	Poor	Poor	Poor	Very poor.	Fair	Poor	Very poor.
Ts: Tremont	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Ud: Udorthents	---	---	---	---	---	---	---	---	---	---
Uf: Udorthents	---	---	---	---	---	---	---	---	---	---
Wa: Wallkill	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
WdA: Warsaw	Fair	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.
Wt: Westland	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.

TABLE 20.--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 164 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
BlA:				
Blount	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
BlB:				
Blount	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
BlB2:				
Blount	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
CcD2:				
Casco	Good		Fair	
	Bottom layer	0.79	Bottom layer	0.76
	Thickest layer	1.00	Thickest layer	0.91
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
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

TABLE 20.--CONSTRUCTION MATERIALS PART 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
CrA:				
Crosby	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
CrB:				
Crosby	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Ed:				
Edwards	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Ee:				
Eel	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.95	Bottom layer	0.91
ElA:				
Eldean	Fair		Fair	
	Thickest layer	0.36	Thickest layer	0.72
	Bottom layer	0.95	Bottom layer	0.91
ElB:				
Eldean	Fair		Fair	
	Thickest layer	0.36	Thickest layer	0.76
	Bottom layer	0.95	Bottom layer	0.91
ElB2:				
Eldean	Fair		Fair	
	Thickest layer	0.36	Bottom layer	0.91
	Bottom layer	0.95	Thickest layer	0.95
EmA:				
Eldean	Fair		Fair	
	Thickest layer	0.36	Thickest layer	0.72
	Bottom layer	0.95	Bottom layer	0.91
EmB:				
Eldean	Fair		Fair	
	Thickest layer	0.36	Thickest layer	0.76
	Bottom layer	0.95	Bottom layer	0.91
EmB2:				
Eldean	Good		Fair	
	Bottom layer	0.89	Bottom layer	0.85
	Thickest layer	1.00	Thickest layer	0.91
EoC2:				
Eldean	Fair		Fair	
	Thickest layer	0.36	Bottom layer	0.91
	Bottom layer	0.95	Thickest layer	0.95
Casco	Good		Fair	
	Bottom layer	0.95	Bottom layer	0.91
	Thickest layer	1.00	Thickest layer	0.95

TABLE 20.--CONSTRUCTION MATERIALS PART 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
EoD2:				
Eldean	Fair		Fair	
	Thickest layer	0.00	Bottom layer	0.41
	Bottom layer	0.50	Thickest layer	0.45
Casco	Good		Fair	
	Bottom layer	0.95	Bottom layer	0.91
	Thickest layer	1.00	Thickest layer	0.95
EpD3:				
Casco	Good		Fair	
	Bottom layer	0.93	Bottom layer	0.89
	Thickest layer	1.00	Thickest layer	0.91
Eldean	Fair		Fair	
	Thickest layer	0.36	Bottom layer	0.91
	Bottom layer	0.95	Thickest layer	0.95
EqC2:				
Eldean	Good		Fair	
	Bottom layer	0.89	Bottom layer	0.85
	Thickest layer	1.00	Thickest layer	0.91
Casco	Good		Fair	
	Bottom layer	0.93	Bottom layer	0.89
	Thickest layer	1.00	Thickest layer	0.91
ErB:				
Eldean	Fair		Fair	
	Thickest layer	0.36	Thickest layer	0.76
	Bottom layer	0.95	Bottom layer	0.91
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
ErC:				
Eldean	Fair		Fair	
	Thickest layer	0.36	Bottom layer	0.91
	Bottom layer	0.95	Thickest layer	0.95
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Gn:				
Genesee	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
GwB:				
Glynwood	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
GwB2:				
Glynwood	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
GwC2:				
Glynwood	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

TABLE 20.--CONSTRUCTION MATERIALS PART 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
GwD2:				
Glynwood	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
GyC3:				
Glynwood	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
GyD3:				
Glynwood	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
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
Ko:				
Kokomo	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Ln:				
Linwood	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
LrE2:				
Lorenzo	Fair		Fair	
	Thickest layer	0.64	Bottom layer	0.91
	Bottom layer	0.95	Thickest layer	0.95
Rodman	Good		Fair	
	Bottom layer	0.95	Bottom layer	0.91
	Thickest layer	1.00	Thickest layer	0.95
MaB:				
Martinsville	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Ockley	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.95	Bottom layer	0.91

TABLE 20.--CONSTRUCTION MATERIALS PART 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
Md:				
Medway	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MhA:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MhB:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MhB2:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MhC2:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MhD2:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MkA:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MkB:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MkB2:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MkC2:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MlC3:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MlD3:				
Miamian	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

TABLE 20.--CONSTRUCTION MATERIALS PART 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
MmE:				
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
MmF:				
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
MnA:				
Millsdale	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MnB:				
Millsdale	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MoA:				
Millsdale	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MoB:				
Millsdale	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MpA:				
Milton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MpB:				
Milton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MpB2:				
Milton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MpC2:				
Milton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
MpD2:				
Milton	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

TABLE 20.--CONSTRUCTION MATERIALS PART 1--Continued

Map symbol and soil name	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value
Mt:				
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	0.95	Bottom layer	0.91
OcB:				
Ockley	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.95	Bottom layer	0.91
OdA:				
Odell	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
OdB:				
Odell	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Pe:				
Pewamo	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Pg:				
Gravel Pits	Not rated		Not rated	
Pq:				
Quarries	Not rated		Not rated	
RdA:				
Randolph	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RdB:				
Randolph	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RgE:				
Rodman	Good		Fair	
	Bottom layer	0.95	Bottom layer	0.91
	Thickest layer	1.00	Thickest layer	0.94
RhB:				
Ritchey	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
RhC:				
Ritchey	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00

TABLE 20.--CONSTRUCTION MATERIALS PART 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
RhE:				
Ritchey	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Rs:				
Ross	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Rt:				
Ross Variant	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
Sk:				
Shoals Variant	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SlA:				
Sleeth	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.95	Bottom layer	0.91
St:				
Stonelick	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
Ts:				
Tremont	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.39
	Bottom layer	0.50	Bottom layer	0.39
Ud:				
Udorthents	Not rated		Not rated	
Uf:				
Udorthents	Not rated		Not rated	
W:				
Water	Not rated		Not rated	
Wa:				
Wallkill	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
WdA:				
Warsaw	Fair		Fair	
	Thickest layer	0.36	Thickest layer	0.36
	Bottom layer	0.95	Bottom layer	0.91

TABLE 20.--CONSTRUCTION MATERIALS PART 1--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
WeA:				
Wea	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.95	Bottom layer	0.91
Wt:				
Westland	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.95	Bottom layer	0.91

TABLE 21.--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 164 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	0.88	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Water erosion	0.99	Low strength	0.00		
			Shrink-swell	0.97		
BlA:						
Blount	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.04	Depth to saturated zone	0.04
	Water erosion	0.90	Shrink-swell	0.87	Hard to reclaim	0.80
	Carbonate content	0.97				
BlB:						
Blount	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.04	Depth to saturated zone	0.04
	Water erosion	0.90	Shrink-swell	0.87	Hard to reclaim	0.80
	Carbonate content	0.97				
BlB2:						
Blount	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Depth to saturated zone	0.04	Depth to saturated zone	0.04
	Water erosion	0.90	Shrink-swell	0.87	Hard to reclaim	0.20
	Carbonate content	0.97				
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		
CcD2:						
Casco	Poor		Poor		Poor	
	Droughty	0.00	Low strength	0.00	Slope	0.00
	Low content of organic matter	0.08	Shrink-swell	0.87	Rock fragments	0.12
			Slope	0.98		
CeA:						
Celina	Fair		Poor		Fair	
	Carbonate content	0.08	Low strength	0.00	Carbonate content	0.08
	Low content of organic matter	0.32	Depth to saturated zone	0.89	Hard to reclaim	0.10
	Water erosion	0.99			Depth to saturated zone	0.89
CeB:						
Celina	Fair		Poor		Fair	
	Carbonate content	0.08	Low strength	0.00	Carbonate content	0.08
	Low content of organic matter	0.68	Depth to saturated zone	0.89	Hard to reclaim	0.10
	Water erosion	0.99			Depth to saturated zone	0.89

TABLE 21.--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
CeB2:						
Celina----------------	Fair		Poor		Poor	
	Carbonate content	0.08	Low strength	0.00	Hard to reclaim	0.00
	Low content of organic matter	0.68	Depth to saturated zone	0.89	Carbonate content	0.08
	Water erosion	0.99			Depth to saturated zone	0.89
CoA:						
Corwin----------------	Fair		Poor		Fair	
	Low content of organic matter	0.50	Low strength	0.00	Hard to reclaim	0.35
	Carbonate content	0.92				
	Water erosion	0.99				
CoB:						
Corwin----------------	Fair		Poor		Fair	
	Low content of organic matter	0.50	Low strength	0.00	Hard to reclaim	0.35
	Carbonate content	0.92				
	Water erosion	0.99				
CrA:						
Crosby----------------	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Low content of organic matter	0.12	Depth to saturated zone	0.04	Depth to saturated zone	0.04
	Carbonate content	0.68			Hard to reclaim	0.10
	Water erosion	0.90				
CrB:						
Crosby----------------	Fair		Poor		Fair	
	Low content of organic matter	0.12	Low strength	0.00	Depth to saturated zone	0.04
	Carbonate content	0.68	Depth to saturated zone	0.04	Hard to reclaim	0.05
	Water erosion	0.90			Carbonate content	0.68
					Rock fragments	0.88
Ed:						
Edwards---------------	Poor		Poor		Poor	
	Wind erosion	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.00	Low strength	0.00	Hard to reclaim	0.00
	Droughty	0.89			Rock fragments	0.00
					Content of organic matter	0.00
Ee:						
Eel-------------------	Fair		Poor		Fair	
	Water erosion	0.99	Low strength	0.00	Depth to saturated zone	0.89
			Depth to saturated zone	0.89		
ElA:						
Eldean----------------	Poor		Poor		Fair	
	Carbonate content	0.00	Low strength	0.00	Rock fragments	0.97
	Droughty	0.10				
	Water erosion	0.99				

TABLE 21.--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
ElB:						
Eldean--------------	Poor		Poor		Fair	
	Carbonate content	0.00	Low strength	0.00	Too clayey	0.01
	Too clayey	0.02	Shrink-swell	0.99		
	Droughty	0.07				
	Low content of organic matter	0.88				
	Water erosion	0.99				
ElB2:						
Eldean--------------	Poor		Poor		Fair	
	Carbonate content	0.00	Low strength	0.00	Too clayey	0.01
	Droughty	0.00				
	Too clayey	0.02				
	Low content of organic matter	0.88				
	Water erosion	0.99				
EmA:						
Eldean--------------	Poor		Poor		Fair	
	Carbonate content	0.00	Low strength	0.00	Rock fragments	0.97
	Droughty	0.10				
	Water erosion	0.99				
EmB:						
Eldean--------------	Poor		Poor		Fair	
	Carbonate content	0.00	Low strength	0.00	Too clayey	0.01
	Too clayey	0.02	Shrink-swell	0.99		
	Droughty	0.07				
	Low content of organic matter	0.88				
	Water erosion	0.99				
EmB2:						
Eldean--------------	Poor		Poor		Poor	
	Carbonate content	0.00	Low strength	0.00	Too clayey	0.00
	Too clayey	0.00			Rock fragments	0.50
	Droughty	0.04				
	Low content of organic matter	0.88				
	Water erosion	0.99				
EoC2:						
Eldean--------------	Poor		Poor		Fair	
	Carbonate content	0.00	Low strength	0.00	Too clayey	0.01
	Droughty	0.00			Slope	0.96
	Too clayey	0.02				
	Low content of organic matter	0.88				
	Water erosion	0.99				
Casco---------------	Poor		Poor		Fair	
	Droughty	0.00	Low strength	0.00	Rock fragments	0.28
	Low content of organic matter	0.12			Slope	0.96

TABLE 21.--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
EoD2:						
Eldean	Poor		Poor		Poor	
	Carbonate content	0.00	Low strength	0.00	Slope	0.00
	Droughty	0.00			Too clayey	0.01
	Too clayey	0.02				
	Low content of organic matter	0.88				
	Water erosion	0.99				
Casco	Poor		Poor		Poor	
	Droughty	0.00	Low strength	0.00	Slope	0.00
	Low content of organic matter	0.12			Rock fragments	0.28
EpD3:						
Casco	Poor		Poor		Fair	
	Droughty	0.00	Low strength	0.00	Rock fragments	0.28
	Low content of organic matter	0.12	Shrink-swell	0.87	Slope	0.37
Eldean	Poor		Poor		Fair	
	Droughty	0.00	Low strength	0.00	Slope	0.37
	Carbonate content	0.00			Rock fragments	0.97
	Low content of organic matter	0.50				
	Water erosion	0.99				
EqC2:						
Eldean	Poor		Poor		Poor	
	Carbonate content	0.00	Low strength	0.00	Too clayey	0.00
	Too clayey	0.00	Shrink-swell	0.99	Rock fragments	0.50
	Droughty	0.02			Slope	0.96
	Low content of organic matter	0.88				
	Water erosion	0.99				
Casco	Poor		Poor		Fair	
	Droughty	0.00	Low strength	0.00	Rock fragments	0.28
	Low content of organic matter	0.12	Shrink-swell	0.87	Slope	0.96
ErB:						
Eldean	Poor		Poor		Fair	
	Carbonate content	0.00	Low strength	0.00	Rock fragments	0.97
	Droughty	0.08				
	Water erosion	0.99				
Miamian	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Low content of organic matter	0.88			Hard to reclaim	0.99
	Water erosion	0.99				

TABLE 21.--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
ErC:						
Eldean	Poor		Poor		Fair	
	Carbonate content	0.00	Low strength	0.00	Too clayey	0.01
	Droughty	0.00			Slope	0.96
	Too clayey	0.02				
	Low content of organic matter	0.88				
	Water erosion	0.99				
Miamian	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Low content of organic matter	0.88			Hard to reclaim	0.80
	Water erosion	0.99			Slope	0.96
Gn:						
Genesee	Fair		Poor		Good	
	Carbonate content	0.68	Low strength	0.00		
GwB:						
Glynwood	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Low content of organic matter	0.32	Depth to saturated zone	0.76	Hard to reclaim	0.46
	Carbonate content	0.46			Depth to saturated zone	0.76
	Water erosion	0.90				
GwB2:						
Glynwood	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Low content of organic matter	0.32	Depth to saturated zone	0.76	Hard to reclaim	0.16
	Carbonate content	0.46			Depth to saturated zone	0.76
	Water erosion	0.90				
GwC2:						
Glynwood	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Low content of organic matter	0.32	Depth to saturated zone	0.76	Hard to reclaim	0.10
	Carbonate content	0.46			Depth to saturated zone	0.76
	Water erosion	0.90			Slope	0.96
GwD2:						
Glynwood	Fair		Poor		Poor	
	Too clayey	0.02	Low strength	0.00	Slope	0.00
	Low content of organic matter	0.32	Depth to saturated zone	0.76	Too clayey	0.01
	Carbonate content	0.46			Hard to reclaim	0.10
	Water erosion	0.90			Depth to saturated zone	0.76
GyC3:						
Glynwood	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Low content of organic matter	0.32	Depth to saturated zone	0.76	Hard to reclaim	0.03
	Carbonate content	0.46			Depth to saturated zone	0.76
	Water erosion	0.90			Slope	0.96

TABLE 21.--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
GyD3:						
Glynwood	Fair		Poor		Poor	
	Low content of organic matter	0.32	Low strength	0.00	Slope	0.00
	Carbonate content	0.46	Depth to saturated zone	0.76	Hard to reclaim	0.00
	Water erosion	0.90			Carbonate content	0.46
	Too clayey	0.95			Too clayey	0.60
					Depth to saturated zone	0.76
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				
Ko:						
Kokomo	Fair		Poor		Poor	
	Too clayey	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.68	Low strength	0.00	Too clayey	0.11
			Shrink-swell	0.94		
Ln:						
Linwood	Poor		Poor		Poor	
	Wind erosion	0.00	Depth to saturated zone	0.00	Hard to reclaim	0.00
	Low content of organic matter	0.50	Low strength	0.00	Depth to saturated zone	0.00
					Rock fragments	0.00
					Content of organic matter	0.00

TABLE 21.--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
LrE2:						
Lorenzo	Poor		Poor		Poor	
	Droughty	0.00	Low strength	0.00	Slope	0.00
	Low content of organic matter	0.88	Slope	0.00	Hard to reclaim	0.00
					Rock fragments	0.88
Rodman	Poor		Poor		Poor	
	Droughty	0.00	Low strength	0.00	Slope	0.00
	Carbonate content	0.46	Slope	0.00	Rock fragments	0.28
MaB:						
Martinsville	Fair		Poor		Good	
	Low content of organic matter	0.12	Low strength	0.00		
	Water erosion	0.99	Shrink-swell	0.95		
Ockley	Fair		Poor		Fair	
	Too clayey	0.41	Low strength	0.00	Too clayey	0.26
	Low content of organic matter	0.50	Shrink-swell	0.98		
	Carbonate content	0.97				
	Water erosion	0.99				
Md:						
Medway	Fair		Poor		Fair	
	Low content of organic matter	0.88	Low strength	0.00	Depth to saturated zone	0.89
			Depth to saturated zone	0.89		
MhA:						
Miamian	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Low content of organic matter	0.82			Hard to reclaim	0.84
	Water erosion	0.99				
MhB:						
Miamian	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Low content of organic matter	0.82			Hard to reclaim	0.99
	Water erosion	0.99				
MhB2:						
Miamian	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Low content of organic matter	0.82			Hard to reclaim	0.54
	Water erosion	0.99				
MhC2:						
Miamian	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Low content of organic matter	0.82			Hard to reclaim	0.35
	Water erosion	0.99			Slope	0.96

TABLE 21.--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
MhD2:						
Miamian-------------	Fair		Poor		Poor	
	Too clayey	0.02	Low strength	0.00	Slope	0.00
	Low content of organic matter	0.82			Too clayey	0.01
	Water erosion	0.99			Hard to reclaim	0.35
MkA:						
Miamian-------------	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Carbonate content	0.08	Shrink-swell	0.87		
	Low content of organic matter	0.88				
	Water erosion	0.99				
MkB:						
Miamian-------------	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Carbonate content	0.08	Shrink-swell	0.87		
	Low content of organic matter	0.88				
	Water erosion	0.99				
MkB2:						
Miamian-------------	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Carbonate content	0.08	Shrink-swell	0.87		
	Low content of organic matter	0.88				
	Water erosion	0.99				
MkC2:						
Miamian-------------	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Carbonate content	0.08	Shrink-swell	0.87	Slope	0.96
	Low content of organic matter	0.88				
	Water erosion	0.99				
MlC3:						
Miamian-------------	Fair		Poor		Poor	
	Low content of organic matter	0.82	Low strength	0.00	Hard to reclaim	0.00
	Water erosion	0.99			Slope	0.96
MlD3:						
Miamian-------------	Fair		Poor		Poor	
	Low content of organic matter	0.82	Low strength	0.00	Hard to reclaim	0.00
	Water erosion	0.99			Slope	0.00
MmE:						
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	0.98			Carbonate content	0.46
Miamian-------------	Fair		Poor		Poor	
	Too clayey	0.02	Low strength	0.00	Slope	0.00
	Low content of organic matter	0.82	Slope	0.18	Too clayey	0.01
	Water erosion	0.99			Hard to reclaim	0.16

TABLE 21.--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
MmF:						
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	0.98			Carbonate content	0.46
Miamian	Fair		Poor		Poor	
	Low content of organic matter	0.82	Slope	0.00	Slope	0.00
	Water erosion	0.99	Low strength	0.00	Hard to reclaim	0.03
MnA:						
Millsdale	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Depth to bedrock	0.54	Depth to saturated zone	0.00	Too clayey	0.00
	Droughty	0.63	Low strength	0.00	Depth to bedrock	0.54
			Shrink-swell	0.16		
MnB:						
Millsdale	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Depth to bedrock	0.54	Depth to saturated zone	0.00	Too clayey	0.00
	Droughty	0.60	Low strength	0.00	Depth to bedrock	0.54
			Shrink-swell	0.12		
MoA:						
Millsdale	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Depth to bedrock	0.54	Depth to saturated zone	0.00	Too clayey	0.00
	Droughty	0.70	Low strength	0.00	Depth to bedrock	0.54
			Shrink-swell	0.26		
MoB:						
Millsdale	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Depth to bedrock	0.54	Depth to saturated zone	0.00	Too clayey	0.00
	Droughty	0.67	Low strength	0.00	Depth to bedrock	0.54
			Shrink-swell	0.22		
MpA:						
Milton	Fair		Poor		Fair	
	Too clayey	0.02	Depth to bedrock	0.00	Too clayey	0.01
	Droughty	0.35	Low strength	0.00	Depth to bedrock	0.46
	Depth to bedrock	0.46	Shrink-swell	0.87		
	Low content of organic matter	0.88				
	Water erosion	0.99				

TABLE 21.--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
MpB:						
Milton--------------	Fair		Poor		Fair	
	Too clayey	0.02	Depth to bedrock	0.00	Too clayey	0.01
	Droughty	0.35	Low strength	0.00	Depth to bedrock	0.46
	Depth to bedrock	0.46	Shrink-swell	0.87		
	Low content of organic matter	0.88				
	Water erosion	0.99				
MpB2:						
Milton--------------	Fair		Poor		Fair	
	Too clayey	0.02	Depth to bedrock	0.00	Too clayey	0.01
	Droughty	0.35	Low strength	0.00	Depth to bedrock	0.46
	Depth to bedrock	0.46	Shrink-swell	0.87		
	Low content of organic matter	0.88				
	Water erosion	0.99				
MpC2:						
Milton--------------	Fair		Poor		Fair	
	Too clayey	0.02	Depth to bedrock	0.00	Too clayey	0.01
	Droughty	0.35	Low strength	0.00	Depth to bedrock	0.46
	Depth to bedrock	0.46	Shrink-swell	0.87	Slope	0.96
	Low content of organic matter	0.88				
	Water erosion	0.99				
MpD2:						
Milton--------------	Fair		Poor		Poor	
	Too clayey	0.02	Depth to bedrock	0.00	Slope	0.00
	Droughty	0.35	Low strength	0.00	Too clayey	0.01
	Depth to bedrock	0.46	Shrink-swell	0.87	Depth to bedrock	0.46
	Low content of organic matter	0.88				
	Water erosion	0.99				
Mt:						
Montgomery----------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low content of organic matter	0.12	Low strength	0.00	Too clayey	0.00
	Carbonate content	0.92	Shrink-swell	0.87		
	Water erosion	0.99				
OcA:						
Ockley--------------	Fair		Poor		Fair	
	Low content of organic matter	0.12	Low strength	0.00	Too clayey	0.51
	Carbonate content	0.68	Shrink-swell	0.98		
	Too clayey	0.88				
	Water erosion	0.99				
OcB:						
Ockley--------------	Fair		Poor		Fair	
	Low content of organic matter	0.12	Low strength	0.00	Too clayey	0.51
	Carbonate content	0.68	Shrink-swell	0.98		
	Too clayey	0.88				
	Water erosion	0.99				

TABLE 21.--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
OdA:						
Odell---------------	Fair		Poor		Fair	
	Low content of organic matter	0.68	Low strength	0.00	Depth to saturated zone	0.14
	Carbonate content	0.92	Depth to saturated zone	0.14	Too clayey	0.65
	Too clayey	0.95			Hard to reclaim	0.99
	Water erosion	0.99				
OdB:						
Odell---------------	Fair		Poor		Fair	
	Low content of organic matter	0.68	Low strength	0.00	Depth to saturated zone	0.14
	Carbonate content	0.92	Depth to saturated zone	0.14	Too clayey	0.65
	Too clayey	0.95			Hard to reclaim	0.99
	Water erosion	0.99				
Pe:						
Pewamo--------------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.80	Low strength	0.00	Too clayey	0.00
	Water erosion	0.99	Shrink-swell	0.87		
Pg:						
Gravel Pits---------	Not rated		Not rated		Not rated	
Pq:						
Quarries------------	Not rated		Not rated		Not rated	
RdA:						
Randolph------------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
	Depth to bedrock	0.84	Low strength	0.00	Depth to saturated zone	0.14
	Low content of organic matter	0.88	Depth to saturated zone	0.14	Depth to bedrock	0.84
	Droughty	0.88	Shrink-swell	0.24		
	Water erosion	0.99				
RdB:						
Randolph------------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
	Depth to bedrock	0.84	Low strength	0.00	Depth to saturated zone	0.14
	Low content of organic matter	0.88	Depth to saturated zone	0.14	Depth to bedrock	0.84
	Droughty	0.88	Shrink-swell	0.24		
	Water erosion	0.99				
RgE:						
Rodman--------------	Poor		Poor		Poor	
	Droughty	0.00	Low strength	0.00	Slope	0.00
	Carbonate content	0.46	Slope	0.00	Rock fragments	0.00

TABLE 21.--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
RhB:						
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	0.09
	Too clayey	0.12	Shrink-swell	0.87	Rock fragments	0.98
	Low content of	0.88				
	organic matter					
	Water erosion	0.99				
RhC:						
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	0.09
	Too clayey	0.12	Shrink-swell	0.87	Slope	0.37
	Low content of	0.88			Rock fragments	0.98
	organic matter					
	Water erosion	0.99				
RhE:						
Ritchey	Poor		Poor		Poor	
	Droughty	0.00	Depth to bedrock	0.00	Slope	0.00
	Depth to bedrock	0.00	Low strength	0.00	Depth to bedrock	0.00
	Too clayey	0.12	Slope	0.00	Too clayey	0.09
	Low content of	0.88	Shrink-swell	0.87	Rock fragments	0.98
	organic matter					
	Water erosion	0.99				
Rs:						
Ross	Good		Poor		Good	
			Low strength	0.00		
Rt:						
Ross Variant	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		
Sh:						
Shoals	Good		Poor		Poor	
			Depth to	0.00	Depth to	0.00
			saturated zone		saturated zone	
			Low strength	0.00		
Sk:						
Shoals Variant	Fair		Poor		Poor	
	Low content of	0.88	Depth to bedrock	0.00	Depth to	0.00
	organic matter				saturated zone	
	Depth to bedrock	0.93	Depth to	0.00	Depth to bedrock	0.93
			saturated zone			
	Water erosion	0.99	Low strength	0.00		
SlA:						
Sleeth	Fair		Poor		Fair	
	Low content of	0.88	Low strength	0.00	Depth to	0.04
	organic matter				saturated zone	
	Carbonate content	0.92	Depth to	0.04		
			saturated zone			
			Shrink-swell	0.87		
St:						
Stonelick	Fair		Poor		Fair	
	Carbonate content	0.68	Low strength	0.00	Carbonate content	0.68
	Low content of	0.75				
	organic matter					
	Droughty	0.76				

TABLE 21.--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
Ts:						
Tremont	Poor		Poor		Fair	
	Carbonate content	0.00	Low strength	0.00	Hard to reclaim	0.02
	Low content of organic matter	0.18	Depth to saturated zone	0.73	Depth to saturated zone	0.73
Ud:						
Udorthents	Not rated		Not rated		Not rated	
Uf:						
Udorthents	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
Wa:						
Wallkill	Fair		Poor		Poor	
	Water erosion	0.99	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.00	Hard to reclaim	0.00
WdA:						
Warsaw	Fair		Poor		Fair	
	Carbonate content	0.92	Low strength	0.00	Rock fragments	0.88
	Droughty	0.93	Shrink-swell	0.98		
WeA:						
Wea	Fair		Poor		Fair	
	Carbonate content	0.97	Low strength	0.00	Rock fragments	0.50
			Shrink-swell	0.97		
Wt:						
Westland	Fair		Poor		Poor	
	Carbonate content	0.92	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.00	Rock fragments	0.28

TABLE 22.--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 165 for further explanation of ratings in this table.)

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
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
BlA:						
Blount	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	Shrink-swell	0.50
BlB:						
Blount	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	Shrink-swell	0.50
					Slope	0.10
BlB2:						
Blount	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	Shrink-swell	0.50
					Slope	0.10
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
CcD2:						
Casco	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
CeA:						
Celina	Not limited		Very limited		Not limited	
			Depth to saturated zone	1.00		
CeB:						
Celina	Not limited		Very limited		Somewhat limited	
			Depth to saturated zone	1.00	Slope	0.10
CeB2:						
Celina	Not limited		Very limited		Somewhat limited	
			Depth to saturated zone	1.00	Slope	0.10
CoA:						
Corwin	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.95	Shrink-swell	0.50

TABLE 22.--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
CoB:						
Corwin	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.95	Shrink-swell	0.50
					Slope	0.10
CrA:						
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
CrB:						
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
					Slope	0.10
Ed:						
Edwards	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	Content of organic matter	1.00	Content of organic matter	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
Ee:						
Eel	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	1.00		
ElA:						
Eldean	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
ElB:						
Eldean	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
ElB2:						
Eldean	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
EmA:						
Eldean	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
EmB:						
Eldean	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
EmB2:						
Eldean	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10

TABLE 22.--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
EoC2:						
Eldean	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
Casco	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.04	Slope	0.04	Slope	1.00
EoD2:						
Eldean	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
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
EpD3:						
Casco	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Eldean	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
EqC2:						
Eldean	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
Casco	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
ErB:						
Eldean	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
ErC:						
Eldean	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
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.50	Slope	0.04	Slope	1.00
	Slope	0.04			Shrink-swell	0.50
Gn:						
Genesee	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
GwB:						
Glynwood	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 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
GwB2:						
Glynwood------------	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
GwC2:						
Glynwood------------	Somewhat limited		Very limited		Very limited	
	Depth to saturated zone	0.10	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.04	Slope	0.04	Depth to saturated zone	0.10
GwD2:						
Glynwood------------	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to saturated zone	1.00	Slope	1.00
	Depth to saturated zone	0.10	Slope	1.00	Depth to saturated zone	0.10
GyC3:						
Glynwood------------	Somewhat limited		Very limited		Very limited	
	Depth to saturated zone	0.10	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.04	Slope	0.04	Depth to saturated zone	0.10
GyD3:						
Glynwood------------	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to saturated zone	1.00	Slope	1.00
	Depth to saturated zone	0.10	Slope	1.00	Depth to saturated zone	0.10
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
Ko:						
Kokomo--------------	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

TABLE 22.--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
Ln:						
Linwood-------------	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	Shrink-swell	0.50	Ponding	1.00
LrE2:						
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
MaB:						
Martinsville--------	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
Ockley--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
Md:						
Medway--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	1.00		
MhA:						
Miamian-------------	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
MhB:						
Miamian-------------	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
					Slope	0.10
MhB2:						
Miamian-------------	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
					Slope	0.10
MhC2:						
Miamian-------------	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.50	Slope	0.04	Slope	1.00
	Slope	0.04			Shrink-swell	0.50
MhD2:						
Miamian-------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50			Shrink-swell	0.50
MkA:						
Miamian-------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
MkB:						
Miamian-------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10

TABLE 22.--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
MkB2:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
MkC2:						
Miamian	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
MlC3:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.04	Slope	0.04	Slope	1.00
MlD3:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
MmE:						
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
MmF:						
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
MnA:						
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	0.46	Ponding	1.00	Depth to bedrock	0.46
MnB:						
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	0.46	Ponding	1.00	Depth to bedrock	0.46
					Slope	0.10
MoA:						
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	0.46	Ponding	1.00	Depth to bedrock	0.46

TABLE 22.--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
MoB:						
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	0.46	Ponding	1.00	Depth to bedrock	0.46
					Slope	0.10
MpA:						
Milton	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	Shrink-swell	0.50	Shrink-swell	0.50
MpB:						
Milton	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	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
MpB2:						
Milton	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	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
MpC2:						
Milton	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.54	Depth to bedrock	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Depth to bedrock	0.54
	Slope	0.04	Slope	0.04	Shrink-swell	0.50
MpD2:						
Milton	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to bedrock	1.00	Slope	1.00
	Depth to bedrock	0.54	Slope	1.00	Depth to bedrock	0.54
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Mt:						
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
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
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
OdA:						
Odell	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.99	Depth to saturated zone	1.00	Depth to saturated zone	0.99
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50

TABLE 22.--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
OdB:						
Odell----------------	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.99	Depth to saturated zone	1.00	Depth to saturated zone	0.99
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
					Slope	0.10
Pe:						
Pewamo---------------	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
Pg:						
Gravel Pits----------	Not Rated		Not Rated		Not Rated	
Pq:						
Quarries-------------	Not Rated		Not Rated		Not Rated	
RdA:						
Randolph-------------	Very limited		Very limited		Very limited	
	Shrink-swell	1.00	Depth to saturated zone	1.00	Shrink-swell	1.00
	Depth to saturated zone	0.99	Shrink-swell	1.00	Depth to saturated zone	0.99
	Depth to bedrock	0.15	Depth to bedrock	1.00	Depth to bedrock	0.15
RdB:						
Randolph-------------	Very limited		Very limited		Very limited	
	Shrink-swell	1.00	Depth to saturated zone	1.00	Shrink-swell	1.00
	Depth to saturated zone	0.99	Shrink-swell	1.00	Depth to saturated zone	0.99
	Depth to bedrock	0.15	Depth to bedrock	1.00	Depth to bedrock	0.15
					Slope	0.10
RgE:						
Rodman---------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
RhB:						
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
RhC:						
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
RhE:						
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
Rs:						
Ross-----------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00

TABLE 22.--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
Rt:						
Ross Variant	Very limited		Very limited		Very limited	
	Depth to soft bedrock	1.00	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Depth to bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
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
Sk:						
Shoals Variant	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
	Depth to bedrock	0.06	Depth to bedrock	1.00	Depth to bedrock	0.06
SlA:						
Sleeth	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	Shrink-swell	0.50
St:						
Stonelick	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
Ts:						
Tremont	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.12	Depth to saturated zone	1.00	Depth to saturated zone	0.12
Ud:						
Udorthents	Not Rated		Not Rated		Not Rated	
Uf:						
Udorthents	Not Rated		Not Rated		Not Rated	
Wa:						
Wallkill	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	Content of organic matter	1.00	Ponding	1.00
			Ponding	1.00		
WdA:						
Warsaw	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
WeA:						
Wea	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Wt:						
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

TABLE 23.--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 165 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				
BlA:						
Blount	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.94
	Frost action	1.00	Too clayey	0.50		
	Depth to saturated zone	0.94				
	Shrink-swell	0.50				
BlB:						
Blount	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.94
	Frost action	1.00	Too clayey	0.50		
	Depth to saturated zone	0.94				
	Shrink-swell	0.50				
BlB2:						
Blount	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.94
	Frost action	1.00	Too clayey	0.50		
	Depth to saturated zone	0.94				
	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
	Low strength	1.00	Ponding	1.00	Ponding	1.00
	Frost action	1.00				
	Ponding	1.00				
	Shrink-swell	0.50				
CcD2:						
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
	Shrink-swell	0.50	Slope	1.00	Droughty	0.99
	Low strength	0.05			Gravel content	0.18
CeA:						
Celina	Very limited		Very limited		Not limited	
	Frost action	1.00	Depth to saturated zone	1.00		
			Too clayey	0.50		

TABLE 23.--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
CeB:						
Celina	Very limited		Very limited		Not limited	
	Frost action	1.00	Depth to saturated zone	1.00		
			Too clayey	0.50		
CeB2:						
Celina	Very limited		Very limited		Not limited	
	Frost action	1.00	Depth to saturated zone	1.00		
CoA:						
Corwin	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.95		
	Shrink-swell	0.50				
	Frost action	0.50				
CoB:						
Corwin	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.95		
	Shrink-swell	0.50				
	Frost action	0.50				
CrA:						
Crosby	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.94
	Depth to saturated zone	0.94	Depth to dense layer	0.50		
CrB:						
Crosby	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.94
	Depth to saturated zone	0.94	Depth to dense layer	0.50		
Ed:						
Edwards	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Carbonate content	1.00
	Subsidence	1.00	Content of organic matter	1.00	Content of organic matter	1.00
	Frost action	1.00	Ponding	1.00	Gravel content	1.00
	Ponding	1.00			Depth to saturated zone	1.00
					Ponding	1.00
Ee:						
Eel	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		
	Low strength	0.28	Flooding	0.60		
ElA:						
Eldean	Very limited		Very limited		Very limited	
	Low strength	1.00	Cutbanks cave	1.00	Carbonate content	1.00
	Shrink-swell	0.50			Droughty	0.06
	Frost action	0.50				

TABLE 23.--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
ElB:						
Eldean	Very limited		Very limited		Very limited	
	Low strength	1.00	Cutbanks cave	1.00	Carbonate content	1.00
	Shrink-swell	0.50			Droughty	0.10
	Frost action	0.50				
ElB2:						
Eldean	Very limited		Very limited		Very limited	
	Low strength	1.00	Cutbanks cave	1.00	Carbonate content	1.00
	Shrink-swell	0.50			Droughty	0.71
	Frost action	0.50				
EmA:						
Eldean	Very limited		Very limited		Very limited	
	Low strength	1.00	Cutbanks cave	1.00	Carbonate content	1.00
	Shrink-swell	0.50			Droughty	0.06
	Frost action	0.50				
EmB:						
Eldean	Very limited		Very limited		Very limited	
	Low strength	1.00	Cutbanks cave	1.00	Carbonate content	1.00
	Shrink-swell	0.50			Droughty	0.10
	Frost action	0.50				
EmB2:						
Eldean	Very limited		Very limited		Very limited	
	Low strength	1.00	Cutbanks cave	1.00	Carbonate content	1.00
	Shrink-swell	0.50			Droughty	0.19
	Frost action	0.50				
EoC2:						
Eldean	Very limited		Very limited		Very limited	
	Low strength	1.00	Cutbanks cave	1.00	Carbonate content	1.00
	Shrink-swell	0.50	Slope	0.04	Droughty	0.73
	Frost action	0.50			Slope	0.04
	Slope	0.04				
Casco	Somewhat limited		Very limited		Somewhat limited	
	Low strength	0.05	Cutbanks cave	1.00	Droughty	0.77
	Slope	0.04	Slope	0.04	Slope	0.04
EoD2:						
Eldean	Very limited		Very limited		Very limited	
	Low strength	1.00	Cutbanks cave	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Carbonate content	1.00
	Shrink-swell	0.50			Droughty	0.44
	Frost action	0.50				
Casco	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
	Low strength	0.05	Slope	1.00	Droughty	0.98
EpD3:						
Casco	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.63	Cutbanks cave	1.00	Droughty	0.65
	Shrink-swell	0.50	Slope	0.63	Slope	0.63
	Low strength	0.05				
Eldean	Somewhat limited		Very limited		Very limited	
	Low strength	0.90	Cutbanks cave	1.00	Droughty	1.00
	Slope	0.63	Slope	0.63	Carbonate content	1.00
	Frost action	0.50			Slope	0.63

TABLE 23.--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
EqC2:						
Eldean	Very limited		Very limited		Very limited	
	Low strength	1.00	Cutbanks cave	1.00	Carbonate content	1.00
	Shrink-swell	0.50	Slope	0.04	Droughty	0.25
	Frost action	0.50			Slope	0.04
	Slope	0.04				
Casco	Somewhat limited		Very limited		Very limited	
	Shrink-swell	0.50	Cutbanks cave	1.00	Droughty	1.00
	Low strength	0.05	Slope	0.04	Slope	0.04
	Slope	0.04			Gravel content	0.01
ErB:						
Eldean	Very limited		Very limited		Very limited	
	Low strength	1.00	Cutbanks cave	1.00	Carbonate content	1.00
	Shrink-swell	0.50			Droughty	0.09
	Frost action	0.50				
Miamian	Very limited		Not limited		Not limited	
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
ErC:						
Eldean	Very limited		Very limited		Very limited	
	Low strength	1.00	Cutbanks cave	1.00	Carbonate content	1.00
	Shrink-swell	0.50	Slope	0.04	Droughty	0.62
	Frost action	0.50			Slope	0.04
	Slope	0.04				
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Slope	0.04	Slope	0.04
	Frost action	0.50				
	Slope	0.04				
Gn:						
Genesee	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
	Low strength	0.50	Flooding	0.60		
	Frost action	0.50				
GwB:						
Glynwood	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				
GwB2:						
Glynwood	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.--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
GwC2:						
Glynwood	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Slope	0.04
	Low strength	1.00	Slope	0.04	Depth to saturated zone	0.03
	Slope	0.04				
	Depth to saturated zone	0.03				
GwD2:						
Glynwood	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Slope	1.00
	Low strength	1.00	Slope	1.00	Depth to saturated zone	0.03
	Slope	1.00				
	Depth to saturated zone	0.03				
GyC3:						
Glynwood	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Slope	0.04
	Low strength	1.00	Slope	0.04	Depth to saturated zone	0.03
	Slope	0.04				
	Depth to saturated zone	0.03				
GyD3:						
Glynwood	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Slope	1.00
	Low strength	1.00	Slope	1.00	Depth to saturated zone	0.03
	Slope	1.00				
	Depth to saturated zone	0.03				
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				

TABLE 23.--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
Ko:						
Kokomo	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				
	Ponding	1.00				
	Shrink-swell	0.50				
Ln:						
Linwood	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Gravel content	1.00
	Subsidence	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Content of organic matter	1.00	Ponding	1.00
	Ponding	1.00				
LrE2:						
Lorenzo	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
			Slope	1.00	Droughty	0.98
			Depth to dense layer	0.50		
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
			Slope	1.00	Droughty	1.00
MaB:						
Martinsville	Somewhat limited		Not limited		Not limited	
	Shrink-swell	0.50				
	Frost action	0.50				
Ockley	Somewhat limited		Very limited		Not limited	
	Low strength	0.90	Cutbanks cave	1.00		
	Shrink-swell	0.50				
	Frost action	0.50				
Md:						
Medway	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	0.60
	Frost action	1.00	Flooding	0.60		
	Low strength	0.05				
MhA:						
Miamian	Very limited		Not limited		Not limited	
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
MhB:						
Miamian	Very limited		Not limited		Not limited	
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
MhB2:						
Miamian	Very limited		Not limited		Not limited	
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				

TABLE 23.--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
MhC2:						
Miamian	Very limited		Somewhat limited		Somewhat limited	
	Low strength	1.00	Slope	0.04	Slope	0.04
	Shrink-swell	0.50				
	Frost action	0.50				
	Slope	0.04				
MhD2:						
Miamian	Very limited		Very limited		Very limited	
	Low strength	1.00	Slope	1.00	Slope	1.00
	Slope	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
MkA:						
Miamian	Very limited		Not limited		Not limited	
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
MkB:						
Miamian	Very limited		Not limited		Not limited	
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
MkB2:						
Miamian	Very limited		Not limited		Not limited	
	Low strength	1.00				
	Shrink-swell	0.50				
	Frost action	0.50				
MkC2:						
Miamian	Very limited		Somewhat limited		Somewhat limited	
	Low strength	1.00	Slope	0.04	Slope	0.04
	Shrink-swell	0.50				
	Frost action	0.50				
	Slope	0.04				
MlC3:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Frost action	0.50	Slope	0.04	Slope	0.04
	Slope	0.04				
MlD3:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
MmE:						
Hennepin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50				
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				

TABLE 23.--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
MmF:						
Hennepin------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50				
Miamian-------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50				
MnA:						
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	0.46
	Shrink-swell	1.00	Too clayey	0.50		
	Ponding	1.00				
MnB:						
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	0.46
	Shrink-swell	1.00	Too clayey	0.50		
	Ponding	1.00				
MoA:						
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	0.46
	Shrink-swell	1.00	Too clayey	0.50		
	Ponding	1.00				
MoB:						
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	0.46
	Shrink-swell	1.00	Too clayey	0.50		
	Ponding	1.00				
MpA:						
Milton--------------	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				
	Shrink-swell	0.50				
	Frost action	0.50				
MpB:						
Milton--------------	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				
	Shrink-swell	0.50				
	Frost action	0.50				

TABLE 23.--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
MpB2:						
Milton	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				
	Shrink-swell	0.50				
	Frost action	0.50				
MpC2:						
Milton	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	Slope	0.04	Slope	0.04
	Shrink-swell	0.50				
	Frost action	0.50				
	Slope	0.04				
MpD2:						
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	0.54
	Depth to bedrock	0.54				
	Shrink-swell	0.50				
	Frost action	0.50				
Mt:						
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		
	Ponding	1.00				
	Shrink-swell	0.50				
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				
OdA:						
Odell	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00				
	Depth to saturated zone	0.75				
	Shrink-swell	0.50				
OdB:						
Odell	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00				
	Depth to saturated zone	0.75				
	Shrink-swell	0.50				

TABLE 23.--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
Pe:						
Pewamo	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		
	Ponding	1.00				
	Shrink-swell	0.50				
Pg:						
Gravel Pits	Not Rated		Not Rated		Not Rated	
Pq:						
Quarries	Not Rated		Not Rated		Not Rated	
RdA:						
Randolph	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to saturated zone	0.75
	Frost action	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.16
	Shrink-swell	1.00	Too clayey	0.50		
	Depth to saturated zone	0.75				
	Depth to bedrock	0.15				
RdB:						
Randolph	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to saturated zone	0.75
	Frost action	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.16
	Shrink-swell	1.00	Too clayey	0.50		
	Depth to saturated zone	0.75				
	Depth to bedrock	0.15				
RgE:						
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
			Slope	1.00	Droughty	1.00
					Gravel content	0.07
RhB:						
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	0.80
	Shrink-swell	0.50				
	Frost action	0.50				
RhC:						
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	0.80
	Slope	0.63			Slope	0.63
	Shrink-swell	0.50				
	Frost action	0.50				

TABLE 23.--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
RhE:						
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	0.96
	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				
	Low strength	0.28				
Rt:						
Ross Variant	Very limited		Very limited		Very limited	
	Depth to soft bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Low strength	1.00	Depth to soft bedrock	1.00	Droughty	0.90
	Depth to bedrock	1.00				
	Frost action	0.50				
Sh:						
Shoals	Very limited		Very limited		Very limited	
	Flooding	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	0.60
	Frost action	1.00	Flooding	0.60		
	Low strength	0.50				
Sk:						
Shoals Variant	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to bedrock	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Flooding	0.80	Depth to bedrock	0.06
	Depth to bedrock	0.06				
SlA:						
Sleeth	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Cutbanks cave	1.00	Depth to saturated zone	0.94
	Depth to saturated zone	0.94	Depth to saturated zone	1.00		
	Shrink-swell	0.50				
	Low strength	0.05				
St:						
Stonelick	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Flooding	0.60	Flooding	0.60
	Frost action	0.50				
Ts:						
Tremont	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	0.60
	Frost action	1.00	Flooding	0.60	Depth to saturated zone	0.05
	Low strength	0.05				
	Depth to saturated zone	0.05				

TABLE 23.--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
Ud:						
Udorthents	Not Rated		Not Rated		Not Rated	
Uf:						
Udorthents	Not Rated		Not Rated		Not Rated	
Wa:						
Wallkill	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
	Ponding	1.00	Content of organic matter	1.00		
WdA:						
Warsaw	Very limited		Very limited		Not limited	
	Low strength	1.00	Cutbanks cave	1.00		
	Shrink-swell	0.50				
	Frost action	0.50				
WeA:						
Wea	Somewhat limited		Very limited		Not limited	
	Low strength	0.90	Cutbanks cave	1.00		
	Shrink-swell	0.50				
	Frost action	0.50				
Wt:						
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
	Ponding	1.00	Ponding	1.00		

TABLE 24.--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 166 for further explanation of ratings in this table.)

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	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	0.46	Seepage	0.53
BlA:				
Blount	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
BlB:				
Blount	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.32
BlB2:				
Blount	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.32
Bs:				
Brookston	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00		
CcD2:				
Casco	Very limited		Very limited	
	Filtering capacity	1.00	Slope	1.00
	Slope	1.00	Seepage	1.00
CeA:				
Celina	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
CeB:				
Celina	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Slope	0.32

TABLE 24.--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
CeB2:				
Celina	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	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		
CoB:				
Corwin	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Slope	0.32
CrA:				
Crosby	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
CrB:				
Crosby	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Slope	0.32
Ed:				
Edwards	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Content of organic matter	1.00
	Subsidence	1.00	Ponding	1.00
	Ponding	1.00		
Ee:				
Eel	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
ElA:				
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00

TABLE 24.--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
ElB:				
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.32
ElB2:				
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.32
EmA:				
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
EmB:				
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.32
EmB2:				
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46	Slope	0.32
EoC2:				
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Slope	0.04	Slope	1.00
Casco	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Slope	0.04	Slope	1.00
EoD2:				
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Slope	1.00
	Slope	1.00	Seepage	1.00
Casco	Very limited		Very limited	
	Filtering capacity	1.00	Slope	1.00
	Slope	1.00	Seepage	1.00
EpD3:				
Casco	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Slope	0.63	Slope	1.00
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Slope	0.63	Slope	1.00

TABLE 24.--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
EqC2:				
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46	Slope	1.00
	Slope	0.04		
Casco	Somewhat limited		Very limited	
	Slope	0.04	Seepage	1.00
			Slope	1.00
ErB:				
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.32
Miamian	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.32
ErC:				
Eldean	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Slope	0.04	Slope	1.00
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	0.04		
Gn:				
Genesee	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
GwB:				
Glynwood	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.32
GwB2:				
Glynwood	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.32
GwC2:				
Glynwood	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.04		

TABLE 24.--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
GwD2:				
Glynwood	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	1.00		
GyC3:				
Glynwood	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.04		
GyD3:				
Glynwood	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	1.00		
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		
Ko:				
Kokomo	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00		
Ln:				
Linwood	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	1.00	Ponding	1.00
	Subsidence	1.00	Content of organic matter	1.00
	Ponding	1.00		

TABLE 24.--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
LrE2:				
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
MaB:				
Martinsville	Somewhat limited		Very limited	
	Restricted permeability	0.46	Seepage	1.00
			Slope	0.32
Ockley	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46	Slope	0.32
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	0.60	Seepage	0.40
MhA:				
Miamian	Very limited		Not limited	
	Restricted permeability	1.00		
MhB:				
Miamian	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.32
MhB2:				
Miamian	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.32
MhC2:				
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	0.04		
MhD2:				
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	1.00		
MkA:				
Miamian	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.08
	Depth to bedrock	0.27		

TABLE 24.--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
MkB:				
Miamian	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.32
	Depth to bedrock	0.27		
MkB2:				
Miamian	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.32
	Depth to bedrock	0.27		
MkC2:				
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Depth to bedrock	0.27		
	Slope	0.04		
MlC3:				
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	0.04		
MlD3:				
Miamian	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	1.00		
MmE:				
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		
MmF:				
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		
MnA:				
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
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00		

TABLE 24.--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
MnB:				
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
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Slope	0.32
MoA:				
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
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00		
MoB:				
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
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Slope	0.32
MpA:				
Milton	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	1.00		
MpB:				
Milton	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	1.00	Slope	0.32
MpB2:				
Milton	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	1.00	Slope	0.32
MpC2:				
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		
MpD2:				
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		

TABLE 24.--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
Mt:				
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
OdA:				
Odell	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53
OdB:				
Odell	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
Pe:				
Pewamo	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00		
Pg:				
Gravel Pits	Not Rated		Not Rated	
Pq:				
Quarries	Not Rated		Not Rated	
RdA:				
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	Seepage	0.28

TABLE 24.--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
RdB:				
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	Slope	0.32
			Seepage	0.28
RgE:				
Rodman--------------	Very limited		Very limited	
	Filtering capacity	1.00	Slope	1.00
	Slope	1.00	Seepage	1.00
RhB:				
Ritchey-------------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
			Seepage	0.53
			Slope	0.32
RhC:				
Ritchey-------------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	0.63	Slope	1.00
			Seepage	0.53
RhE:				
Ritchey-------------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	1.00	Slope	1.00
			Seepage	0.53
Rs:				
Ross----------------	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	0.53
Rt:				
Ross Variant--------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
			Depth to soft bedrock	1.00
			Seepage	0.53
Sh:				
Shoals--------------	Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		

TABLE 24.--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
Sk:				
Shoals Variant	Very limited		Very limited	
	Flooding	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	0.53
SlA:				
Sleeth	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		
St:				
Stonelick	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
			Seepage	1.00
Ts:				
Tremont	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
Ud:				
Udorthents	Not Rated		Not Rated	
Uf:				
Udorthents	Not Rated		Not Rated	
Wa:				
Wallkill	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	Content of organic matter	1.00
WdA:				
Warsaw	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
WeA:				
Wea	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		

TABLE 24.--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
Wt:				
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		

TABLE 25.--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 166 for further explanation of ratings in this table.)

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Trench sanitary landfill: Value	Area sanitary landfill: Rating class and limiting features	Area sanitary landfill: Value	Daily cover for landfill: Rating class and limiting features	Daily cover for landfill: Value
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				
BlA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
BlB:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
BlB2:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			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
CcD2:						
Casco	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	0.02
CeA:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.19	Depth to saturated zone	0.47
CeB:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.19	Depth to saturated zone	0.47
CeB2:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.19	Depth to saturated zone	0.47
CoA:						
Corwin	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.09

TABLE 25.--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
CoB:						
Corwin	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.09
CrA:						
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
CrB:						
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
Ed:						
Edwards	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	Carbonate content	1.00
					Ponding	1.00
Ee:						
Eel	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.47
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Seepage	1.00	Seepage	1.00		
ElA:						
Eldean	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50				
ElB:						
Eldean	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50				
ElB2:						
Eldean	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50				
EmA:						
Eldean	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50				
EmB:						
Eldean	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50				
EmB2:						
Eldean	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Too clayey	1.00
	Too clayey	1.00				

TABLE 25.--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
EoC2:						
Eldean	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50	Slope	0.04	Slope	0.04
	Slope	0.04				
Casco	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50	Slope	0.04	Slope	0.04
	Slope	0.04				
EoD2:						
Eldean	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Too clayey	0.50
	Too clayey	0.50				
Casco	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Too clayey	0.50
	Too clayey	0.50				
EpD3:						
Casco	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Slope	0.63	Slope	0.63	Slope	0.63
	Too clayey	0.50			Too clayey	0.50
Eldean	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Slope	0.63
	Slope	0.63	Slope	0.63	Too clayey	0.50
	Too clayey	0.50				
EqC2:						
Eldean	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Too clayey	1.00
	Too clayey	1.00	Slope	0.04	Slope	0.04
	Slope	0.04				
Casco	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
ErB:						
Eldean	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50				
Miamian	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
ErC:						
Eldean	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50	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

TABLE 25.--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
Gn:						
Genesee	Very limited		Very limited		Not limited	
	Flooding	1.00	Flooding	1.00		
	Seepage	1.00				
GwB:						
Glynwood	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
GwB2:						
Glynwood	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
GwC2:						
Glynwood	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	Slope	0.04	Too clayey	0.50
	Slope	0.04			Slope	0.04
GwD2:						
Glynwood	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Depth to saturated zone	0.68
	Too clayey	0.50			Too clayey	0.50
GyC3:						
Glynwood	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	Slope	0.04	Too clayey	0.50
	Slope	0.04			Slope	0.04
GyD3:						
Glynwood	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Depth to saturated zone	0.68
	Too clayey	0.50			Too clayey	0.50
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

TABLE 25.--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
Ko:						
Kokomo	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	Hard to compact	1.00
	Too clayey	0.50			Ponding	1.00
					Too clayey	0.50
Ln:						
Linwood	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	Seepage	1.00	Ponding	1.00
	Too clayey	0.50	Ponding	1.00	Gravel content	1.00
					Too clayey	0.50
LrE2:						
Lorenzo	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50				
Rodman	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage	1.00	Seepage	1.00		
MaB:						
Martinsville	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50				
Ockley	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50				
Md:						
Medway	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.47
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
MhA:						
Miamian	Not limited		Not limited		Not limited	
MhB:						
Miamian	Not limited		Not limited		Somewhat limited	
					Too clayey	0.50
MhB2:						
Miamian	Not limited		Not limited		Not limited	
MhC2:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.04	Slope	0.04	Slope	0.04
MhD2:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
MkA:						
Miamian	Very limited		Not limited		Somewhat limited	
	Depth to bedrock	1.00			Too clayey	0.50
	Too clayey	0.50				

TABLE 25.--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
MkB:						
Miamian	Very limited		Not limited		Somewhat limited	
	Depth to bedrock	1.00			Too clayey	0.50
	Too clayey	0.50				
MkB2:						
Miamian	Very limited		Not limited		Somewhat limited	
	Depth to bedrock	1.00			Too clayey	0.50
	Too clayey	0.50				
MkC2:						
Miamian	Very limited		Somewhat limited		Somewhat limited	
	Depth to bedrock	1.00	Slope	0.04	Too clayey	0.50
	Too clayey	0.50			Slope	0.04
	Slope	0.04				
MlC3:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.04	Slope	0.04	Slope	0.04
MlD3:						
Miamian	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
MmE:						
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
MmF:						
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
MnA:						
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			Hard to compact	1.00
					Ponding	1.00
MnB:						
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			Hard to compact	1.00
					Ponding	1.00

TABLE 25.--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
MoA:						
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			Hard to compact	1.00
					Ponding	1.00
MoB:						
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			Hard to compact	1.00
					Ponding	1.00
MpA:						
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
MpB:						
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
MpB2:						
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
MpC2:						
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
MpD2:						
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
Mt:						
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
	Too clayey	0.50			Too clayey	0.50
OcA:						
Ockley--------------	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50				
OcB:						
Ockley--------------	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Too clayey	0.50
	Too clayey	0.50				

TABLE 25.--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
OdA:						
Odell	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
OdB:						
Odell	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
Pe:						
Pewamo	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
Pg:						
Gravel Pits	Not Rated		Not Rated		Not Rated	
Pq:						
Quarries	Not Rated		Not Rated		Not Rated	
RdA:						
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	Too clayey	1.00
	Too clayey	1.00			Hard to compact	1.00
					Depth to saturated zone	1.00
RdB:						
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	Too clayey	1.00
	Too clayey	1.00			Hard to compact	1.00
					Depth to saturated zone	1.00
RgE:						
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	0.04
RhB:						
Ritchey	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
RhC:						
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

TABLE 25.--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
RhE:						
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	0.50			Too clayey	0.50
Rs:						
Ross	Very limited		Very limited		Not limited	
	Flooding	1.00	Flooding	1.00		
Rt:						
Ross Variant	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
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		
	Seepage	1.00				
Sk:						
Shoals Variant	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00		
SlA:						
Sleeth	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00			Too clayey	0.50
	Too clayey	0.50				
St:						
Stonelick	Very limited		Very limited		Not limited	
	Flooding	1.00	Flooding	1.00		
	Seepage	1.00	Seepage	1.00		
Ts:						
Tremont	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Carbonate content	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.71
	Seepage	1.00				
Ud:						
Udorthents	Not Rated		Not Rated		Not Rated	
Uf:						
Udorthents	Not Rated		Not Rated		Not Rated	
Wa:						
Wallkill	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
	Seepage	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00			Gravel content	1.00

TABLE 25.--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
WdA:						
Warsaw	Very limited		Very limited		Somewhat limited	
	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				
Wt:						
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
	Seepage	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00			Too clayey	0.50
	Too clayey	0.50				

TABLE 26.--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 167 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				
BlA:						
Blount	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
	Too acid	0.11	Too acid	0.42	Too acid	0.42
BlB:						
Blount	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
	Too acid	0.11	Too acid	0.42	Too acid	0.42
					Too steep for surface application	0.08
BlB2:						
Blount	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
	Too acid	0.11	Too acid	0.42	Too acid	0.42
					Too steep for surface application	0.08
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	Restricted permeability	0.31	Restricted permeability	0.31
	Restricted permeability	0.41				

TABLE 26.--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
CcD2:						
Casco	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
CeA:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.86
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
CeB:						
Celina	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.86
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
					Too steep for surface application	0.08
CeB2:						
Celina	Very limited		Somewhat limited		Somewhat limited	
	Dense layer	1.00	Depth to saturated zone	0.86	Depth to saturated zone	0.86
	Depth to saturated zone	0.86	Restricted permeability	0.31	Restricted permeability	0.31
	Restricted permeability	0.41			Too steep for surface application	0.08
CoA:						
Corwin	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Depth to saturated zone	0.43
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
CoB:						
Corwin	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.43	Depth to saturated zone	0.43	Depth to saturated zone	0.43
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
					Too steep for surface application	0.08
CrA:						
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	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.03	Too acid	0.14	Too acid	0.14

TABLE 26.--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
CrB:						
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
	Dense layer	1.00	Restricted permeability	0.31	Restricted permeability	0.31
	Restricted permeability	0.41	Too acid	0.14	Too acid	0.14
	Too acid	0.03			Too steep for surface application	0.08
Ed:						
Edwards	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	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	Droughty	0.11	Droughty	0.11
	Droughty	0.11	Filtering capacity	0.01	Filtering capacity	0.01
Ee:						
Eel	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.86
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Flooding	0.60
ElA:						
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.90	Droughty	0.90	Droughty	0.90
	Shallow to Discontinuity	0.46	Shallow to Discontinuity	0.46		
ElB:						
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.93	Droughty	0.93	Droughty	0.93
	Shallow to Discontinuity	0.54	Shallow to Discontinuity	0.54	Too steep for surface application	0.08
ElB2:						
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	1.00	Droughty	1.00	Droughty	1.00
	Shallow to Discontinuity	0.90	Shallow to Discontinuity	0.90	Too steep for surface application	0.08

TABLE 26.--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
EmA:						
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.90	Droughty	0.90	Droughty	0.90
	Shallow to Discontinuity	0.46	Shallow to Discontinuity	0.46		
EmB:						
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.93	Droughty	0.93	Droughty	0.93
	Shallow to Discontinuity	0.54	Shallow to Discontinuity	0.54	Too steep for surface application	0.08
EmB2:						
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.96	Droughty	0.96	Droughty	0.96
	Shallow to Discontinuity	0.90	Shallow to Discontinuity	0.90	Too steep for surface application	0.08
EoC2:						
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	1.00	Droughty	1.00	Droughty	1.00
	Dense layer	1.00	Shallow to Discontinuity	0.95	Too steep for surface application	1.00
	Shallow to Discontinuity	0.95	Slope	0.04	Too steep for sprinkler application	0.22
	Slope	0.04				
Casco	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	1.00	Droughty	1.00	Droughty	1.00
	Shallow to Discontinuity	1.00	Shallow to Discontinuity	1.00	Too steep for surface application	1.00
	Slope	0.04	Slope	0.04	Too steep for sprinkler application	0.22

TABLE 26.--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
EoD2:						
Eldean	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	1.00	Droughty	1.00	Too steep for sprinkler application	1.00
	Shallow to Discontinuity	0.79	Shallow to Discontinuity	0.79	Droughty	1.00
Casco	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
EpD3:						
Casco	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	1.00	Droughty	1.00	Droughty	1.00
	Shallow to Discontinuity	1.00	Shallow to Discontinuity	1.00	Too steep for surface application	1.00
	Slope	0.63	Slope	0.63	Too steep for sprinkler application	0.78
Eldean	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	0.63	Slope	0.63	Too steep for sprinkler application	0.78

TABLE 26.--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
EqC2:						
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.98	Droughty	0.98	Too steep for surface application	1.00
	Shallow to Discontinuity	0.50	Shallow to Discontinuity	0.50	Droughty	0.98
	Slope	0.04	Slope	0.04	Too steep for sprinkler application	0.22
Casco	Very limited		Very limited		Very limited	
	Shallow to Discontinuity	1.00	Droughty	1.00	Droughty	1.00
	Droughty	1.00	Shallow to Discontinuity	1.00	Too steep for surface application	1.00
	Slope	0.04	Slope	0.04	Too steep for sprinkler application	0.22
ErB:						
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.92	Droughty	0.92	Droughty	0.92
	Shallow to Discontinuity	0.54	Shallow to Discontinuity	0.54	Too steep for surface application	0.08
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.01	Too acid	0.03	Too steep for surface application	0.08
					Too acid	0.03
ErC:						
Eldean	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	1.00	Droughty	1.00	Droughty	1.00
	Shallow to Discontinuity	0.90	Shallow to Discontinuity	0.90	Too steep for surface application	1.00
	Slope	0.04	Slope	0.04	Too steep for sprinkler application	0.22
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.41	Restricted permeability	0.31	Too steep for surface application	1.00
	Slope	0.04	Slope	0.04	Restricted permeability	0.31
	Too acid	0.01	Too acid	0.03	Too steep for sprinkler application	0.22
					Too acid	0.03

TABLE 26.--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
Gn:						
Genesee	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
GwB:						
Glynwood	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
					Too steep for surface application	0.08
GwB2:						
Glynwood	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.95
					Too steep for surface application	0.08
GwC2:						
Glynwood	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Too steep for surface application	1.00
	Slope	0.04	Slope	0.04	Depth to saturated zone	0.95
					Too steep for sprinkler application	0.22
GwD2:						
Glynwood	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Too steep for surface application	1.00
	Slope	1.00	Slope	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	0.95	Too steep for sprinkler application	1.00
					Depth to saturated zone	0.95
GyC3:						
Glynwood	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Dense layer	1.00	Depth to saturated zone	0.95	Too steep for surface application	1.00
	Depth to saturated zone	0.95	Slope	0.04	Depth to saturated zone	0.95
	Slope	0.04			Too steep for sprinkler application	0.22

TABLE 26.--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
GyD3:						
Glynwood------------	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Too steep for surface application	1.00
	Dense layer	1.00	Slope	1.00	Restricted permeability	1.00
	Slope	1.00	Depth to saturated zone	0.95	Too steep for sprinkler application	1.00
	Depth to saturated zone	0.95			Depth to saturated zone	0.95
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 26.--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
Ko:						
Kokomo	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	Restricted permeability	0.31	Restricted permeability	0.31
	Restricted permeability	0.41				
Ln:						
Linwood	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	0.90	Restricted permeability	0.31	Restricted permeability	0.31
	Restricted permeability	0.41				
LrE2:						
Lorenzo	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
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				
MaB:						
Martinsville	Not limited		Not limited		Somewhat limited	
					Too steep for surface application	0.08
Ockley	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Too acid	0.01	Too acid	0.03	Too steep for surface application	0.08
					Too acid	0.03

TABLE 26.--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
Md:						
Medway	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.86
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Flooding	0.60
MhA:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.01	Too acid	0.03	Too acid	0.03
MhB:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.01	Too acid	0.03	Too steep for surface application	0.08
					Too acid	0.03
MhB2:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.01	Too acid	0.03	Too steep for surface application	0.08
					Too acid	0.03
MhC2:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.41	Restricted permeability	0.31	Too steep for surface application	1.00
	Slope	0.04	Slope	0.04	Restricted permeability	0.31
	Too acid	0.01	Too acid	0.03	Too steep for sprinkler application	0.22
					Too acid	0.03
MhD2:						
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	0.01	Too acid	0.03	Restricted permeability	0.31
					Too acid	0.03
MkA:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.01	Too acid	0.03	Too acid	0.03

TABLE 26.--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
MkB:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.01	Too acid	0.03	Too steep for surface application	0.08
					Too acid	0.03
MkB2:						
Miamian	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.01	Too acid	0.03	Too steep for surface application	0.08
					Too acid	0.03
MkC2:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.41	Restricted permeability	0.31	Too steep for surface application	1.00
	Slope	0.04	Slope	0.04	Restricted permeability	0.31
	Too acid	0.01	Too acid	0.03	Too steep for sprinkler application	0.22
					Too acid	0.03
MlC3:						
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	Slope	0.04	Restricted permeability	0.31
	Slope	0.04	Too acid	0.03	Too steep for sprinkler application	0.22
	Too acid	0.01			Too acid	0.03
MlD3:						
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	0.03	Restricted permeability	0.31
	Too acid	0.01			Too acid	0.03

TABLE 26.--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
MmE:						
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	0.02	Restricted permeability	0.31
	Droughty	0.02			Droughty	0.02
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	0.01	Too acid	0.03	Restricted permeability	0.31
					Too acid	0.03
MmF:						
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	0.02	Restricted permeability	0.31
	Droughty	0.02			Droughty	0.02
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	0.03	Restricted permeability	0.31
	Too acid	0.01			Too acid	0.03
MnA:						
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	Depth to bedrock	0.46	Depth to bedrock	0.46
	Depth to bedrock	0.46	Droughty	0.37	Droughty	0.37
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31

TABLE 26.--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
MnB:						
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	Depth to bedrock	0.46	Depth to bedrock	0.46
	Depth to bedrock	0.46	Droughty	0.40	Droughty	0.40
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
MoA:						
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	Depth to bedrock	0.46	Depth to bedrock	0.46
	Depth to bedrock	0.46	Restricted permeability	0.31	Restricted permeability	0.31
	Restricted permeability	0.41	Droughty	0.30	Droughty	0.30
MoB:						
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	Depth to bedrock	0.46	Depth to bedrock	0.46
	Depth to bedrock	0.46	Droughty	0.33	Droughty	0.33
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
MpA:						
Milton	Somewhat limited		Somewhat limited		Somewhat limited	
	Droughty	0.65	Droughty	0.65	Droughty	0.65
	Depth to bedrock	0.54	Depth to bedrock	0.54	Depth to bedrock	0.54
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.01	Too acid	0.03	Too acid	0.03
MpB:						
Milton	Somewhat limited		Somewhat limited		Somewhat limited	
	Droughty	0.65	Droughty	0.65	Droughty	0.65
	Depth to bedrock	0.54	Depth to bedrock	0.54	Depth to bedrock	0.54
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.01	Too acid	0.03	Too steep for surface application	0.08
					Too acid	0.03
MpB2:						
Milton	Somewhat limited		Somewhat limited		Somewhat limited	
	Droughty	0.65	Droughty	0.65	Droughty	0.65
	Depth to bedrock	0.54	Depth to bedrock	0.54	Depth to bedrock	0.54
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.01	Too acid	0.03	Too steep for surface application	0.08
					Too acid	0.03

TABLE 26.--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
MpC2:						
Milton	Somewhat limited		Somewhat limited		Very limited	
	Droughty	0.65	Droughty	0.65	Too steep for surface application	1.00
	Depth to bedrock	0.54	Depth to bedrock	0.54	Droughty	0.65
	Restricted permeability	0.41	Restricted permeability	0.31	Depth to bedrock	0.54
	Slope	0.04	Slope	0.04	Restricted permeability	0.31
	Too acid	0.01	Too acid	0.03	Too steep for sprinkler application	0.22
MpD2:						
Milton	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Droughty	0.65	Droughty	0.65	Too steep for sprinkler application	1.00
	Depth to bedrock	0.54	Depth to bedrock	0.54	Droughty	0.65
	Restricted permeability	0.41	Restricted permeability	0.31	Depth to bedrock	0.54
	Too acid	0.01	Too acid	0.03	Restricted permeability	0.31
Mt:						
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	0.01	Too acid	0.03	Too acid	0.03
OcB:						
Ockley	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Too acid	0.01	Too acid	0.03	Too steep for surface application	0.08
					Too acid	0.03
OdA:						
Odell	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

TABLE 26.--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
OdB:						
Odell	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 steep for surface application	0.08
Pe:						
Pewamo	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	0.50	Restricted permeability	0.31	Restricted permeability	0.31
	Restricted permeability	0.41				
Pg:						
Gravel Pits	Not rated		Not rated		Not rated	
Pq:						
Quarries	Not rated		Not rated		Not rated	
RdA:						
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	Restricted permeability	0.31	Restricted permeability	0.31
	Depth to bedrock	0.16	Depth to bedrock	0.16	Depth to bedrock	0.16
	Droughty	0.12	Too acid	0.14	Too acid	0.14
	Too acid	0.03	Droughty	0.12	Droughty	0.12
RdB:						
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	Too acid	0.42	Too acid	0.42
	Depth to bedrock	0.16	Restricted permeability	0.31	Restricted permeability	0.31
	Droughty	0.12	Depth to bedrock	0.16	Depth to bedrock	0.16
	Too acid	0.11	Droughty	0.12	Droughty	0.12
RgE:						
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				

TABLE 26.--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
RhB:						
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
RhC:						
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
RhE:						
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
Rs:						
Ross	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Flooding	0.60
Rt:						
Ross Variant	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				
Sh:						
Shoals	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
	Flooding	1.00	Flooding	1.00	Flooding	0.60
Sk:						
Shoals Variant	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
	Depth to bedrock	0.06	Depth to bedrock	0.06	Depth to bedrock	0.06
SlA:						
Sleeth	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

TABLE 26.--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
St:						
Stonelick	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Flooding	0.60
	Droughty	0.24	Droughty	0.24	Droughty	0.24
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
Ts:						
Tremont	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.96
	Depth to saturated zone	0.96	Depth to saturated zone	0.96	Flooding	0.60
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
Ud:						
Udorthents	Not rated		Not rated		Not rated	
Uf:						
Udorthents	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	
Wa:						
Wallkill	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				
WdA:						
Warsaw	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.07	Droughty	0.07	Droughty	0.07
	Shallow to Discontinuity	0.03	Shallow to Discontinuity	0.03		
WeA:						
Wea	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
Wt:						
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	Restricted permeability	0.31	Restricted permeability	0.31
	Restricted permeability	0.41				

TABLE 27.--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 169 for further explanation of ratings in this table.)

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
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
BlA:						
Blount	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Slow refill	1.00
			Piping	0.50	Cutbanks cave	0.10
BlB:						
Blount	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Slow refill	1.00
			Piping	0.50	Cutbanks cave	0.10
BlB2:						
Blount	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Slow refill	1.00
			Piping	0.50	Cutbanks cave	0.10
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		
CcD2:						
Casco	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Slope	0.04				
CeA:						
Celina	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.86	Depth to water	1.00
			Piping	0.50		
CeB:						
Celina	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.86	Depth to water	1.00
			Piping	0.50		
CeB2:						
Celina	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.86	Depth to water	1.00
			Piping	0.50		

TABLE 27.--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
CoA:						
Corwin	Not limited		Somewhat limited		Somewhat limited	
			Piping	0.50	Slow refill	0.96
			Depth to saturated zone	0.43	Depth to water	0.25
					Cutbanks cave	0.10
CoB:						
Corwin	Not limited		Somewhat limited		Somewhat limited	
			Piping	0.50	Slow refill	0.96
			Depth to saturated zone	0.43	Depth to water	0.25
					Cutbanks cave	0.10
CrA:						
Crosby	Not limited		Very limited		Somewhat limited	
			Depth to saturated zone	1.00	Slow refill	0.96
			Piping	0.50	Cutbanks cave	0.10
CrB:						
Crosby	Not limited		Very limited		Somewhat limited	
			Depth to saturated zone	1.00	Slow refill	0.96
			Piping	0.50	Cutbanks cave	0.10
Ed:						
Edwards	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		
Ee:						
Eel	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	Cutbanks cave	1.00
			Depth to saturated zone	0.86	Depth to water	0.06
			Thin layer	0.20		
ElA:						
Eldean	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	0.50		
ElB:						
Eldean	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	0.50		
ElB2:						
Eldean	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	0.50		
EmA:						
Eldean	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	0.50		

TABLE 27.--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
EmB:						
Eldean	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	0.50		
EmB2:						
Eldean	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	0.50		
EoC2:						
Eldean	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	0.50		
Casco	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	0.50		
EoD2:						
Eldean	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Slope	0.03	Piping	0.50		
Casco	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Slope	0.03	Piping	0.50		
EpD3:						
Casco	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Slope	0.01				
Eldean	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Slope	0.01	Piping	0.50		
EqC2:						
Eldean	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	0.50		
Casco	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
ErB:						
Eldean	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	0.50		
Miamian	Not limited		Somewhat limited		Very limited	
			Piping	0.50	Depth to water	1.00
ErC:						
Eldean	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	0.50		
Miamian	Not limited		Somewhat limited		Very limited	
			Piping	0.50	Depth to water	1.00

TABLE 27.--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
Gn:						
Genesee	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	Depth to water	1.00
			Thin layer	0.50		
GwB:						
Glynwood	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.95	Slow refill	1.00
			Piping	0.50	Cutbanks cave	0.10
					Depth to water	0.02
GwB2:						
Glynwood	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.95	Slow refill	1.00
			Piping	0.50	Cutbanks cave	0.10
					Depth to water	0.02
GwC2:						
Glynwood	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.95	Slow refill	1.00
			Piping	0.50	Cutbanks cave	0.10
					Depth to water	0.02
GwD2:						
Glynwood	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.03	Depth to saturated zone	0.95	Slow refill	1.00
			Piping	0.50	Cutbanks cave	0.10
					Depth to water	0.02
GyC3:						
Glynwood	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.95	Slow refill	1.00
			Piping	0.50	Cutbanks cave	0.10
					Depth to water	0.02
GyD3:						
Glynwood	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.03	Depth to saturated zone	0.95	Slow refill	1.00
			Piping	0.50	Cutbanks cave	0.10
					Depth to water	0.02
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

TABLE 27.--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
Ko:						
Kokomo	Not limited		Very limited		Somewhat limited	
			Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Hard to compact	1.00		
Ln:						
Linwood	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		
LrE2:						
Lorenzo	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Slope	0.59	Piping	0.50		
Rodman	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Slope	0.68	Piping	0.50		
MaB:						
Martinsville	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Piping	0.50	Depth to water	1.00
			Thin layer	0.30		
Ockley	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Piping	0.50	Depth to water	1.00
Md:						
Medway	Somewhat limited		Somewhat limited		Somewhat limited	
	Seepage	0.37	Depth to saturated zone	0.86	Slow refill	0.36
			Piping	0.50	Cutbanks cave	0.10
					Depth to water	0.06
MhA:						
Miamian	Not limited		Somewhat limited		Very limited	
			Piping	0.50	Depth to water	1.00
MhB:						
Miamian	Not limited		Somewhat limited		Very limited	
			Piping	0.50	Depth to water	1.00
MhB2:						
Miamian	Not limited		Somewhat limited		Very limited	
			Piping	0.50	Depth to water	1.00
MhC2:						
Miamian	Not limited		Somewhat limited		Very limited	
			Piping	0.50	Depth to water	1.00
MhD2:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.03	Piping	0.50	Depth to water	1.00
MkA:						
Miamian	Not limited		Somewhat limited		Very limited	
			Piping	0.50	Depth to water	1.00
			Thin layer	0.13		

TABLE 27.--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
MkB:						
Miamian	Not limited		Somewhat limited		Very limited	
			Piping	0.50	Depth to water	1.00
			Thin layer	0.13		
MkB2:						
Miamian	Not limited		Somewhat limited		Very limited	
			Piping	0.50	Depth to water	1.00
MkC2:						
Miamian	Not limited		Somewhat limited		Very limited	
			Piping	0.50	Depth to water	1.00
MlC3:						
Miamian	Not limited		Somewhat limited		Very limited	
			Piping	0.50	Depth to water	1.00
MlD3:						
Miamian	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.03	Piping	0.50	Depth to water	1.00
MmE:						
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
MmF:						
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
MnA:						
Millsdale	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.86	Ponding	1.00	Depth to bedrock	1.00
			Depth to saturated zone	1.00	Slow refill	0.28
			Hard to compact	1.00	Cutbanks cave	0.10
			Thin layer	0.40		
MnB:						
Millsdale	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.86	Ponding	1.00	Depth to bedrock	1.00
			Depth to saturated zone	1.00	Slow refill	0.28
			Hard to compact	1.00	Cutbanks cave	0.10
			Thin layer	0.30		
MoA:						
Millsdale	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.86	Ponding	1.00	Depth to bedrock	1.00
			Depth to saturated zone	1.00	Slow refill	0.28
			Hard to compact	1.00	Cutbanks cave	0.10
			Thin layer	0.67		

TABLE 27.--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
MoB:						
Millsdale	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.86	Ponding	1.00	Depth to bedrock	1.00
			Depth to saturated zone	1.00	Slow refill	0.28
			Hard to compact	1.00	Cutbanks cave	0.10
			Thin layer	0.57		
MpA:						
Milton	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.88	Thin layer	1.00	Depth to water	1.00
			Piping	0.50		
MpB:						
Milton	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.88	Thin layer	1.00	Depth to water	1.00
			Piping	0.50		
MpB2:						
Milton	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.88	Thin layer	1.00	Depth to water	1.00
			Piping	0.50		
MpC2:						
Milton	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.88	Thin layer	1.00	Depth to water	1.00
			Piping	0.50		
MpD2:						
Milton	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.88	Thin layer	1.00	Depth to water	1.00
	Slope	0.03	Piping	0.50		
Mt:						
Montgomery	Not limited		Very limited		Somewhat limited	
			Ponding	1.00	Slow refill	0.28
			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
OdA:						
Odell	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
			Thin layer	0.13		
OdB:						
Odell	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
			Thin layer	0.03		

TABLE 27.--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
Pe:						
Pewamo	Not limited		Very limited		Somewhat limited	
			Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.50		
Pg:						
Gravel Pits	Not Rated		Not Rated		Not Rated	
Pq:						
Quarries	Not Rated		Not Rated		Not Rated	
RdA:						
Randolph	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.74	Depth to saturated zone	1.00	Depth to bedrock	1.00
	Seepage	0.25	Hard to compact	1.00	Cutbanks cave	1.00
			Thin layer	0.37	Slow refill	0.46
RdB:						
Randolph	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.74	Depth to saturated zone	1.00	Depth to bedrock	1.00
	Seepage	0.25	Hard to compact	1.00	Cutbanks cave	1.00
			Thin layer	0.37	Slow refill	0.46
RgE:						
Rodman	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
	Slope	0.36				
RhB:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
			Piping	0.50		
RhC:						
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		
RhE:						
Ritchey	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
	Slope	0.68	Piping	0.50		
Rs:						
Ross	Somewhat limited		Very limited		Very limited	
	Seepage	0.50	Piping	1.00	Depth to water	1.00
Rt:						
Ross Variant	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
			Piping	0.50		
Sh:						
Shoals	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Piping	1.00		

TABLE 27.--WATER MANAGEMENT PART 1--Continued

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
Sk:						
Shoals Variant------	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.66	Depth to saturated zone	1.00	Depth to bedrock	1.00
	Seepage	0.50	Piping	1.00	Slow refill	0.28
					Cutbanks cave	0.10
SlA:						
Sleeth--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Piping	0.50		
St:						
Stonelick-----------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	1.00		
			Thin layer	0.07		
Ts:						
Tremont-------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Cutbanks cave	1.00
			Piping	1.00	Depth to water	0.02
			Depth to saturated zone	0.96		
Ud:						
Udorthents----------	Not Rated		Not Rated		Not Rated	
Uf:						
Udorthents----------	Not Rated		Not Rated		Not Rated	
W:						
Water---------------	Not Rated		Not Rated		Not Rated	
Wa:						
Wallkill------------	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		
WdA:						
Warsaw--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to water	1.00
			Piping	0.50		
			Thin layer	0.07		
WeA:						
Wea-----------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Piping	0.50	Depth to water	1.00
Wt:						
Westland------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00		
			Piping	0.50		

TABLE 28.--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 169 for further explanation of ratings in this table.)

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
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
BlA:						
Blount	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	0.91
	Restricted permeability	0.91	Restricted permeability	0.91		
BlB:						
Blount	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	0.91
	Restricted permeability	0.91	Restricted permeability	0.91	Slope	0.04
BlB2:						
Blount	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	0.91
	Restricted permeability	0.91	Restricted permeability	0.91	Slope	0.04
Bs:						
Brookston	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.22	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.22	Restricted permeability	0.22
CcD2:						
Casco	Very Limited		Very Limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00			Depth to saturated zone	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	0.47	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22		

TABLE 28.--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
CeB:						
Celina	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.47	Depth to saturated zone	1.00	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Slope	0.04
CeB2:						
Celina	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.47	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		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
	Depth to saturated zone	0.09				
CoB:						
Corwin	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
	Depth to saturated zone	0.09			Slope	0.04
CrA:						
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	0.22
	Restricted permeability	0.22	Restricted permeability	0.22		
CrB:						
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	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Slope	0.04
Ed:						
Edwards	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.99	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.99	Subsidence	1.00
					Restricted permeability	0.99

TABLE 28.--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
Ee:						
Eel	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.47	Depth to saturated zone	1.00	Flooding	1.00
ElA:						
Eldean	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Droughty	1.00				
ElB:						
Eldean	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Droughty	1.00			Slope	0.04
ElB2:						
Eldean	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Droughty	1.00			Slope	0.04
EmA:						
Eldean	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Droughty	1.00				
EmB:						
Eldean	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Droughty	1.00			Slope	0.04
EmB2:						
Eldean	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Droughty	1.00			Slope	0.04
EoC2:						
Eldean	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Droughty	1.00	Slope	1.00	Slope	0.96
	Slope	1.00				
Casco	Very Limited		Very Limited		Very limited	
	Droughty	1.00	Slope	1.00	Depth to saturated zone	1.00
	Slope	1.00			Slope	0.96
EoD2:						
Eldean	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				
Casco	Very Limited		Very Limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Droughty	1.00			Depth to saturated zone	1.00

TABLE 28.--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
EpD3:						
Casco	Very Limited		Very Limited		Very limited	
	Droughty	1.00	Slope	1.00	Depth to saturated zone	1.00
	Slope	1.00			Slope	1.00
Eldean	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Droughty	1.00	Slope	1.00	Slope	1.00
	Slope	1.00				
EqC2:						
Eldean	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				
Casco	Very Limited		Very Limited		Very limited	
	Droughty	1.00	Slope	1.00	Depth to saturated zone	1.00
	Slope	1.00			Slope	0.96
ErB:						
Eldean	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Droughty	1.00			Slope	0.04
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
ErC:						
Eldean	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Droughty	1.00	Slope	1.00	Slope	0.96
	Slope	1.00				
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
Gn:						
Genesee	Not Limited		Not Limited		Very limited	
					Flooding	1.00
					Depth to saturated zone	1.00
GwB:						
Glynwood	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Restricted permeability	0.91	Depth to saturated zone	1.00	Restricted permeability	0.91
	Depth to saturated zone	0.68	Restricted permeability	0.91	Slope	0.04

TABLE 28.--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
GwB2:						
Glynwood	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Restricted permeability	0.91	Depth to saturated zone	1.00	Restricted permeability	0.91
	Depth to saturated zone	0.68	Restricted permeability	0.91	Slope	0.04
GwC2:						
Glynwood	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Slope	1.00	Slope	1.00	Slope	0.96
	Restricted permeability	0.91	Depth to saturated zone	1.00	Restricted permeability	0.91
	Depth to saturated zone	0.68	Restricted permeability	0.91		
GwD2:						
Glynwood	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	0.91	Depth to saturated zone	1.00	Restricted permeability	0.91
	Depth to saturated zone	0.68	Restricted permeability	0.91		
GyC3:						
Glynwood	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Slope	1.00	Slope	1.00	Slope	0.96
	Restricted permeability	0.91	Depth to saturated zone	1.00	Restricted permeability	0.91
	Depth to saturated zone	0.68	Restricted permeability	0.91		
GyD3:						
Glynwood	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	0.91	Depth to saturated zone	1.00	Restricted permeability	0.91
	Depth to saturated zone	0.68	Restricted permeability	0.91		
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

TABLE 28.--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
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
Ko:						
Kokomo	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.22	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.22	Restricted permeability	0.22
Ln:						
Linwood	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.22	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.22	Subsidence	1.00
					Restricted permeability	0.22
LrE2:						
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
MaB:						
Martinsville	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
					Slope	0.04
Ockley	Very Limited		Very Limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
					Slope	0.04
Md:						
Medway	Somewhat Limited		Very Limited		Very limited	
	Depth to saturated zone	0.47	Depth to saturated zone	1.00	Frost action	1.00
					Flooding	1.00

TABLE 28.--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
MhA:						
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
MhB:						
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
MhB2:						
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
MhC2:						
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
MhD2:						
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
MkA:						
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
MkB:						
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
MkB2:						
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 28.--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
MkC2:						
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
MlC3:						
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
MlD3:						
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
MmE:						
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
MmF:						
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
MnA:						
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
	Restricted permeability	0.22	Depth to bedrock	0.46	Restricted permeability	0.22
			Restricted permeability	0.22	Depth to bedrock	0.12

TABLE 28.--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
MnB:						
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
	Restricted permeability	0.22	Depth to bedrock	0.46	Restricted permeability	0.22
			Restricted permeability	0.22	Depth to bedrock	0.12
					Slope	0.04
MoA:						
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
	Restricted permeability	0.22	Depth to bedrock	0.46	Restricted permeability	0.22
			Restricted permeability	0.22	Depth to bedrock	0.12
MoB:						
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
	Restricted permeability	0.22	Depth to bedrock	0.46	Restricted permeability	0.22
			Restricted permeability	0.22	Depth to bedrock	0.12
					Slope	0.04
MpA:						
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	0.54	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to bedrock	0.14
MpB:						
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	0.54	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to bedrock	0.14
					Slope	0.04
MpB2:						
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	0.54	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to bedrock	0.14
					Slope	0.04

TABLE 28.--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
MpC2:						
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	0.54	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to bedrock	0.14
MpD2:						
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	0.54	Restricted permeability	0.22
	Restricted permeability	0.22	Restricted permeability	0.22	Depth to bedrock	0.14
Mt:						
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	0.91	Ponding	1.00	Restricted permeability	0.91
			Restricted permeability	0.91		
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
OdA:						
Odell	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		
OdB:						
Odell	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	Slope	0.04

TABLE 28.--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
Pe:						
Pewamo	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	Restricted permeability	0.22
			Restricted permeability	0.22		
Pg:						
Gravel Pits	Not Rated		Not Rated		Not Rated	
Pq:						
Quarries	Not Rated		Not Rated		Not Rated	
RdA:						
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	Restricted permeability	0.22	Depth to bedrock	0.04
	Restricted permeability	0.22	Depth to bedrock	0.15		
RdB:						
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	Restricted permeability	0.22	Slope	0.04
	Restricted permeability	0.22	Depth to bedrock	0.15	Depth to bedrock	0.04
RgE:						
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
RhB:						
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	0.66
	Droughty	1.00	Content of large stones	0.13	Slope	0.04
	Content of large stones	0.13				
RhC:						
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	0.66
	Slope	1.00	Content of large stones	0.13		
	Content of large stones	0.13				

TABLE 28.--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
RhE:						
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	0.74
	Droughty	1.00	Content of large stones	0.26		
	Content of large stones	0.26				
Rs:						
Ross	Not Limited		Not Limited		Very limited	
					Flooding	1.00
					Depth to saturated zone	1.00
Rt:						
Ross Variant	Very Limited		Very Limited		Very limited	
	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	0.78
	Droughty	1.00				
Sh:						
Shoals	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
					Flooding	1.00
Sk:						
Shoals Variant	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	Flooding	1.00
	Depth to saturated zone	1.00	Depth to bedrock	0.06	Depth to bedrock	0.02
SlA:						
Sleeth	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
St:						
Stonelick	Not Limited		Not Limited		Very limited	
					Flooding	1.00
					Depth to saturated zone	1.00
Ts:						
Tremont	Somewhat Limited		Very Limited		Very limited	
	Depth to saturated zone	0.71	Depth to saturated zone	1.00	Frost action	1.00
					Flooding	1.00
Ud:						
Udorthents	Not Rated		Not Rated		Not Rated	
Uf:						
Udorthents	Not Rated		Not Rated		Not Rated	

TABLE 28.--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
Wa:						
Wallkill	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
			Ponding	1.00		
WdA:						
Warsaw	Not Limited		Not Limited		Very limited	
					Depth to saturated zone	1.00
WeA:						
Wea	Not Limited		Not Limited		Very limited	
					Depth to saturated zone	1.00
Wt:						
Westland	Very Limited		Very Limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Restricted permeability	0.22	Ponding	1.00	Frost action	1.00
			Restricted permeability	0.22	Restricted permeability	0.22

TABLE 29.--ENGINEERING INDEX PROPERTIES

(Absence of an entry indicates that the data were not estimated. See text on page 171 for additional information.)

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	
Ag: Algiers---------	0-23	Silt loam	CL-ML, ML	A-4	0	0	100	100	90-100	70-90	25-40	4-10
	23-60	Silty clay loam, clay loam	CL, CL-ML	A-6, A-7	0	0	100	90-100	90-100	75-95	25-45	5-16
BlA: Blount----------	0-9	Silt loam	ML	A-4	0	0	100	100	90-100	75-95	30-40	6-10
	9-33	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	95-100	90-100	80-95	40-52	18-26
	33-60	Clay loam	CL	A-4, A-6	0	0	90-100	85-100	80-100	70-80	30-38	12-20
BlB: Blount----------	0-9	Silt loam	ML	A-4	0	0	100	100	90-100	75-95	30-40	6-10
	9-33	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	95-100	90-100	80-95	40-52	18-26
	33-60	Clay loam	CL	A-4, A-6	0	0	90-100	85-100	80-100	70-80	30-38	12-20
BlB2: Blount----------	0-5	Silt loam	ML	A-4	0	0	100	100	90-100	75-95	30-40	6-10
	5-26	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	95-100	90-100	80-95	40-52	18-26
	26-60	Clay loam	CL	A-7	0	0	90-100	85-100	80-100	70-80	30-38	12-20
Bs: Brookston-------	0-39	Silty clay loam	CH, CL, ML	A-6, A-7	0	0	100	95-100	90-100	80-95	38-52	14-24
	39-60	Loam	CL, ML	A-4, A-6	0-1	0	95-100	85-100	80-95	60-75	20-35	6-14
CcD2: Casco-----------	0-7	Gravelly loam	SC-SM, SM	A-1, A-2	0	0	55-90	50-75	30-60	15-50	18-31	2-10
	7-17	Clay loam, sandy clay loam, gravelly loam	CL, GC, SC	A-2, A-6, A-7	0-1	0-5	55-100	50-100	40-90	20-80	25-46	11-26
	17-80	Stratified gravel to loamy sand	GP, GP-GM, SP, SP-SM	A-1, A-2, A-3	0-3	0-30	25-100	20-95	10-75	2-10	0-14	NP
CeA: Celina----------	0-12	Silt loam	ML	A-4	0	0	100	100	90-100	70-90	30-40	6-10
	12-24	Clay loam, silty clay	CL	A-6, A-7	0	0	95-100	90-100	90-100	70-90	35-45	16-24
	24-60	Loam	CL, ML	A-4, A-6	0	0	90-100	80-100	75-95	55-75	20-35	6-14
CeB: Celina----------	0-11	Silt loam	ML	A-4	0	0	100	100	90-100	70-90	30-40	6-10
	11-24	Clay loam, silty clay	CL	A-6, A-7	0	0	95-100	90-100	90-100	70-90	35-45	16-24
	24-60	Loam	CL, ML	A-4, A-6	0	0	90-100	80-100	75-95	55-75	20-35	6-14
CeB2: Celina----------	0-6	Silt loam	ML	A-4	0	0	100	100	90-100	70-90	30-40	6-10
	6-19	Clay loam, silty clay	CL	A-6, A-7	0	0	95-100	90-100	90-100	70-90	35-45	16-24
	19-60	Loam	CL, ML	A-4, A-6	0	0	90-100	80-100	75-95	55-75	20-35	6-14
CoA: Corwin----------	0-13	Silt loam, loam	ML	A-4	0	0	100	95-100	90-100	70-85	30-40	6-10
	13-28	Clay loam	CL	A-6, A-7	0	0	95-100	90-100	85-100	70-80	35-45	14-22
	28-60	Loam	CL, ML	A-4, A-6	0	0	90-100	80-95	75-90	55-75	20-35	6-14
CoB: Corwin----------	0-12	Silt loam, loam	ML	A-4	0	0	100	95-100	90-100	70-85	30-40	6-10
	12-28	Clay loam	CL	A-6, A-7	0	0	95-100	90-100	85-100	70-80	35-45	14-22
	28-60	Loam	CL, ML	A-4, A-6	0	0	90-100	80-95	75-90	55-75	20-35	6-14
CrA: Crosby----------	0-8	Silt loam	ML	A-4	0	0	100	95-100	90-100	70-90	30-40	6-10
	8-24	Silty clay loam, silty clay	CH, CL, MH, ML	A-6, A-7	0	0	90-100	90-100	90-100	75-95	40-55	13-24
	24-60	Loam	CL, ML	A-4, A-6	0	0	85-100	75-95	70-90	55-75	20-35	6-14

TABLE 29.--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	
CrB:												
Crosby----------	0-8	Silt loam	ML	A-4	0	0	100	95-100	90-100	70-90	30-40	6-10
	8-23	Silty clay loam, silty clay	CH, CL, MH, ML	A-6, A-7	0	0	90-100	90-100	90-100	75-95	40-55	13-24
	23-60	Loam	CL, ML	A-4, A-6	0	0	85-100	75-95	70-90	55-75	20-35	6-14
Ed:												
Edwards---------	0-21	Muck	PT		0	0	0	0	0	0	---	---
	21-60	Marl			0	0	0	0	0	0	---	---
Ee:												
Eel-------------	0-31	Silt loam, loam	ML, CL-ML	A-4, A-6	0	0	95-100	90-100	85-100	65-85	30-40	4-14
	31-42	Loam, gravelly loam	ML, CL-ML	A-4	0	0	80-95	75-90	65-80	50-65	25-35	4-10
	42-60	Stratified sand to gravel	GM, GW, SM, SW	A-1	0	0-5	45-60	40-55	30-40	10-30	---	NP
ElA:												
Eldean----------	0-12	Loam	CL, CL-ML, ML	A-4	0	0	85-100	75-100	70-90	60-75	20-40	4-10
	12-23	Clay, clay loam	CL	A-6, A-7	0	0	85-100	80-100	75-90	60-80	35-50	14-25
	23-30	Gravelly clay loam	CL, SC	A-6	0	0	55-80	50-70	45-65	40-60	30-40	11-18
	30-60	Stratified gravel to sand	GM, GW, SM, SW	A-1	0	0-5	35-60	30-55	20-40	4-15	---	NP
ElB:												
Eldean----------	0-11	Loam	CL, CL-ML, ML	A-4	0	0	85-100	75-100	70-90	60-75	20-40	4-10
	11-23	Clay, clay loam	CL	A-6, A-7	0	0	85-100	80-100	75-90	60-80	35-50	14-25
	23-29	Gravelly clay loam	CL, SC	A-6	0	0	55-80	50-70	45-65	40-60	30-40	11-18
	29-60	Stratified sand to gravel	GM, GW, SM, SW	A-1	0	0-5	35-60	30-55	20-40	4-15	---	NP
ElB2:												
Eldean----------	0-6	Loam	CL, CL-ML, ML	A-4	0	0	85-100	75-100	70-90	60-75	20-40	4-10
	6-17	Clay, clay loam	CL	A-6, A-7	0	0	85-100	80-100	75-90	60-80	35-50	14-25
	17-24	Gravelly clay loam	CL, SC	A-6	0	0	55-80	50-70	45-65	40-60	30-40	11-18
	24-60	Stratified sand to gravel	SM, SW, GM, GW	A-1	0	0-5	35-60	30-55	20-40	4-15	---	NP
EmA:												
Eldean----------	0-12	Silt loam	CL, CL-ML, ML	A-4	0	0	85-100	75-100	70-90	60-75	20-40	4-10
	12-23	Clay, clay loam	CL	A-6, A-7	0	0	85-100	80-100	75-90	60-80	35-50	14-25
	23-30	Gravelly clay loam	CL, SC	A-6	0	0	55-80	50-70	45-65	40-60	30-40	11-18
	30-60	Stratified sand to gravel	GM, GW, SM, SW	A-1	0	0-5	35-60	30-55	20-40	4-15	---	NP
EmB:												
Eldean----------	0-11	Silt loam	CL, CL-ML, ML	A-4	0	0	85-100	75-100	70-90	60-75	20-40	4-10
	11-23	Clay, clay loam	CL	A-6, A-7	0	0	85-100	80-100	75-90	60-80	35-50	14-25
	23-29	Gravelly clay loam	CL, SC	A-6	0	0	55-80	50-70	45-65	40-60	30-40	11-18
	29-60	Stratified sand to gravel	GM, GW, SM, SW	A-1	0	0-5	35-60	30-55	20-40	4-15	---	NP
EmB2:												
Eldean----------	0-8	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	85-100	80-100	70-100	55-90	27-41	9-17
	8-18	Clay, sandy clay, gravelly clay loam	CL, ML	A-6, A-7	0	0-5	75-100	60-100	55-95	50-80	38-50	12-23
	18-24	Very gravelly loam, loam, gravelly sandy loam	CL, GC, SC	A-2, A-6, A-7	0	0-10	55-85	45-85	45-75	30-60	38-50	12-23
	24-80	Stratified sand to extremely gravelly coarse sandy loam	GM, GP-GM, SM, SP-SM	A-1, A-2	0	0-15	30-70	20-50	5-40	0-35	---	NP

TABLE 29.--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	
EoC2:												
Eldean	0-8	Gravelly loam	ML	A-4	0	0	85-100	75-100	70-90	60-75	20-40	4-10
	8-17	Clay loam, clay	CL	A-6, A-7	0	0	85-100	80-100	75-90	60-80	35-50	14-25
	17-23	Gravelly clay loam	CL, SC	A-6	0	0	55-80	50-70	45-65	40-60	30-40	11-18
	23-60	Stratified sand to gravel	GM, GW, SM, SW	A-1	0	0-5	35-60	30-55	20-40	4-15	---	NP
Casco	0-8	Gravelly loam	ML	A-4	0	0	75-95	70-85	65-80	50-70	25-35	4-10
	8-20	Gravelly clay loam	CL, SC	A-6	0	0	75-95	70-85	60-80	45-65	30-40	11-18
	20-60	Stratified sand to gravel	GM, GP, GW, SM, SW	A-1	0	0-5	35-60	30-55	20-40	4-15	---	NP
EoD2:												
Eldean	0-8	Gravelly loam	ML	A-4	0	0	85-100	75-100	70-90	60-75	20-40	4-10
	8-19	Clay, clay loam	CL	A-6, A-7	0	0	85-100	80-100	75-90	60-80	35-50	14-25
	19-26	Gravelly clay loam	CL, SC	A-6	0	0	55-80	50-70	45-65	40-60	30-40	11-18
	26-60	Stratified sand to gravel	GM, GP-GM, GW, SM	A-1	0	0-5	35-60	30-55	20-40	4-15	---	NP
Casco	0-5	Gravelly loam	ML	A-4	0	0	75-95	70-85	65-80	50-70	25-35	4-10
	5-17	Gravelly clay loam	CL, SC	A-6	0	0	75-95	70-85	60-80	45-65	30-40	11-18
	17-60	Stratified sand to gravel	GM, GP, GW, SM, SW	A-1	0	0-5	35-60	30-55	20-40	4-15	---	NP
EpD3:												
Casco	0-8	Gravelly loam	ML	A-4	0	0	75-95	70-85	65-80	50-70	25-35	4-10
	8-20	Clay loam, sandy clay loam, gravelly loam	CL, GC, SC	A-7, A-2, A-6	0	0-5	60-100	55-100	45-100	20-80	25-46	11-26
	20-60	Stratified sand to gravel	SP-SM, GP, GP-GM, SP	A-3, A-2, A-1	0	0-10	30-100	30-100	10-95	2-10	---	NP
Eldean	0-12	Sandy clay loam	CL, ML	A-4	0	0	85-100	75-100	70-90	60-75	35-50	14-25
	12-19	Gravelly clay loam	CL, SC	A-6	0	0	85-100	80-100	75-90	60-80	30-40	11-18
	19-60	Stratified sand to gravel	GM, GP, GW, SM, SW	A-1	0	0-5	30-70	20-50	5-40	0-35	---	NP
EqC2:												
Eldean	0-7	Clay loam	CL	A-4, A-6	0	0-5	85-100	75-100	65-100	55-80	38-48	19-23
	7-22	Clay, sandy clay, gravelly clay loam	CL, ML	A-6, A-7	0	0-5	75-100	60-100	55-95	50-80	38-50	12-23
	22-28	Very gravelly clay loam, loam, very gravelly sandy loam	CL, GC, SC	A-2, A-4, A-6, A-7	0	0-10	55-85	45-85	45-75	30-60	30-45	8-20
	28-80	Stratified sand to extremely gravelly coarse sandy loam	GM, GP-GM, SM, SP-SM	A-1, A-2	0	0-15	30-70	20-50	5-40	0-35	---	NP
Casco	0-7	Gravelly sandy loam	SC-SM, SM	A-1, A-2	0	0	75-80	70-80	45-60	20-35	18-31	2-10
	7-19	Clay loam, sandy clay loam, gravelly loam	CL, GC, SC	A-2, A-7, A-6	0	0-5	60-100	55-100	45-100	20-80	25-46	11-26
	19-80	Stratified gravel to sand	SP-SM, GP, GP-GM, SP	A-3, A-2, A-1	0	0-10	30-100	30-100	10-95	2-10	---	NP
ErB:												
Eldean	0-12	Loam	CL, CL-ML, ML	A-4	0	0	85-100	75-100	70-90	60-75	20-40	4-10
	12-23	Clay, clay loam	CL	A-6, A-7	0	0	85-100	80-100	75-90	60-80	35-50	14-25
	23-29	Gravelly clay loam	CL, SC	A-6	0	0	55-80	50-70	45-65	40-60	30-40	11-18
	29-60	Stratified sand to gravel	GM, GP, GW, SM, SW	A-1	0	0-5	35-60	30-55	20-40	4-15	---	NP
Miamian	0-11	Silt loam	CL-ML, ML	A-4, A-6	0	0	100	95-100	85-100	70-85	30-40	6-12
	11-38	Clay loam, silty clay loam, clay	CL, ML	A-6, A-7	0	0	95-100	90-100	90-100	70-90	35-45	12-24
	38-60	Loam	CL, ML	A-4, A-6	0	0	95-100	90-100	80-95	60-75	20-35	5-12

TABLE 29.--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	
ErC:												
Eldean----------	0-8	Loam	CL, CL-ML, ML	A-4	0	0	85-100	75-100	70-90	60-75	20-40	4-10
	8-18	Clay, clay loam	CL	A-6, A-7	0	0	85-100	80-100	75-90	60-80	35-50	14-25
	18-24	Gravelly clay loam	CL, SC	A-6	0	0	55-80	50-70	45-65	40-60	30-40	11-18
	24-60	Stratified sand to gravel	GM, GW, SM, SW	A-1	0	0-5	35-60	30-55	20-40	4-15	---	NP
Miamian---------	0-7	Silt loam	CL-ML, ML	A-4, A-6	0	0	100	95-100	85-100	70-85	30-40	6-12
	7-33	Clay loam, silty clay loam, clay	CL, ML	A-6, A-7	0	0	95-100	90-100	90-100	35-45	35-45	12-24
	33-60	Loam	CL, ML	A-4, A-6	0	0	95-100	90-100	80-95	60-75	20-35	5-12
Gn:												
Genesee---------	0-25	Silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	85-100	70-90	30-42	4-14
	25-43	Loam	CL, ML, CL-ML	A-4	0	0	85-100	80-95	75-90	55-70	25-35	4-10
	43-60	Stratified sand to gravel	GM, SM	A-1	0	0	45-60	40-55	25-40	10-30	---	NP
GwB:												
Glynwood--------	0-8	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	75-90	28-40	4-14
	8-29	Clay, clay loam, silty clay loam	CH, CL	A-6, A-7	0	0	95-100	85-100	80-100	75-95	38-52	18-28
	29-60	Clay loam	CL	A-6	0	0	90-100	80-100	75-95	65-80	30-40	12-17
GwB2:												
Glynwood--------	0-6	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	75-90	28-40	4-14
	6-25	Clay, clay loam, silty clay loam	CH, CL	A-6, A-7	0	0	95-100	85-100	80-100	75-95	38-52	18-28
	25-60	Clay loam	CL	A-6	0	0	90-100	80-100	75-95	65-80	30-40	12-17
GwC2:												
Glynwood--------	0-5	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	75-90	28-40	4-14
	5-24	Clay, clay loam, silty clay loam	CH, CL	A-6, A-7	0	0	95-100	85-100	80-100	75-95	38-52	18-28
	24-60	Clay loam	CL	A-6	0	0	90-100	80-100	75-95	65-80	30-40	12-17
GwD2:												
Glynwood--------	0-4	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	75-90	28-40	4-14
	4-24	Clay, clay loam, silty clay loam	CH, CL	A-6, A-7	0	0	95-100	85-100	80-100	75-95	38-52	18-28
	24-60	Clay loam	CL	A-6	0	0	90-100	80-100	75-95	65-80	30-40	12-17
GyC3:												
Glynwood--------	0-4	Clay loam	CL	A-6, A-7	0	0	95-100	95-100	90-100	75-90	28-40	4-14
	4-22	Clay, clay loam, silty clay loam	CH, CL	A-6, A-7	0	0	95-100	85-100	80-100	75-95	38-52	18-28
	22-60	Clay loam	CL	A-6	0	0	90-100	80-100	75-95	65-80	30-40	12-17
GyD3:												
Glynwood--------	0-4	Clay loam	CL	A-6, A-7	0	0	95-100	95-100	90-100	75-90	28-40	4-14
	4-20	Clay, clay loam, silty clay loam	CH, CL	A-6, A-7	0	0	95-100	85-100	80-100	75-95	38-52	18-28
	20-60	Clay loam	CL	A-6	0	0	90-100	80-100	75-95	65-80	30-40	12-17
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

TABLE 29.--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	
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
Ko:												
Kokomo----------	0-19	Silty clay loam	CH, CL	A-7, A-6	0	0	100	98-100	85-95	75-85	43-57	18-24
	19-52	Silty clay loam, clay loam	CH, CL	A-7, A-6	0	0-1	95-100	95-100	95-100	75-95	35-55	15-30
	52-80	Loam, clay loam	CL	A-6	0-1	0-3	90-100	85-95	75-90	55-70	25-35	10-20
Ln:												
Linwood---------	0-3	Muck	PT		0	0	0	0	0	0	---	---
	3-28	Muck	PT		0	0	0	0	0	0	---	---
	28-60	Silty clay loam	CL	A-6, A-7	0	0	95-100	90-100	85-100	75-95	25-35	11-20
LrE2:												
Lorenzo---------	0-7	Gravelly loam	ML	A-4	0	0	80-95	75-85	65-75	55-65	30-40	4-10
	7-16	Gravelly clay loam, sandy clay loam	CL, SC	A-6, A-4	0	0	80-100	75-95	70-85	35-65	30-40	11-20
	16-60	Stratified sand to gravel	GM, GW, SM, SW	A-1	0	0-5	35-60	30-55	20-40	4-15	0-0	NP
Rodman----------	0-15	Gravelly loam	ML, SM	A-4	0	0	75-90	70-85	69-75	40-60	22-30	2-6
	15-60	Stratified sand to gravel	GM, GW, SM, SW	A-1	0-1	0-5	35-60	30-50	20-40	4-15	---	NP
MaB:												
Martinsville----	0-8	Loam	ML	A-4	0	0	100	95-100	85-95	60-75	25-38	4-10
	8-30	Clay loam, sandy clay loam	CL, SC	A-4, A-6	0	0	100	95-100	80-90	45-75	20-35	8-17
	30-50	Fine sandy loam, gravelly clay loam, loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	85-100	80-100	70-85	40-70	20-35	6-15
	50-60	Loam, silt loam	CL, ML	A-4, A-6	0	0	85-100	80-95	75-90	55-75	20-35	6-14
Ockley----------	0-12	Silt loam	ML	A-4	0	0	100	100	90-100	70-90	30-40	4-10
	12-37	Silty clay loam, clay loam, clay	CL	A-6	0	0	95-100	95-100	90-100	70-80	25-35	11-17
	37-47	Gravelly loam	ML, SC	A-6	0	0	75-90	70-80	60-75	45-60	30-40	11-18
	47-60	Stratified sand to gravel	GM, GW, SM, SW	A-1	0	0-5	35-60	30-50	20-40	4-15	0-0	NP
Md:												
Medway----------	0-20	Silt loam	CL, ML	A-4, A-6	0	0	100	95-100	90-100	70-90	25-40	4-12
	20-60	Loam, clay loam	CL, ML	A-4, A-6	0	0-5	95-100	90-100	80-95	60-80	25-40	6-14
MhA:												
Miamian---------	0-10	Silt loam	CL-ML, ML, CL	A-4, A-6	0	0	100	95-100	85-100	70-85	30-40	6-12
	10-34	Clay loam, silty clay loam	CL, ML	A-6, A-7	0	0	95-100	90-100	90-100	70-90	35-45	12-24
	34-60	Loam	CL, ML	A-4, A-6	0	0	95-100	90-100	80-95	60-75	20-35	5-12
MhB:												
Miamian---------	0-10	Silt loam	CL-ML, ML, CL	A-4, A-6	0	0	100	95-100	85-100	70-85	30-40	6-12
	10-38	Clay loam, silty clay loam	CL, ML	A-6, A-7	0	0	95-100	90-100	90-100	70-90	35-45	12-24
	38-80	Loam	CL, ML	A-4, A-6	0	0	95-100	90-100	80-95	60-75	20-35	5-12
MhB2:												
Miamian---------	0-8	Silt loam	CL-ML, ML, CL	A-4, A-6	0	0	100	95-100	85-100	70-85	30-40	6-12
	8-30	Clay loam, silty clay loam	CL, ML	A-6, A-7	0	0	95-100	90-100	90-100	70-90	35-45	12-24
	30-60	Loam	CL, ML	A-4, A-6	0	0	95-100	90-100	80-95	60-75	20-35	5-12

TABLE 29.--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	
MhC2:												
Miamian---------	0-7	Silt loam	CL-ML, ML, CL	A-4, A-6	0	0	100	95-100	85-100	70-85	30-40	6-12
	7-28	Clay loam, silty clay loam	CL, ML	A-6, A-7	0	0	95-100	90-100	90-100	70-90	35-45	12-24
	28-60	Loam	CL, ML	A-4, A-6	0	0	95-100	90-100	80-95	60-75	20-35	5-12
MhD2:												
Miamian---------	0-7	Silt loam	CL-ML, ML, CL	A-4, A-6	0	0	100	95-100	85-100	70-85	30-40	6-12
	7-28	Clay loam, silty clay loam	CL, ML	A-6, A-7	0	0	95-100	90-100	90-100	70-90	35-45	12-24
	28-60	Loam	CL, ML	A-4, A-6	0	0	95-100	90-100	80-95	60-75	20-35	5-12
MkA:												
Miamian---------	0-10	Silt loam	CL-ML, ML, CL	A-4, A-6	0	0	95-100	95-100	90-100	70-95	25-40	4-12
	10-32	Clay loam, silty clay loam	CL, ML	A-6, A-7	0	0	85-100	80-100	75-95	70-85	30-50	15-30
	32-50	Loam	CL, ML	A-4, A-6	0	0	85-100	80-100	75-95	70-85	30-50	15-30
	50-60	Loam	CL, ML	A-4, A-6	0	0	85-95	75-90	70-85	55-75	30-50	15-35
	60-65	Unweathered bedrock			---	---	---	---	---	---	---	---
MkB:												
Miamian---------	0-10	Silt loam	CL-ML, ML, CL	A-4, A-6	0	0	95-100	95-100	90-100	70-95	25-40	4-12
	10-32	Clay loam, silty clay loam	CL, ML	A-6, A-7	0	0	85-100	80-100	75-95	70-85	30-50	15-30
	32-50	Loam	CL, ML	A-4, A-6	0	0	85-100	80-100	75-95	70-85	30-50	15-30
	50-60	Loam	CL, ML	A-4, A-6	0	0	85-95	75-90	70-85	55-75	30-50	15-35
	60-65	Unweathered bedrock			---	---	---	---	---	---	---	---
MkB2:												
Miamian---------	0-6	Silt loam	CL-ML, ML, CL	A-4, A-6	0	0	95-100	95-100	90-100	70-95	25-40	4-12
	6-45	Clay loam, silty clay loam	CL, ML	A-6, A-7	0	0	85-100	80-100	75-95	70-85	30-50	15-30
	45-60	Loam	CL, ML	A-4, A-6	0	0	85-95	75-90	70-85	55-75	30-50	15-35
	60-65	Unweathered bedrock			---	---	---	---	---	---	---	---
MkC2:												
Miamian---------	0-5	Silt loam	CL-ML, ML, CL	A-4, A-6	0	0	100	95-100	90-100	70-95	25-40	4-12
	5-44	Clay loam, loam	CL, ML	A-4, A-6	0	0	95-100	80-100	75-95	70-85	30-50	15-30
	44-60	Loam	CL, ML	A-4, A-6	0	0	85-95	75-90	70-85	55-75	30-50	15-35
	60-65	Unweathered bedrock			---	---	---	---	---	---	---	---
MlC3:												
Miamian---------	0-7	Clay loam	CL, CL-ML	A-6, A-7	0	0	100	95-100	85-100	70-85	30-40	6-12
	7-18	Clay loam, silt loam	CL, ML	A-4, A-6	0	0	95-100	90-100	90-100	70-90	35-45	12-24
	18-60	Loam, clay loam	CL, ML	A-4, A-6	0	0	95-100	90-100	80-95	60-75	20-35	5-12
MlD3:												
Miamian---------	0-7	Clay loam	CL, CL-ML	A-6, A-7	0	0	100	95-100	85-100	70-85	30-40	6-12
	7-15	Clay loam, silt loam	CL, ML	A-4, A-6	0	0	95-100	90-100	90-100	70-90	35-45	12-24
	15-60	Loam, clay loam	CL, ML	A-4, A-6	0	0	95-100	90-100	80-95	60-75	20-35	5-12
MmE:												
Hennepin--------	0-14	Silt loam	CL-ML, ML	A-4, A-6	0-1	0-5	95-100	90-100	85-95	70-85	25-38	4-12
	14-60	Loam	CL, ML	A-4, A-6	0-1	0-5	90-100	85-100	80-95	60-75	25-35	6-14
Miamian---------	0-7	Silt loam	CL-ML, ML, CL	A-4, A-6	0	0	100	95-100	85-100	70-85	30-40	6-12
	7-25	Clay loam	CL	A-6, A-7	0	0	95-100	90-100	90-100	70-90	35-45	12-24
	25-60	Loam	CL, ML	A-4, A-6	0	0	95-100	90-100	80-95	60-75	20-35	5-12

TABLE 29.--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	
MmF:												
Hennepin--------	0-14	Silt loam	CL, CL-ML	A-4, A-6	0-1	0-5	95-100	90-100	85-95	70-85	25-38	4-12
	14-60	Loam	CL, ML	A-4, A-6	0-1	0-5	90-100	85-100	80-95	60-75	25-35	6-14
Miamian---------	0-5	Silt loam	CL-ML, ML, CL	A-4, A-6	0	0	100	95-100	85-100	70-85	30-40	6-12
	5-22	Clay loam	CL	A-6, A-7	0	0	95-100	90-100	90-100	70-90	35-45	12-24
	22-60	Loam	CL, ML	A-4, A-6	0	0	95-100	90-100	80-95	60-75	20-35	5-12
MnA:												
Millsdale-------	0-11	Silt loam	CL	A-6, A-7	0	0	100	100	95-100	80-95	32-45	12-22
	11-30	Silty clay	CH, CL, MH	A-7	0	0	90-100	85-100	80-100	75-85	40-60	20-30
	30-32	Unweathered bedrock			---	---	---	---	---	---	---	---
MnB:												
Millsdale-------	0-10	Silt loam	CL	A-6, A-7	0	0	100	100	95-100	80-95	32-45	12-22
	10-30	Silty clay	CH, CL, MH	A-7	0	0	90-100	85-100	80-100	75-85	40-60	20-30
	30-32	Unweathered bedrock			---	---	---	---	---	---	---	---
MoA:												
Millsdale-------	0-14	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	80-95	32-45	12-22
	14-30	Silty clay	CH, CL, MH	A-7	0	0	90-100	85-100	80-100	75-85	40-60	20-30
	30-32	Unweathered bedrock			---	---	---	---	---	---	---	---
MoB:												
Millsdale-------	0-13	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	80-95	32-45	12-22
	13-30	Silty clay	CH, CL, MH	A-7	0	0	90-100	85-100	80-100	75-85	40-60	20-30
	30-32	Unweathered bedrock			---	---	---	---	---	---	---	---
MpA:												
Milton----------	0-8	Silt loam	CL-ML, ML	A-4	0	0	100	95-100	90-100	80-90	26-36	6-10
	8-19	Silty clay loam, clay loam	CL, CL-ML	A-6, A-7	0	0	100	95-100	90-100	70-85	34-48	11-28
	19-29	Clay, clay loam	CH, CL, CL-ML	A-6, A-7	0	0-5	95-100	90-100	85-100	65-85	38-55	14-30
	29-31	Unweathered bedrock			---	---	---	---	---	---	---	---
MpB:												
Milton----------	0-8	Silt loam	CL-ML, ML	A-4	0	0	100	95-100	90-100	80-90	26-36	6-10
	8-19	Silty clay loam, clay loam	CL, CL-ML	A-6, A-7	0	0	100	95-100	90-100	70-85	34-48	11-28
	19-29	Clay, clay loam	CH, CL, CL-ML	A-6, A-7	0	0-5	95-100	90-100	85-100	65-85	38-55	14-30
	29-31	Unweathered bedrock			---	---	---	---	---	---	---	---
MpB2:												
Milton----------	0-8	Silt loam	CL-ML, ML	A-4	0	0	100	95-100	90-100	80-90	26-36	6-10
	8-19	Silty clay loam, clay loam	CL, CL-ML	A-6, A-7	0	0	100	95-100	90-100	70-85	34-48	11-28
	19-29	Clay, clay loam	CH, CL, CL-ML	A-6, A-7	0	0-5	95-100	90-100	85-100	65-85	38-55	14-30
	29-31	Unweathered bedrock			---	---	---	---	---	---	---	---
MpC2:												
Milton----------	0-8	Silt loam	CL-ML, ML	A-4	0	0	100	95-100	90-100	80-90	26-36	6-10
	8-19	Silty clay loam, clay loam	CL, CL-ML	A-6, A-7	0	0	100	95-100	90-100	70-85	34-48	11-28
	19-29	Clay, clay loam	CH, CL, CL-ML	A-6, A-7	0	0-5	95-100	90-100	85-100	65-85	38-55	14-30
	29-31	Unweathered bedrock			---	---	---	---	---	---	---	---
MpD2:												
Milton----------	0-8	Silt loam	CL-ML, ML	A-4	0	0	100	95-100	90-100	80-90	26-36	6-10
	8-19	Silty clay loam, clay loam	CL, CL-ML	A-6, A-7	0	0	100	95-100	90-100	70-85	34-48	11-28
	19-29	Clay, clay loam	CH, CL, CL-ML	A-6, A-7	0	0-5	95-100	90-100	85-100	65-85	38-55	14-30
	29-31	Unweathered bedrock			---	---	---	---	---	---	---	---

TABLE 29.--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	
Mt:												
Montgomery------	0-16	Silty clay loam	CH, CL, MH	A-6, A-7	0	0	100	100	95-100	85-98	35-54	20-32
	16-33	Silty clay loam, silty clay	CH	A-7	0	0	100	100	95-100	90-98	50-69	30-40
	33-68	Silty clay loam	CH, CL	A-6, A-7	0	0	100	100	95-100	85-95	35-52	20-32
OcA:												
Ockley----------	0-12	Silt loam	ML	A-4	0	0	100	100	90-100	70-90	30-40	4-10
	12-37	Silty clay loam, clay loam, clay	CL	A-6	0	0	95-100	95-100	90-100	70-80	25-35	11-17
	37-47	Gravelly loam	ML, SC, CL	A-6	0	0	75-90	70-80	60-75	45-60	30-40	11-18
	47-60	Stratified sand to gravel	GM, GW, SM, SW	A-1	0	0-5	35-60	30-50	20-40	4-15	0-0	NP
OcB:												
Ockley----------	0-12	Silt loam	ML	A-4	0	0	100	100	90-100	70-90	30-40	4-10
	12-37	Silty clay loam, clay loam, clay	CL	A-6	0	0	95-100	95-100	90-100	70-80	25-35	11-17
	37-47	Gravelly loam	ML, SC, CL	A-6	0	0	75-90	70-80	60-75	45-60	30-40	11-18
	47-60	Stratified sand to gravel	GM, GW, SM, SW	A-1	0	0-5	35-60	30-50	20-40	4-15	0-0	NP
OdA:												
Odell-----------	0-16	Silt loam	ML	A-4	0	0	100	95-100	90-100	70-95	30-40	6-10
	16-38	Clay loam	CL	A-6, A-7	0	0	95-100	90-100	90-100	70-85	35-45	14-22
	38-60	Loam	CL, ML	A-4, A-6	0	0	90-100	85-100	85-95	60-75	20-35	6-14
OdB:												
Odell-----------	0-15	Silt loam	ML	A-4	0	0	100	95-100	90-100	70-95	30-40	6-10
	15-38	Clay loam	CL	A-6, A-7	0	0	95-100	90-100	90-100	70-85	35-45	14-22
	38-60	Loam	CL, ML	A-4, A-6	0	0	90-100	85-100	85-95	60-75	20-35	6-14
Pe:												
Pewamo----------	0-10	Silty clay loam	CL	A-6, A-7	0	0	95-100	85-100	85-100	80-95	34-42	12-20
	10-35	Silty clay, silty clay loam	CH, CL	A-7	0	0	90-100	80-100	80-100	75-95	40-52	24-34
	35-60	Silty clay loam	CL	A-6, A-7	0	0	85-100	80-95	75-95	70-90	30-42	12-20
Pg:												
Gravel Pits-----	---	---	---	---	---	---	---	---	---	---	---	---
Pq:												
Quarries--------	---	---	---	---	---	---	---	---	---	---	---	---
RdA:												
Randolph--------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	70-90	20-40	5-14
	8-29	Clay, silty clay, silty clay loam	CH, CL	A-7	0	0	100	95-100	90-100	75-95	45-60	22-35
	29-34	Very gravelly clay loam	GC, GM	A-2, A-6	0	0-15	40-55	30-50	20-45	15-40	20-40	5-12
	34-36	Unweathered bedrock			---	---	---	---	---	---	---	---
RdB:												
Randolph--------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	70-90	20-40	5-14
	8-29	Clay, silty clay, silty clay loam	CH, CL	A-7	0	0	100	95-100	90-100	75-95	45-60	22-35
	29-34	Very gravelly clay loam	GC, GM	A-2, A-6	0	0	40-55	30-50	20-45	15-40	20-40	5-12
	34-36	Unweathered bedrock			---	---	---	---	---	---	---	---
RgE:												
Rodman----------	0-7	Gravelly loam	CL, ML, SC, SM	A-4	0	0-2	70-85	65-75	60-75	36-65	23-43	4-17
	7-12	Gravelly sandy loam, sandy loam, loam	CL, ML, SC, SM	A-4, A-2, A-1	0	0-2	70-85	60-85	40-75	20-55	15-30	NP-10
	12-80	Stratified extremely gravelly coarse sand to sand	GP, GP-GM, SP, SP-SM	A-1	0-1	1-5	30-70	22-50	7-20	2-10	---	NP

TABLE 29.--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	
RhB:												
Ritchey---------	0-6	Silt loam	ML	A-4	0	0	100	90-100	85-100	70-90	30-40	4-10
	6-16	Silty clay, silty clay loam	CH, CL	A-6, A-7	0-10	0-15	90-100	85-100	80-95	75-95	35-52	18-26
	16-18	Unweathered bedrock			---	---	---	---	---	---	---	---
RhC:												
Ritchey---------	0-6	Silt loam	ML	A-4	0	0	100	90-100	85-100	70-90	30-40	4-10
	6-16	Silty clay, silty clay loam	CH, CL	A-6, A-7	0-10	0-15	90-100	85-100	80-95	75-95	35-52	18-26
	16-18	Unweathered bedrock			---	---	---	---	---	---	---	---
RhE:												
Ritchey---------	0-4	Silt loam	ML	A-4	0	0	100	90-100	85-100	70-90	30-40	4-10
	4-14	Silty clay, silty clay loam	CH, CL	A-6, A-7	0-10	0-15	90-100	85-100	80-95	75-95	35-52	10-20
	14-16	Unweathered bedrock			---	---	---	---	---	---	---	---
Rs:												
Ross------------	0-45	Silt loam	CL, ML	A-4, A-6	0	0	100	95-100	90-100	70-90	25-40	4-12
	45-60	Loam	CL, ML	A-4, A-6	0	0	95-100	90-100	80-95	55-75	25-40	6-14
Rt:												
Ross Variant----	0-7	Silt loam	CL, ML	A-4, A-6	0	0	100	95-100	90-100	70-90	25-40	4-12
	7-13	Silty clay loam	CL	A-6, A-7	0	0	95-100	90-100	85-100	80-95	25-35	11-15
	13-20	Weathered bedrock			---	---	---	---	---	---	---	---
	20-22	Unweathered bedrock			---	---	---	---	---	---	---	---
Sh:												
Shoals----------	0-40	Silt loam, loam	CL, ML, CL-ML	A-4, A-6	0	0	100	95-100	90-100	70-90	30-40	4-14
	40-60	Stratified silt loam to gravelly sand	GM, SM	A-1, A-3	0	0-5	45-60	40-55	30-40	10-30	---	NP
Sk:												
Shoals Variant--	0-8	Silt loam	CL-ML, ML	A-4, A-6	0	0	95-100	95-100	90-100	70-90	30-40	4-14
	8-36	Loam, silt loam, clay loam	ML, CL-ML	A-4, A-6	0	0	95-100	90-100	80-95	60-80	25-35	4-14
	36-38	Unweathered bedrock			---	---	---	---	---	---	---	---
SlA:												
Sleeth----------	0-10	Silt loam	ML	A-4	0	0	100	95-100	90-100	70-90	30-40	4-10
	10-42	Clay loam, sandy clay loam	CL, SC	A-6	0	0	85-100	80-100	70-95	45-75	25-35	11-17
	42-60	Stratified sand to gravel	GM, GW, SM, SW	A-1	0-1	0-5	35-60	30-50	20-40	4-15	---	NP
St:												
Stonelick-------	0-15	Loam	ML	A-4	0	0	100	95-100	85-95	60-75	30-40	4-10
	15-38	Sandy loam	SM	A-2	0	0	95-100	90-100	65-85	35-50	15-36	NP-6
	38-60	Sandy loam, sand, loamy sand	SM	A-2	0	0	85-100	75-95	50-70	10-20	---	NP
Ts:												
Tremont---------	0-18	Silt loam	CL, ML		0	0	95-100	90-100	85-100	70-90	37-49	13-18
	18-28	Clay loam, silt loam, loam	CL, ML		0	0	95-100	90-100	80-100	65-95	30-45	5-20
	28-40	Silt loam, silty clay loam, loam	CL-ML, CL, ML		0	0	95-100	85-100	75-95	60-90	20-35	5-15
	40-80	Loam, very gravelly coarse sandy loam, coarse sandy loam	SM, GM, GW-GM		0	0-10	50-90	30-75	20-65	10-50	0-20	NP-5

TABLE 29.--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	
Ud:												
Udorthents	---	---	---	---	---	---	---	---	---	---	---	---
Uf:												
Udorthents	---	---	---	---	---	---	---	---	---	---	---	---
Wa:												
Wallkill	0-27	Silt loam	ML	A-4	0	0	95-100	90-100	75-100	60-85	16-32	3-12
	27-60	Muck	PT		0	0	0	0	0	0	---	---
WdA:												
Warsaw	0-18	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	90-100	70-90	25-40	4-12
	18-37	Loam, clay loam, gravelly loam	CL, MH, ML	A-6, A-7	0	0	75-100	70-100	65-95	50-80	35-54	14-23
	37-60	Stratified sand to gravel	GM, GW, SM, SW	A-1	0	0-5	35-60	30-50	20-40	4-15	---	NP
WeA:												
Wea	0-18	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	90-100	70-90	30-40	6-12
	18-44	Clay loam, gravelly clay loam	CL	A-6	0	0	80-100	70-90	65-90	55-80	30-40	11-18
	44-60	Stratified sand to gravel	GM, GW, SM, SW	A-1	0-1	0-5	35-60	30-50	20-40	4-15	---	NP
Wt:												
Westland	0-18	Silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100	80-95	35-45	14-22
	18-21	Clay loam	CL	A-4, A-6	0	0	80-100	75-95	70-90	60-80	35-45	15-25
	21-45	Gravelly clay loam, gravelly loam	CL, ML	A-4, A-6	0	0-3	75-90	70-85	60-75	50-65	30-40	8-14
	45-60	Stratified sand to gravel	GM, GW, SM, SW	A-1	0	0-5	35-60	30-50	20-40	4-15	---	NP

TABLE 30.--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 172 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	0-23	15-27	1.20-1.45	0.60-2.00	0.17-0.21	Low	.37	.37	5	6
	23-60	20-35	1.25-1.65	0.60-2.00	0.14-0.18	Moderate	.37	.37		
BlA:										
Blount	0-9	22-27	1.35-1.55	0.60-2.00	0.16-0.20	Low	.43	.43	4	6
	9-33	35-50	1.40-1.70	0.06-0.20	0.10-0.15	Moderate	.43	.43		
	33-60	27-38	1.60-1.85	0.06-0.20	0.06-0.10	Moderate	.43	.43		
BlB:										
Blount	0-9	22-27	1.35-1.55	0.60-2.00	0.16-0.20	Low	.43	.43	4	6
	9-33	35-50	1.40-1.70	0.06-0.20	0.10-0.15	Moderate	.43	.43		
	33-60	27-38	1.60-1.85	0.06-0.20	0.06-0.10	Moderate	.43	.43		
BlB2:										
Blount	0-5	22-27	1.35-1.55	0.60-2.00	0.16-0.20	Low	.43	.43	4	6
	5-26	35-50	1.40-1.70	0.06-0.20	0.10-0.15	Moderate	.43	.43		
	26-60	27-38	1.60-1.85	0.06-0.20	0.06-0.10	Moderate	.43	.43		
Bs:										
Brookston	0-39	27-30	1.40-1.55	0.60-2.00	0.18-0.22	Moderate	.28	.28	5	6
	39-60	15-26	1.45-1.70	0.20-0.60	0.07-0.12	Low	.28	.32		
CcD2:										
Casco	0-7	5-15	1.35-1.60	0.60-2.00	0.08-0.12	Low	.17	.24	3	3
	7-17	18-35	1.55-1.65	0.60-2.00	0.09-0.19	Moderate	.32	.32		
	17-80	0-2	1.30-1.70	6.00-20.00	0.02-0.04	Low	.10	.10		
CeA:										
Celina	0-12	14-26	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37	4	6
	12-24	35-48	1.45-1.60	0.20-0.60	0.12-0.16	Moderate	.37	.37		
	24-60	16-27	1.60-1.82	0.20-0.60	0.07-0.12	Low	.37	.49		
CeB:										
Celina	0-11	14-26	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37	4	6
	11-24	35-48	1.45-1.60	0.20-0.60	0.12-0.16	Moderate	.37	.37		
	24-60	16-27	1.60-1.82	0.20-0.60	0.07-0.12	Low	.37	.49		
CeB2:										
Celina	0-6	14-26	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37	4	6
	6-19	35-48	1.45-1.60	0.20-0.60	0.12-0.16	Moderate	.37	.37		
	19-60	16-27	1.60-1.82	0.20-0.60	0.07-0.12	Low	.37	.49		
CoA:										
Corwin	0-13	12-22	1.30-1.45	0.60-2.00	0.18-0.22	Low	.28	.28	5	5
	13-28	25-35	1.40-1.60	0.20-0.60	0.14-0.18	Moderate	.28	.28		
	28-60	10-20	1.70-1.90	0.20-0.60	0.07-0.12	Low	.37	.43		
CoB:										
Corwin	0-12	12-22	1.30-1.45	0.60-2.00	0.18-0.22	Low	.28	.28	5	5
	12-28	25-35	1.40-1.60	0.20-0.60	0.14-0.18	Moderate	.28	.28		
	28-60	10-20	1.70-1.90	0.20-0.60	0.07-0.12	Low	.37	.43		
CrA:										
Crosby	0-8	11-24	1.35-1.45	0.60-2.00	0.16-0.20	Low	.43	.43	4	5
	8-24	35-45	1.50-1.60	0.20-0.60	0.12-0.16	Moderate	.43	.49		
	24-60	15-27	1.70-2.00	0.20-0.60	0.07-0.12	Low	.43	.49		

TABLE 30.--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					
CrB:										
Crosby----------	0-8	11-24	1.35-1.45	0.60-2.00	0.16-0.20	Low	.43	.43	4	5
	8-23	35-45	1.50-1.60	0.20-0.60	0.12-0.16	Moderate	.43	.49		
	23-60	15-27	1.70-2.00	0.20-0.60	0.07-0.12	Low	.43	.49		
Ed:										
Edwards---------	0-21	0-0	0.30-0.55	2.00-6.00	0.20-0.30	---	---	---	1	2
	21-60	3-6	---	0.01-0.06	---	---	---	---		
Ee:										
Eel-------------	0-31	18-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.32	.32	5	6
	31-42	18-27	1.30-1.50	0.60-6.00	0.14-0.18	Low	.37	.37		
	42-60	10-27	1.30-1.50	6.00-20.00	0.06-0.10	Low	.37	.37		
ElA:										
Eldean----------	0-12	15-25	1.30-1.50	0.60-2.00	0.13-0.17	Low	.37	.43	4	5
	12-23	35-48	1.40-1.60	0.60-2.00	0.09-0.13	Moderate	.37	.49		
	23-30	25-45	1.30-1.60	0.60-6.00	0.07-0.11	Low	.37	.64		
	30-60	2-8	1.55-1.70	6.00-20.00	0.02-0.06	Low	.10	.43		
ElB:										
Eldean----------	0-11	15-25	1.30-1.50	0.60-2.00	0.13-0.17	Low	.37	.43	4	5
	11-23	35-48	1.40-1.60	0.60-2.00	0.09-0.13	Moderate	.37	.49		
	23-29	25-45	1.30-1.60	0.60-6.00	0.07-0.11	Low	.37	.64		
	29-60	2-8	1.55-1.70	6.00-20.00	0.02-0.06	Low	.10	.43		
ElB2:										
Eldean----------	0-6	15-25	1.30-1.50	0.60-2.00	0.13-0.17	Low	.37	.43	4	5
	6-17	35-48	1.40-1.60	0.60-2.00	0.09-0.13	Moderate	.37	.49		
	17-24	25-45	1.30-1.60	0.60-6.00	0.07-0.11	Low	.37	.64		
	24-60	2-8	1.55-1.70	6.00-20.00	0.02-0.06	Low	.10	.43		
EmA:										
Eldean----------	0-12	15-25	1.30-1.50	0.60-2.00	0.13-0.17	Low	.37	.43	4	5
	12-23	35-48	1.40-1.60	0.60-2.00	0.09-0.13	Moderate	.37	.49		
	23-30	25-45	1.30-1.60	0.60-6.00	0.07-0.11	Low	.37	.64		
	30-60	2-8	1.55-1.70	6.00-20.00	0.02-0.06	Low	.10	.43		
EmB:										
Eldean----------	0-11	15-25	1.30-1.50	0.60-2.00	0.13-0.17	Low	.37	.43	4	5
	11-23	35-48	1.40-1.60	0.60-2.00	0.09-0.13	Moderate	.37	.49		
	23-29	25-45	1.30-1.60	0.60-6.00	0.07-0.11	Low	.37	.64		
	29-60	2-8	1.55-1.70	6.00-20.00	0.02-0.06	Low	.10	.43		
EmB2:										
Eldean----------	0-8	15-25	1.30-1.50	0.60-2.00	0.18-0.22	Low	.37	.43	4	5
	8-18	35-48	1.40-1.60	0.20-2.00	0.08-0.14	Moderate	.37	.49		
	18-24	25-45	1.30-1.60	0.60-2.00	0.07-0.14	Low	.37	.64		
	24-80	2-8	1.55-1.70	6.00-20.00	0.01-0.04	Low	.10	.43		
EoC2:										
Eldean----------	0-8	15-25	1.30-1.50	0.60-2.00	0.13-0.17	Low	.28	.49	4	5
	8-17	35-48	1.40-1.60	0.60-2.00	0.09-0.13	Moderate	.37	.49		
	17-23	25-45	1.30-1.60	0.60-6.00	0.07-0.11	Low	.37	.64		
	23-60	2-8	1.55-1.70	6.00-20.00	0.02-0.06	Low	.10	.43		
Casco-----------	0-8	5-15	1.35-1.60	0.60-2.00	0.13-0.17	Low	.17	.24	3	5
	8-20	18-35	1.55-1.65	0.60-6.00	0.10-0.14	Low	.32	.32		
	20-60	0-2	1.30-1.70	6.00-20.00	0.02-0.06	Low	.10	.10		

TABLE 30.--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					
EoD2:										
Eldean----------	0-8	15-25	1.30-1.50	0.60-2.00	0.13-0.17	Low	.28	.49	4	5
	8-19	35-48	1.40-1.60	0.60-2.00	0.09-0.13	Moderate	.37	.49		
	19-26	25-45	1.30-1.60	0.60-6.00	0.07-0.11	Low	.37	.64		
	26-60	2-8	1.55-1.70	6.00-20.00	0.02-0.06	Low	.10	.43		
Casco-----------	0-5	5-15	1.35-1.60	0.60-2.00	0.13-0.17	Low	.17	.24	3	5
	5-17	18-40	1.55-1.65	0.60-6.00	0.10-0.14	Low	.32	.32		
	17-60	0-2	1.30-1.70	6.00-20.00	0.02-0.06	Low	.10	.10		
EpD3:										
Casco-----------	0-8	18-40	1.55-1.65	0.60-2.00	0.09-0.19	Low	.28	.32	2	5
	8-20	18-35	1.55-1.65	0.60-2.00	0.09-0.19	Moderate	.32	.32		
	20-60	0-2	1.30-1.80	6.00-20.00	0.02-0.04	Low	.10	.10		
Eldean----------	0-12	15-25	1.40-1.60	0.60-2.00	0.09-0.13	Moderate	.32	.32	4	5
	12-19	25-45	1.30-1.60	0.60-2.00	0.07-0.11	Low	.37	.64		
	19-60	2-8	1.55-1.70	6.00-20.00	0.02-0.06	Low	.10	.43		
EqC2:										
Eldean----------	0-7	27-33	1.35-1.55	0.60-2.00	0.11-0.15	Moderate	.32	.37	4	8
	7-22	35-48	1.40-1.60	0.20-2.00	0.08-0.14	Moderate	.37	.49		
	22-28	25-45	1.30-1.60	0.60-2.00	0.07-0.14	Low	.37	.64		
	28-80	2-8	1.55-1.70	6.00-20.00	0.01-0.04	Low	.10	.43		
Casco-----------	0-7	5-15	1.35-1.60	0.60-2.00	0.08-0.12	Low	.17	.24	3	8
	7-19	18-35	1.55-1.65	0.60-2.00	0.09-0.19	Moderate	.32	.32		
	19-80	0-2	1.30-1.70	20.00-20.00	0.02-0.04	Low	.10	---		
ErB:										
Eldean----------	0-12	15-25	1.30-1.50	0.60-2.00	0.13-0.17	Low	.37	.43	4	5
	12-23	35-48	1.40-1.60	0.60-2.00	0.09-0.13	Moderate	.37	.49		
	23-29	25-45	1.30-1.60	0.60-6.00	0.07-0.11	Low	.37	.64		
	29-60	2-8	1.55-1.70	6.00-20.00	0.02-0.06	Low	.10	.43		
Miamian---------	0-11	14-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37	4	6
	11-38	35-48	1.45-1.70	0.20-0.60	0.12-0.16	Moderate	.37	.43		
	38-60	16-31	1.60-1.85	0.20-0.60	0.07-0.12	Low	.37	.49		
ErC:										
Eldean----------	0-8	15-25	1.30-1.50	0.60-2.00	0.13-0.17	Low	.37	.43	4	5
	8-18	35-48	1.40-1.60	0.60-2.00	0.09-0.13	Moderate	.37	.49		
	18-24	25-45	1.30-1.60	0.60-6.00	0.07-0.11	Low	.37	.64		
	24-60	2-8	1.55-1.70	6.00-20.00	0.02-0.06	Low	.10	.43		
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37	4	6
	7-33	35-48	1.45-1.70	0.20-0.60	0.12-0.16	Moderate	.37	.43		
	33-60	16-31	1.60-1.85	0.20-0.60	0.07-0.12	Low	.37	.49		
Gn:										
Genesee---------	0-25	17-25	1.30-1.50	0.60-2.00	0.16-0.20	Low	.32	.32	4	6
	25-43	10-20	1.30-1.60	0.60-2.00	0.13-0.17	Low	.32	.32		
	43-60	0-5	1.50-1.70	6.00-20.00	0.06-0.10	Low	.10	.37		
GwB:										
Glynwood--------	0-8	16-27	1.25-1.50	0.60-2.00	0.16-0.20	Low	.43	.43	4	6
	8-29	35-55	1.45-1.70	0.06-0.20	0.10-0.15	Moderate	.32	.37		
	29-60	27-36	1.65-1.85	0.06-0.20	0.06-0.10	Low	.32	.37		
GwB2:										
Glynwood--------	0-6	16-27	1.25-1.50	0.60-2.00	0.16-0.20	Low	.43	.43	4	6
	6-25	35-55	1.45-1.70	0.06-0.20	0.10-0.15	Moderate	.32	.37		
	25-60	27-36	1.65-1.85	0.06-0.20	0.06-0.10	Low	.32	.37		

TABLE 30.--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					
GwC2:										
Glynwood--------	0-5	16-27	1.25-1.50	0.60-2.00	0.16-0.20	Low	.43	.43	4	6
	5-24	35-55	1.45-1.70	0.06-0.20	0.10-0.15	Moderate	.32	.37		
	24-60	27-36	1.65-1.85	0.06-0.20	0.06-0.10	Low	.32	.37		
GwD2:										
Glynwood--------	0-4	16-27	1.25-1.50	0.60-2.00	0.16-0.20	Low	.43	.43	4	6
	4-24	35-55	1.45-1.70	0.06-0.20	0.10-0.15	Moderate	.32	.37		
	24-60	27-36	1.65-1.85	0.06-0.20	0.06-0.10	Low	.32	.37		
GyC3:										
Glynwood--------	0-4	27-40	1.35-1.55	0.20-0.60	0.16-0.20	Low	.43	.49	4	6
	4-22	35-55	1.45-1.70	0.06-0.20	0.10-0.15	Moderate	.32	.37		
	22-60	27-36	1.65-1.85	0.06-0.20	0.06-0.10	Low	.32	.37		
GyD3:										
Glynwood--------	0-4	27-40	1.35-1.55	0.20-0.60	0.16-0.20	Low	.43	.49	4	6
	4-20	35-55	1.45-1.70	0.06-0.20	0.10-0.15	Moderate	.32	.37		
	20-60	27-36	1.65-1.85	0.06-0.20	0.06-0.10	Low	.32	.37		
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		
Ko:										
Kokomo----------	0-19	27-35	1.35-1.50	0.60-2.00	0.17-0.19	Moderate	.24	.24	5	7
	19-52	35-40	1.40-1.60	0.20-0.60	0.18-0.20	Moderate	.32	.32		
	52-80	16-25	1.50-1.75	0.20-0.60	0.05-0.19	Low	.32	.37		
Ln:										
Linwood---------	0-3	0-0	0.15-0.40	6.00-20.00	0.20-0.30	---	---	---	2	2
	3-28	0-0	0.15-0.40	6.00-20.00	0.20-0.30	---	---	---		
	28-60	5-35	1.60-1.90	0.20-0.60	0.14-0.18	Moderate	.28	.28		
LrE2:										
Lorenzo---------	0-7	18-27	1.25-1.40	2.00-6.00	0.13-0.17	Low	.28	.28	3	6
	7-16	20-35	1.60-1.70	2.00-6.00	0.10-0.14	Low	.28	.32		
	16-60	1-5	1.75-1.95	6.00-20.00	0.02-0.06	Low	.10	.10		
Rodman----------	0-15	8-25	1.20-1.50	2.00-6.00	0.10-0.14	Low	.20	.32	3	6
	15-60	0-10	1.60-1.70	6.00-20.00	0.02-0.04	Low	.10	.37		

TABLE 30.--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					
MaB:										
Martinsville----	0-8	10-22	1.30-1.40	0.60-2.00	0.14-0.18	Low	.37	.37	5	5
	8-30	22-38	1.40-1.65	0.60-2.00	0.12-0.16	Moderate	.37	.37		
	30-50	15-28	1.55-1.65	0.60-6.00	0.10-0.14	Moderate	.37	.37		
	50-60	8-15	1.65-1.70	0.60-6.00	0.08-0.13	Low	.28	.32		
Ockley----------	0-12	10-20	1.30-1.40	0.60-2.00	0.16-0.20	Low	.37	.37	5	5
	12-37	26-45	1.40-1.65	0.60-2.00	0.15-0.17	Moderate	.37	.37		
	37-47	15-25	1.60-1.70	2.00-6.00	0.12-0.16	Low	.24	.43		
	47-60	2-8	1.65-1.70	6.00-20.00	0.02-0.06	Low	.24	.28		
Md:										
Medway----------	0-20	18-27	1.20-1.45	0.60-2.00	0.18-0.22	Low	.28	.28	5	6
	20-60	5-30	1.20-1.60	0.60-2.00	0.13-0.17	Low	.32	.49		
MhA:										
Miamian---------	0-10	14-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37	4	6
	10-34	35-48	1.45-1.70	0.20-0.60	0.12-0.16	Moderate	.37	.43		
	34-60	16-27	1.60-1.85	0.20-0.60	0.07-0.12	Low	.37	.49		
MhB:										
Miamian---------	0-10	14-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37	4	6
	10-38	35-48	1.45-1.70	0.20-0.60	0.12-0.16	Moderate	.37	.43		
	38-80	16-27	1.60-1.85	0.20-0.60	0.07-0.12	Low	.37	.49		
MhB2:										
Miamian---------	0-8	14-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37	4	6
	8-30	35-48	1.45-1.70	0.20-0.60	0.12-0.16	Moderate	.37	.43		
	30-60	16-27	1.60-1.85	0.20-0.60	0.07-0.12	Low	.37	.49		
MhC2:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37	4	6
	7-28	35-48	1.45-1.70	0.20-0.60	0.12-0.16	Moderate	.37	.43		
	28-60	16-27	1.60-1.85	0.20-0.60	0.07-0.12	Low	.37	.49		
MhD2:										
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37	4	6
	7-28	35-48	1.45-1.70	0.20-0.60	0.12-0.16	Moderate	.37	.43		
	28-60	16-27	1.60-1.85	0.20-0.60	0.07-0.12	Low	.37	.49		
MkA:										
Miamian---------	0-10	14-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37	4	6
	10-32	35-48	1.45-1.70	0.20-0.60	0.12-0.16	Moderate	.37	.43		
	32-50	16-27	1.55-1.75	0.20-0.60	0.07-0.12	Moderate	.37	.43		
	50-60	16-27	1.60-1.80	0.20-0.60	0.04-0.08	Moderate	.37	.64		
	60-65	---	---	0.00-0.20	---	---	---	---		
MkB:										
Miamian---------	0-10	14-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37	4	6
	10-32	35-48	1.45-1.70	0.20-0.60	0.12-0.16	Moderate	.37	.43		
	32-50	16-27	1.55-1.75	0.20-0.60	0.07-0.12	Moderate	.37	.43		
	50-60	16-27	1.60-1.80	0.20-0.60	0.04-0.08	Moderate	.37	.64		
	60-65	---	---	0.00-0.20	---	---	---	---		
MkB2:										
Miamian---------	0-6	14-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37	4	6
	6-45	35-48	1.45-1.70	0.20-0.60	0.12-0.16	Moderate	.37	.43		
	45-60	16-27	1.60-1.80	0.20-0.60	0.04-0.08	Moderate	.37	.64		
	60-65	---	---	0.00-0.20	---	---	---	---		

TABLE 30.--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					
MkC2:										
Miamian---------	0-5	14-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37	4	6
	5-44	35-48	1.45-1.70	0.20-0.60	0.12-0.16	Moderate	.37	.43		
	44-60	16-27	1.60-1.80	0.20-0.60	0.04-0.08	Moderate	.37	.64		
	60-65	---	---	0.00-0.20	---	---	---	---		
MlC3:										
Miamian---------	0-7	27-38	1.35-1.55	0.60-2.00	0.16-0.20	Moderate	.32	.32	4	6
	7-18	35-48	1.45-1.70	0.20-0.60	0.12-0.16	Moderate	.37	.43		
	18-60	16-31	1.60-1.85	0.20-0.60	0.07-0.12	Low	.37	.49		
MlD3:										
Miamian---------	0-7	27-38	1.35-1.55	0.60-2.00	0.16-0.20	Moderate	.32	.32	4	6
	7-15	35-48	1.45-1.70	0.20-0.60	0.12-0.16	Moderate	.37	.43		
	15-60	16-31	1.60-1.85	0.20-0.60	0.07-0.12	Low	.37	.49		
MmE:										
Hennepin--------	0-14	20-30	1.20-1.40	0.60-2.00	0.11-0.17	Low	.28	.28	5	6
	14-60	18-35	1.70-1.85	0.20-0.60	0.06-0.10	Low	.32	.32		
Miamian---------	0-7	14-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37	4	6
	7-25	35-48	1.45-1.70	0.20-0.60	0.12-0.16	Moderate	.37	.43		
	25-60	16-27	1.60-1.85	0.20-0.60	0.07-0.12	Low	.37	.49		
MmF:										
Hennepin--------	0-14	20-32	1.20-1.40	0.60-2.00	0.11-0.17	Low	.28	.28	5	6
	14-60	18-30	1.70-1.85	0.20-0.60	0.06-0.10	Low	.32	.32		
Miamian---------	0-5	14-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37	4	6
	5-22	35-48	1.45-1.70	0.20-0.60	0.12-0.16	Moderate	.37	.43		
	22-60	16-27	1.60-1.85	0.20-0.60	0.07-0.12	Low	.37	.49		
MnA:										
Millsdale-------	0-11	18-27	1.30-1.45	0.60-2.00	0.16-0.20	Moderate	.24	.37	2	6
	11-30	35-48	1.40-1.65	0.20-0.60	0.11-0.17	High	.32	.37		
	30-32	---	---	0.06-0.60	---	---	---	---		
MnB:										
Millsdale-------	0-10	18-27	1.30-1.45	0.60-2.00	0.16-0.20	Moderate	.24	.37	2	6
	10-30	35-48	1.40-1.65	0.20-0.60	0.11-0.17	High	.32	.37		
	30-32	---	---	0.06-0.60	---	---	---	---		
MoA:										
Millsdale-------	0-14	27-40	1.30-1.50	0.60-2.00	0.16-0.20	Moderate	.28	.32	2	6
	14-30	35-45	1.40-1.65	0.20-0.60	0.11-0.17	High	.32	.37		
	30-32	---	---	0.06-0.60	---	---	---	---		
MoB:										
Millsdale-------	0-13	27-40	1.30-1.50	0.60-2.00	0.16-0.20	Moderate	.28	.32	2	6
	13-30	35-45	1.40-1.65	0.20-0.60	0.11-0.17	High	.32	.37		
	30-32	---	---	0.06-0.60	---	---	---	---		
MpA:										
Milton----------	0-8	14-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37	2	6
	8-19	35-50	1.45-1.65	0.20-0.60	0.12-0.16	Moderate	.37	.43		
	19-29	25-45	1.40-1.70	0.20-0.60	0.10-0.14	Moderate	.37	.43		
	29-31	---	---	0.06-0.60	---	---	---	---		
MpB:										
Milton----------	0-8	14-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37	2	6
	8-19	35-50	1.45-1.65	0.20-0.60	0.12-0.16	Moderate	.37	.43		
	19-29	25-45	1.40-1.70	0.20-0.60	0.10-0.14	Moderate	.37	.43		
	29-31	---	---	0.06-0.60	---	---	---	---		

TABLE 30.--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					
MpB2:										
Milton----------	0-8	14-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37	2	6
	8-19	35-50	1.45-1.65	0.20-0.60	0.12-0.16	Moderate	.37	.43		
	19-29	25-45	1.40-1.70	0.20-0.60	0.10-0.14	Moderate	.37	.43		
	29-31	---	---	0.06-0.60	---	---	---	---		
MpC2:										
Milton----------	0-8	14-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37	2	6
	8-19	35-50	1.45-1.65	0.20-0.60	0.12-0.16	Moderate	.37	.43		
	19-29	25-45	1.40-1.70	0.20-0.60	0.10-0.14	Moderate	.37	.43		
	29-31	---	---	0.06-0.60	---	---	---	---		
MpD2:										
Milton----------	0-8	14-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37	2	6
	8-19	35-50	1.45-1.65	0.20-0.60	0.12-0.16	Moderate	.37	.43		
	19-29	25-45	1.40-1.70	0.20-0.60	0.10-0.14	Moderate	.37	.43		
	29-31	---	---	0.06-0.60	---	---	---	---		
Mt:										
Montgomery------	0-16	35-40	1.35-1.55	0.60-2.00	0.16-0.21	Moderate	.32	.32	5	4
	16-33	35-55	1.45-1.65	0.06-0.20	0.12-0.16	Moderate	.37	.37		
	33-68	35-48	1.50-1.60	0.06-0.60	0.10-0.15	Moderate	.37	.37		
OcA:										
Ockley----------	0-12	11-22	1.30-1.40	0.60-2.00	0.16-0.20	Low	.37	.37	4	5
	12-37	20-45	1.45-1.60	0.60-2.00	0.15-0.17	Moderate	.37	.43		
	37-47	20-35	1.40-1.55	2.00-6.00	0.12-0.16	Low	.24	.43		
	47-60	2-5	1.60-1.80	6.00-20.00	0.02-0.06	Low	.10	.37		
OcB:										
Ockley----------	0-12	11-22	1.30-1.40	0.60-2.00	0.16-0.20	Low	.37	.37	4	5
	12-37	20-45	1.45-1.60	0.60-2.00	0.15-0.17	Moderate	.37	.43		
	37-47	20-35	1.40-1.55	2.00-6.00	0.12-0.16	Low	.24	.43		
	47-60	2-5	1.60-1.80	6.00-20.00	0.02-0.06	Low	.10	.37		
OdA:										
Odell-----------	0-16	18-27	1.30-1.50	0.60-2.00	0.18-0.22	Low	.28	.28	5	6
	16-38	25-38	1.50-1.70	0.60-2.00	0.14-0.18	Moderate	.28	.28		
	38-60	18-27	1.70-1.90	0.20-0.60	0.07-0.12	Low	.37	.43		
OdB:										
Odell-----------	0-15	18-27	1.30-1.50	0.60-2.00	0.18-0.22	Low	.28	.28	5	6
	15-38	25-38	1.50-1.70	0.60-2.00	0.14-0.18	Moderate	.28	.28		
	38-60	18-27	1.70-1.90	0.20-0.60	0.07-0.12	Low	.37	.43		
Pe:										
Pewamo----------	0-10	27-40	1.35-1.55	0.60-2.00	0.17-0.21	Moderate	.28	.28	5	6
	10-35	35-50	1.40-1.70	0.20-0.60	0.12-0.16	Moderate	.32	.32		
	35-60	30-40	1.50-1.70	0.20-0.60	0.07-0.12	Moderate	.37	.37		
Pg:										
Gravel pits-----	---	---	---	---	---	---	---	---	-	---
Pq:										
Quarries--------	---	---	---	---	---	---	---	---	-	---
RdA:										
Randolph--------	0-8	16-27	1.30-1.45	0.60-2.00	0.16-0.20	Low	.37	.37	2	6
	8-29	35-50	1.40-1.65	0.20-0.60	0.13-0.17	High	.37	.43		
	29-34	18-36	1.50-1.70	0.20-2.00	0.10-0.14	Moderate	.37	.64		
	34-36	---	---	0.06-0.60	---	---	---	---		

TABLE 30.--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					
RdB:										
Randolph--------	0-8	16-27	1.30-1.45	0.60-2.00	0.16-0.20	Low	.37	.37	2	6
	8-29	35-50	1.40-1.65	0.20-0.60	0.13-0.17	High	.37	.43		
	29-34	18-36	1.50-1.70	0.20-2.00	0.10-0.14	Moderate	.37	.64		
	34-36	---	---	0.06-0.60	---	---	---	---		
RgE:										
Rodman----------	0-7	8-25	1.20-1.50	2.00-6.00	0.10-0.12	Low	.20	.32	3	8
	7-12	5-25	1.10-1.50	2.00-6.00	0.09-0.12	Low	.20	.32		
	12-80	0-10	1.60-1.70	20.00-99.90	0.02-0.04	Low	.10	.37		
RhB:										
Ritchey---------	0-6	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	.37	.37	1	6
	6-16	27-48	1.35-1.60	0.60-2.00	0.13-0.17	Moderate	.37	.32		
	16-18	---	---	0.06-0.60	---	---	---	---		
RhC:										
Ritchey---------	0-6	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	.37	.37	1	6
	6-16	27-48	1.35-1.60	0.60-2.00	0.13-0.17	Moderate	.37	.32		
	16-18	---	---	0.06-0.60	---	---	---	---		
RhE:										
Ritchey---------	0-4	18-27	1.20-1.40	0.60-2.00	0.16-0.20	Low	.37	.37	1	6
	4-14	27-48	1.35-1.60	0.60-2.00	0.13-0.17	Moderate	.37	.32		
	14-16	---	---	0.06-0.60	---	---	---	---		
Rs:										
Ross------------	0-45	15-27	1.20-1.45	0.60-2.00	0.18-0.22	Low	.32	.32	5	5
	45-60	5-32	1.35-1.60	0.60-2.00	0.13-0.17	Low	.32	.49		
Rt:										
Ross Variant----	0-7	15-27	1.20-1.45	0.60-2.00	0.18-0.22	Low	.28	.28	1	6
	7-13	18-32	1.20-1.50	0.60-2.00	0.15-0.19	Low	.28	.28		
	13-20	---	---	0.00-0.20	---	---	---	---		
	20-22	---	---	0.00-0.60	---	---	---	---		
Sh:										
Shoals----------	0-40	18-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.24	.24	5	6
	40-60	12-25	1.35-1.60	6.00-20.00	0.06-0.10	Low	.37	.43		
Sk:										
Shoals Variant--	0-8	18-27	1.30-1.50	0.60-2.00	0.16-0.20	Low	.37	.37	2	6
	8-36	15-27	1.35-1.60	0.60-2.00	0.14-0.22	Low	.37	.37		
	36-38	---	---	0.00-0.60	0.13-0.17	---	---	---		
SlA:										
Sleeth----------	0-10	11-22	1.30-1.45	0.60-2.00	0.16-0.20	Low	.32	.32	4	5
	10-42	20-38	1.45-1.60	0.60-2.00	0.13-0.17	Moderate	.32	.37		
	42-60	2-5	1.60-1.80	6.00-20.00	0.02-0.06	Low	.10	.37		
St:										
Stonelick-------	0-15	8-22	1.20-1.45	0.60-2.00	0.10-0.15	Low	.32	.37	5	5
	15-38	5-18	1.30-1.55	2.00-6.00	0.06-0.12	Low	.24	.28		
	38-60	5-27	1.30-1.55	2.00-6.00	0.02-0.06	Low	.24	.28		
Ts:										
Tremont---------	0-18	20-27	1.20-1.45	0.60-2.00	0.20-0.24	Low	.28	.28	5	4L
	18-28	22-35	1.20-1.25	0.60-2.00	0.18-0.22	Moderate	.28	.24		
	28-40	18-32	1.35-1.55	0.60-2.00	0.15-0.22	Low	.32	.37		
	40-80	5-15	1.50-1.75	2.00-6.00	0.06-0.12	Low	.32	.37		
Ud:										
Udorthents------	---	---	---	---	---	---	---	---	-	---

TABLE 30.--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					
Uf:										
Udorthents	---	---	---	---	---	---	---	---	-	---
Wa:										
Wallkill	0-27	10-27	1.15-1.40	0.60-2.00	0.16-0.20	Low	.37	.37	5	5
	27-60	0-0	0.25-0.45	6.00-20.00	0.20-0.30	---	---	---		
WdA:										
Warsaw	0-18	15-25	1.30-1.50	0.60-2.00	0.14-0.19	Low	.28	.28	4	5
	18-37	17-35	1.35-1.60	0.60-2.00	0.10-0.15	Moderate	.28	.32		
	37-60	2-8	1.40-1.65	6.00-20.00	0.02-0.06	Low	.10	.37		
WeA:										
Wea	0-18	12-22	1.30-1.45	0.60-2.00	0.18-0.22	Low	.32	.32	4	5
	18-44	20-38	1.40-1.60	0.60-2.00	0.13-0.17	Moderate	.32	.32		
	44-60	1-5	1.60-1.80	6.00-20.00	0.02-0.06	Low	.10	.28		
Wt:										
Westland	0-18	27-38	1.45-1.55	0.20-2.00	0.17-0.21	Moderate	.24	.28	4	6
	18-21	20-35	1.40-1.65	0.20-0.60	0.13-0.17	Moderate	.28	.32		
	21-45	18-35	1.55-1.70	0.60-2.00	0.13-0.17	Low	.28	.37		
	45-60	1-10	1.65-1.95	6.00-20.00	0.02-0.06	Low	.10	.24		

TABLE 31.--CHEMICAL PROPERTIES OF THE SOILS

(Absence of an entry indicates that data were not estimated. See text on page 173 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	0-23	6.1-7.3	2.0-4.0	10-24	0
	23-60	6.1-7.8	0.5-1.0	10-22	0-5
BlA:					
Blount	0-9	5.6-6.0	2.0-3.0	17-22	0
	9-33	5.6-7.8	0.0-1.0	21-30	0
	33-60	7.9-8.4	0.0-0.5	16-25	5-30
BlB:					
Blount	0-9	5.6-6.0	2.0-3.0	17-22	0
	9-33	5.6-7.8	0.0-1.0	21-30	0
	33-60	7.9-8.4	0.0-0.5	16-25	5-30
BlB2:					
Blount	0-5	5.6-6.0	1.0-2.0	17-22	0
	5-26	5.6-7.8	0.0-1.0	21-30	0
	26-60	7.9-8.4	0.0-0.5	16-25	5-30
Bs:					
Brookston	0-39	6.1-7.8	3.0-5.0	27-35	0
	39-60	7.9-8.4	0.1-1.0	3.0-16	5-35
CcD2:					
Casco	0-7	5.6-7.3	1.0-2.0	3.0-15	---
	7-17	5.6-7.8	0.0-0.5	4.0-30	0-3
	17-80	7.4-8.4	0.0-0.5	0.0-3.0	1-25
CeA:					
Celina	0-12	5.6-7.3	1.0-3.0	9.0-19	0
	12-24	5.6-7.8	0.5-1.0	18-32	0-15
	24-60	7.9-8.4	0.3-0.5	8.0-14	25-45
CeB:					
Celina	0-11	5.6-7.3	1.0-3.0	9.0-19	0
	11-24	5.6-7.8	0.5-2.0	18-32	0-15
	24-60	7.9-8.4	0.1-1.0	8.0-14	25-45
CeB2:					
Celina	0-6	5.6-7.3	0.5-2.0	9.0-19	0
	6-19	5.6-7.8	0.5-2.0	18-32	0-15
	19-60	7.9-8.4	0.1-1.0	8.0-14	25-45
CoA:					
Corwin	0-13	6.1-7.3	2.0-4.0	10-24	0
	13-28	6.1-7.8	0.5-1.0	11-23	0
	28-60	7.9-8.4	0.0-1.0	12-23	10-30
CoB:					
Corwin	0-12	6.1-7.3	2.0-4.0	10-24	0
	12-28	6.1-7.8	0.5-1.0	11-23	0
	28-60	7.9-8.4	0.0-1.0	12-23	10-30
CrA:					
Crosby	0-8	5.6-6.5	1.0-3.0	6.0-20	0
	8-24	5.6-7.8	0.5-1.0	7.0-18	0
	24-60	7.4-8.4	0.0-0.5	15-29	5-40

TABLE 31.--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
CrB:					
Crosby----------	0-8	5.6-6.5	1.0-3.0	6.0-20	0
	8-23	5.6-7.8	0.5-1.0	7.0-18	0
	23-60	7.4-8.4	0.0-0.5	15-29	10-40
Ed:					
Edwards---------	0-21	6.6-7.8	55-75	150-230	---
	21-60	7.4-8.4	0.5-3.0	1.0-10	50-90
Ee:					
Eel-------------	0-31	7.4-7.8	1.0-2.0	12-20	0
	31-42	7.9-8.4	0.5-1.0	12-20	0-15
	42-60	7.9-8.4	0.2-1.0	8.0-18	0-25
ElA:					
Eldean----------	0-12	5.6-7.3	1.0-3.0	8.0-21	0
	12-23	5.6-7.3	0.5-1.0	20-30	0
	23-30	6.6-8.4	0.5-1.0	20-30	0
	30-60	7.9-8.4	0.5-1.0	1.0-8.0	40-65
ElB:					
Eldean----------	0-11	5.6-7.3	1.0-3.0	8.0-21	0
	11-23	5.6-7.3	0.5-1.0	20-30	0
	23-29	6.6-8.4	0.5-1.0	20-30	0
	29-60	7.9-8.4	0.5-1.0	1.0-8.0	40-65
ElB2:					
Eldean----------	0-6	5.6-7.3	0.5-2.0	8.0-21	0
	6-17	5.6-7.3	0.5-1.0	20-30	0
	17-24	6.6-8.4	0.5-1.0	20-30	0
	24-60	7.9-8.4	0.5-1.0	1.0-8.0	40-65
EmA:					
Eldean----------	0-12	5.6-7.3	1.0-3.0	8.0-21	0
	12-23	5.6-7.3	0.5-1.0	20-30	0
	23-30	6.6-8.4	0.5-1.0	20-30	0
	30-60	7.9-8.4	0.5-1.0	1.0-8.0	40-65
EmB:					
Eldean----------	0-11	5.6-7.3	1.0-3.0	8.0-21	0
	11-23	5.6-7.3	0.5-1.0	20-30	0
	23-29	6.6-8.4	0.5-1.0	20-30	0
	29-60	7.9-8.4	0.5-1.0	1.0-8.0	40-65
EmB2:					
Eldean----------	0-8	5.6-7.3	1.0-3.0	8.0-21	---
	8-18	5.6-7.8	0.5-1.0	20-30	---
	18-24	6.6-8.4	0.5-1.0	20-30	10-50
	24-80	7.4-8.4	0.5-1.0	1.0-8.0	40-65
EoC2:					
Eldean----------	0-8	5.6-7.3	0.5-2.0	8.0-22	0
	8-17	5.6-7.3	0.5-1.0	20-30	0
	17-23	6.6-8.4	0.5-1.0	20-30	0
	23-60	7.9-8.4	0.5-1.0	1.0-8.0	40-65
Casco-----------	0-8	6.6-7.8	0.0-1.0	3.0-15	0
	8-20	6.6-7.8	0.0-0.5	4.0-30	0-3
	20-60	7.9-8.4	0.0-0.5	0.0-3.0	1-25

TABLE 31.--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
EoD2:					
Eldean----------	0-8	5.6-7.3	0.5-2.0	8.0-22	0
	8-19	5.6-7.3	0.5-1.0	20-30	0
	19-26	6.6-8.4	0.5-1.0	20-30	0
	26-60	7.9-8.4	0.5-1.0	1.0-8.0	40-65
Casco-----------	0-5	6.6-7.8	0.0-1.0	3.0-15	0
	5-17	6.6-7.8	0.0-0.5	4.0-30	0-3
	17-60	7.9-8.4	0.0-0.5	0.0-3.0	1-25
EpD3:					
Casco-----------	0-8	6.6-7.8	0.0-1.0	4.0-30	0
	8-20	5.6-7.8	0.0-0.5	4.0-30	0-3
	20-60	7.4-8.4	0.0-0.5	0.0-3.0	1-25
Eldean----------	0-12	5.6-7.3	0.0-1.0	20-30	0
	12-19	6.6-8.4	0.5-1.0	20-30	0
	19-60	7.9-8.4	0.5-1.0	1.0-8.0	40-65
EqC2:					
Eldean----------	0-7	5.6-7.3	0.5-2.0	12-24	---
	7-22	5.6-7.8	---	20-30	---
	22-28	6.6-8.4	---	20-30	---
	28-80	7.4-8.4	---	1.0-8.0	---
Casco-----------	0-7	5.6-7.3	1.0-2.0	3.0-15	---
	7-19	5.6-7.8	---	4.0-30	---
	19-80	7.4-8.4	---	0.0-3.0	---
ErB:					
Eldean----------	0-12	5.6-7.3	1.0-3.0	8.0-21	0
	12-23	5.6-7.3	0.5-1.0	20-30	0
	23-29	6.6-8.4	0.5-1.0	20-30	0
	29-60	7.9-8.4	0.5-1.0	1.0-8.0	40-65
Miamian---------	0-11	6.1-6.5	1.0-3.0	10-18	0
	11-38	5.1-7.8	0.5-1.0	17-28	0
	38-60	7.9-8.4	0.5-1.0	7.0-16	0-15
ErC:					
Eldean----------	0-8	5.6-7.3	1.0-3.0	8.0-21	0
	8-18	5.6-7.3	0.5-1.0	20-30	0
	18-24	6.6-8.4	0.5-1.0	20-30	0
	24-60	7.9-8.4	0.5-1.0	1.0-8.0	40-65
Miamian---------	0-7	6.1-6.5	1.0-3.0	10-18	0
	7-33	5.1-7.8	0.5-1.0	17-28	0
	33-60	7.9-8.4	0.5-1.0	7.0-16	0-15
Gn:					
Genesee---------	0-25	6.6-7.8	1.0-3.0	9.0-21	0-10
	25-43	7.9-8.4	0.5-1.0	5.0-14	0-30
	43-60	7.9-8.4	0.2-1.0	0.0-5.0	10-40
GwB:					
Glynwood--------	0-8	5.6-7.3	1.0-3.0	12-22	0
	8-29	5.6-7.8	0.5-1.0	20-33	0
	29-60	7.4-8.4	0.3-0.5	11-27	22-35
GwB2:					
Glynwood--------	0-6	5.6-7.3	0.5-2.0	12-22	0
	6-25	5.6-7.8	0.5-1.0	20-33	0
	25-60	7.4-8.4	0.3-0.5	11-27	22-35

TABLE 31.--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
GwC2:					
Glynwood--------	0-5	5.6-7.3	0.5-2.0	12-22	0
	5-24	5.6-7.8	0.5-1.0	20-33	0
	24-60	7.4-8.4	0.3-0.5	11-27	22-35
GwD2:					
Glynwood--------	0-4	5.6-7.3	0.5-2.0	12-22	0
	4-24	5.6-7.8	0.5-1.0	20-33	0
	24-60	7.4-8.4	0.3-0.5	11-27	22-35
GyC3:					
Glynwood--------	0-4	5.6-7.3	0.0-1.0	12-20	0
	4-22	5.6-7.8	0.5-1.0	20-33	0
	22-60	7.4-8.4	0.3-0.5	11-27	22-35
GyD3:					
Glynwood--------	0-4	5.6-7.3	0.0-1.0	12-20	0
	4-20	5.6-7.8	0.5-1.0	20-33	0
	20-60	7.4-8.4	0.3-0.5	11-27	22-35
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
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
Ko:					
Kokomo----------	0-19	6.1-7.3	3.0-6.0	16-33	---
	19-52	6.1-7.8	1.0-2.0	16-28	---
	52-80	7.9-8.4	0.2-1.0	6.0-17	15-35
Ln:					
Linwood---------	0-3	7.4-8.4	40-70	150-230	---
	3-28	7.4-8.4	50-70	150-230	---
	28-60	7.9-8.4	0.0-1.0	2.0-20	5-25
LrE2:					
Lorenzo---------	0-7	6.6-7.8	1.0-3.0	11-19	---
	7-16	6.6-8.4	0.5-1.0	10-22	---
	16-60	7.9-8.4	0.0-0.5	1.0-3.0	---
Rodman----------	0-15	7.4-7.8	1.0-3.0	5.0-18	0-15
	15-60	7.9-8.4	0.0-1.0	1.0-6.0	10-45
MaB:					
Martinsville----	0-8	5.6-7.3	1.0-2.0	6.0-18	0
	8-30	5.6-6.5	0.0-0.5	8.0-20	0
	30-50	6.6-8.4	0.0-0.5	6.0-17	0-10
	50-60	7.9-8.4	0.0-0.2	3.0-9.0	5-25
Ockley----------	0-12	6.1-6.5	1.0-2.0	6.0-16	0
	12-37	6.1-7.8	0.0-1.0	10-22	0
	37-47	6.6-7.8	0.0-0.5	6.0-17	0-10
	47-60	7.9-8.4	0.0-0.2	3.0-9.0	5-30

TABLE 31.--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
Md:					
Medway----------	0-20	7.4-7.8	3.0-6.0	13-28	0
	20-60	7.4-8.4	0.5-1.0	2.0-18	0
MhA:					
Miamian---------	0-10	6.1-6.5	1.0-3.0	10-18	0
	10-34	5.6-7.8	0.5-1.0	17-28	0
	34-60	7.9-8.4	0.3-1.0	7.0-16	0-15
MhB:					
Miamian---------	0-10	6.1-6.5	0.5-2.0	10-18	0
	10-38	5.6-7.8	0.5-1.0	17-28	0
	38-80	7.9-8.4	0.3-1.0	7.0-16	0-15
MhB2:					
Miamian---------	0-8	6.1-6.5	0.5-2.0	10-18	0
	8-30	5.6-7.8	0.5-1.0	17-28	0
	30-60	7.9-8.4	0.3-1.0	7.0-16	0-15
MhC2:					
Miamian---------	0-7	6.1-6.5	0.5-2.0	10-18	0
	7-28	5.6-7.8	0.5-1.0	17-28	0
	28-60	7.9-8.4	0.3-1.0	7.0-16	0-15
MhD2:					
Miamian---------	0-7	6.1-6.5	1.0-3.0	10-18	0
	7-28	5.6-7.8	0.5-1.0	17-28	0
	28-60	7.9-8.4	0.3-1.0	7.0-16	0-15
MkA:					
Miamian---------	0-10	6.1-6.5	1.0-3.0	10-20	0
	10-32	5.6-7.8	0.5-1.0	17-25	0
	32-50	5.6-7.8	0.3-1.0	16-22	0-10
	50-60	7.9-8.4	0.3-1.0	12-20	25-45
	60-65	---	---	---	---
MkB:					
Miamian---------	0-10	6.1-6.5	1.0-3.0	10-20	0
	10-32	5.6-7.8	0.5-1.0	17-25	0
	32-50	5.1-7.8	0.3-1.0	16-22	0-10
	50-60	7.9-8.4	0.3-1.0	12-20	25-45
	60-65	---	---	---	---
MkB2:					
Miamian---------	0-6	6.1-6.5	0.5-2.0	10-20	0
	6-45	5.6-7.8	0.5-1.0	17-25	0
	45-60	7.9-8.4	0.3-1.0	12-20	25-45
	60-65	---	---	---	---
MkC2:					
Miamian---------	0-5	6.1-6.5	0.5-2.0	10-20	0
	5-44	5.6-7.8	0.5-1.0	17-25	0
	44-60	7.9-8.4	0.3-1.0	12-20	25-45
	60-65	---	---	---	---
MlC3:					
Miamian---------	0-7	6.1-6.5	0.0-1.0	14-20	0
	7-18	5.6-7.8	0.5-1.0	17-28	0
	18-60	7.9-8.4	0.3-1.0	7.0-16	0-15
MlD3:					
Miamian---------	0-7	6.1-6.5	0.0-1.0	14-20	0
	7-15	5.6-7.8	0.5-1.0	17-28	0
	15-60	7.9-8.4	0.3-1.0	7.0-16	0-15

TABLE 31.--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
MmE:					
Hennepin--------	0-14	6.1-7.8	1.0-2.0	14-22	0-20
	14-60	7.9-8.4	0.0-0.5	11-18	10-45
Miamian---------	0-7	6.1-6.5	1.0-3.0	10-18	0
	7-25	5.6-7.8	0.5-1.0	17-28	0
	25-60	7.9-8.4	0.3-1.0	7.0-16	0-15
MmF:					
Hennepin--------	0-14	6.1-7.8	1.0-2.0	14-22	0-20
	14-60	7.9-8.4	0.0-0.5	11-18	10-45
Miamian---------	0-5	6.1-6.5	1.0-3.0	10-18	0
	5-22	5.6-7.8	0.5-1.0	17-28	0
	22-60	7.9-8.4	0.3-1.0	7.0-16	0-15
MnA:					
Millsdale-------	0-11	6.1-7.3	4.0-6.0	20-36	0
	11-30	6.1-7.8	0.5-2.0	15-30	0-15
	30-32	---	---	---	---
MnB:					
Millsdale-------	0-10	6.1-7.3	4.0-6.0	20-36	0
	10-30	6.1-7.8	0.5-2.0	15-30	0-15
	30-32	---	---	---	---
MoA:					
Millsdale-------	0-14	6.1-7.3	4.0-7.0	20-36	0
	14-30	6.1-7.8	0.5-2.0	15-30	0-15
	30-32	---	---	---	---
MoB:					
Millsdale-------	0-13	6.1-7.3	4.0-7.0	20-36	0
	13-30	6.1-7.8	0.5-2.0	15-30	0-15
	30-32	---	---	---	---
MpA:					
Milton----------	0-8	6.1-6.5	1.0-3.0	10-22	0
	8-19	5.6-7.3	0.5-1.0	16-30	0-5
	19-29	6.1-7.8	0.0-0.5	10-27	0-15
	29-31	---	---	---	---
MpB:					
Milton----------	0-8	6.1-6.5	1.0-3.0	10-22	0
	8-19	5.6-7.3	0.5-1.0	16-30	0-5
	19-29	6.1-7.8	0.0-0.5	10-27	0-15
	29-31	---	---	---	---
MpB2:					
Milton----------	0-8	6.1-6.5	0.5-2.0	10-22	0
	8-19	5.6-7.3	0.5-1.0	16-30	0-5
	19-29	6.1-7.8	0.0-0.5	10-27	0-15
	29-31	---	---	---	---
MpC2:					
Milton----------	0-8	6.1-6.5	0.5-2.0	10-22	0
	8-19	5.6-7.3	0.5-1.0	16-30	0-5
	19-29	6.1-7.8	0.0-0.5	10-27	0-15
	29-31	---	---	---	---
MpD2:					
Milton----------	0-8	6.1-6.5	0.5-2.0	10-22	0
	8-19	5.6-7.3	0.5-1.0	16-30	0-5
	19-29	6.1-7.8	0.0-0.5	10-27	0-15
	29-31	---	---	---	---

TABLE 31.--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
Mt:					
Montgomery------	0-16	6.6-7.3	3.0-6.0	20-36	0-5
	16-33	6.6-7.8	0.0-1.0	20-35	0-10
	33-68	7.4-8.4	0.0-0.5	20-35	5-35
OcA:					
Ockley----------	0-12	6.1-6.5	0.5-3.0	3.0-15	0
	12-37	6.1-7.8	0.0-0.5	5.0-15	0
	37-47	6.6-7.8	0.0-0.5	2.0-15	0
	47-60	7.9-8.4	0.0-0.2	1.0-3.0	10-40
OcB:					
Ockley----------	0-12	6.1-6.5	0.5-3.0	3.0-15	0
	12-37	6.1-7.8	0.0-0.5	5.0-15	0
	37-47	6.6-7.8	0.0-0.5	2.0-15	0
	47-60	7.9-8.4	0.0-0.2	1.0-3.0	10-40
OdA:					
Odell-----------	0-16	6.1-7.3	2.0-4.0	11-25	0
	16-38	6.1-7.8	0.2-1.0	10-23	0
	38-60	7.9-8.4	0.0-1.0	4.0-13	5-35
OdB:					
Odell-----------	0-15	6.1-7.3	2.0-4.0	11-25	0
	15-38	6.1-7.8	0.2-1.0	10-23	0
	38-60	7.9-8.4	0.0-1.0	4.0-13	5-35
Pe:					
Pewamo----------	0-10	6.1-7.3	3.0-12	10-25	0
	10-35	6.6-7.3	0.5-2.0	10-20	0-5
	35-60	7.4-8.4	0.0-1.0	5.0-15	15-30
Pg:					
Gravel pits-----	---	---	---	---	---
Pq:					
Quarries--------	---	---	---	---	---
RdA:					
Randolph--------	0-8	5.6-6.5	1.0-3.0	8.0-22	0
	8-29	5.6-7.3	0.5-1.0	14-30	0
	29-34	7.4-7.8	0.0-0.0	8.0-20	0
	34-36	---	---	---	0-15
RdB:					
Randolph--------	0-8	5.1-6.5	1.0-3.0	8.0-22	0
	8-29	5.6-7.3	0.5-1.0	14-30	0
	29-34	7.4-7.8	0.0-0.0	8.0-20	0
	34-36	---	---	---	0-15
RgE:					
Rodman----------	0-7	6.6-8.4	2.0-4.0	5.0-18	0-15
	7-12	6.6-8.4	0.0-2.0	1.0-14	0-25
	12-80	7.4-8.4	0.0-1.0	1.0-6.0	10-45
RhB:					
Ritchey---------	0-6	5.6-7.3	1.0-3.0	13-22	0
	6-16	6.6-8.4	0.5-1.0	17-23	0-20
	16-18	---	---	---	---
RhC:					
Ritchey---------	0-6	5.6-7.3	1.0-3.0	13-22	0
	6-16	6.6-8.4	0.5-1.0	17-23	0-20
	16-18	---	---	---	---

TABLE 31.--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
RhE:					
Ritchey	0-4	5.6-7.3	1.0-3.0	13-22	0
	4-14	6.6-8.4	0.5-1.0	17-23	0-20
	14-16	---	---	---	---
Rs:					
Ross	0-45	6.6-8.4	3.0-5.0	12-26	---
	45-60	6.1-8.4	0.5-2.0	2.0-15	0-30
Rt:					
Ross Variant	0-7	7.4-7.8	4.0-8.0	14-32	---
	7-13	7.9-8.4	0.5-2.0	11-29	---
	13-20	---	---	---	---
	20-22	---	---	---	---
Sh:					
Shoals	0-40	7.4-7.8	2.0-5.0	12-27	0-5
	40-60	6.1-8.4	0.5-1.0	3.0-19	0-25
Sk:					
Shoals Variant	0-8	7.4-7.8	2.0-4.0	13-24	0-2
	8-36	7.9-8.4	0.5-1.0	7.0-14	---
	36-38	---	---	0.0-0.0	0-10
SlA:					
Sleeth	0-10	6.1-7.3	0.5-3.0	5.0-19	0
	10-42	6.1-7.8	0.5-1.0	9.0-23	0
	42-60	7.9-8.4	0.0-0.5	0.0-5.0	10-30
St:					
Stonelick	0-15	7.4-8.4	1.0-3.0	6.0-19	2-15
	15-38	7.9-8.4	0.3-1.0	2.0-11	10-40
	38-60	7.9-8.4	0.0-0.5	2.0-11	---
Ts:					
Tremont	0-18	7.4-8.4	4.0-7.0	20-24	5-15
	18-28	7.4-8.4	2.0-5.0	16-24	3-12
	28-40	7.4-8.4	0.1-1.0	16-24	3-12
	40-80	7.4-8.4	0.1-0.5	6.0-12	40-60
Ud:					
Udorthents	---	---	---	---	---
Uf:					
Udorthents	---	---	---	---	---
Wa:					
Wallkill	0-27	6.6-7.8	3.0-10	15-29	---
	27-60	5.6-7.8	55-75	150-230	---
WdA:					
Warsaw	0-18	6.1-7.8	2.0-5.0	10-25	0
	18-37	5.1-6.5	0.5-2.0	7.0-22	0
	37-60	7.9-8.4	0.0-1.0	1.0-7.0	15-25
WeA:					
Wea	0-18	6.1-7.3	2.0-5.0	8.0-24	0
	18-44	6.6-8.4	0.5-2.0	9.0-24	---
	44-60	7.9-8.4	0.0-1.0	0.0-5.0	0-35
Wt:					
Westland	0-18	6.1-7.3	2.0-6.0	15-31	0
	18-21	6.6-7.3	0.5-2.0	9.0-22	0
	21-45	7.4-7.8	0.5-2.0	3.0-15	0-10
	45-60	7.9-8.4	0.2-1.0	0.0-2.0	5-35

TABLE 32.--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 174 for additional information.)

Map symbol and soil name	Hydro-logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Kind	Surface water depth	Duration	Frequency	Duration	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
BlA:										
Blount	C	Jan-May	0.5-2.0	1.5-5.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
BlB:										
Blount	C	Jan-May	0.5-2.0	1.5-5.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
BlB2:										
Blount	C	Jan-May	0.5-2.0	1.5-5.0	Perched	---	---	None	---	None
		Jun-Dec	---	---	---	---	---	None	---	None
Bs:										
Brookston	B/D	Jan-May	0.0-1.0	>6.0	Apparent	0.0-0.5	Long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.0-1.0	>6.0	Apparent	0.0-0.5	Long	Frequent	---	None
CcD2:										
Casco	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
CeA:										
Celina	C	Jan-Apr	2.0-3.0	2.1-3.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CeB:										
Celina	C	Jan-Apr	2.0-3.0	2.1-3.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CeB2:										
Celina	C	Jan-Apr	2.0-3.0	2.1-3.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CoA:										
Corwin	B	Jan-Apr	2.0-4.0	>6.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CoB:										
Corwin	B	Jan-Apr	2.0-4.0	>6.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CrA:										
Crosby	C	Jan-Apr	0.5-2.0	1.0-3.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
CrB:										
Crosby	C	Jan-Apr	0.5-2.0	1.0-3.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Ed:										
Edwards	B/D	Jan-Jun	0.0-1.0	>6.0	Apparent	0.0-1.0	Very long	Frequent	---	None
		Jul-Aug	---	---	---	---	---	None	---	None
		Sep-Dec	0.0-1.0	>6.0	Apparent	0.0-1.0	Very long	Frequent	---	None
Ee:										
Eel	B	Jan-Apr	2.0-3.0	>6.0	Apparent	---	---	None	Brief	Occasional
		May-Jun	---	---	---	---	---	None	Brief	Occasional
		Jul-Sep	---	---	---	---	---	None	---	None
		Oct-Dec	---	---	---	---	---	None	Brief	Occasional
ElA:										
Eldean	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
ElB:										
Eldean	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None

TABLE 32.--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
ElB2:										
Eldean	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
EmA:										
Eldean	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
EmB:										
Eldean	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
EmB2:										
Eldean	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
EoC2:										
Eldean	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Casco	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
EoD2:										
Eldean	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Casco	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
EpD3:										
Casco	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Eldean	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
EqC2:										
Eldean	B	Jan-Dec	>6.0	>6.0	---	---	---	---	---	None
Casco	B	Jan-Dec	>6.0	>6.0	---	---	---	---	---	None
ErB:										
Eldean	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Miamian	C	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
ErC:										
Eldean	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Miamian	C	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
Gn:										
Genesee	B	Jan-May	>4.0	>4.0	---	---	---	None	Brief	Occasional
		Jun-Oct	>4.0	>4.0	---	---	---	None	---	None
		Nov-Dec	>4.0	>4.0	---	---	---	None	Brief	Occasional
GwB:										
Glynwood	C	Jan-Apr	1.5-3.0	2.5-5.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
GwB2:										
Glynwood	C	Jan-Apr	1.5-3.0	2.5-5.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
GwC2:										
Glynwood	C	Jan-Apr	1.5-3.0	2.5-5.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
GwD2:										
Glynwood	C	Jan-Apr	1.5-3.0	2.5-5.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
GyC3:										
Glynwood	C	Jan-Apr	1.5-3.0	2.5-5.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
GyD3:										
Glynwood	C	Jan-Apr	1.5-3.0	2.5-5.0	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None

TABLE 32.--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
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
Ko:										
Kokomo----------	B/D	Jan-May	0.0-0.5	>6.0	Apparent	0.0-2.0	Very long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.0-0.5	>6.0	Apparent	0.0-2.0	Very long	Frequent	---	None
Ln:										
Linwood---------	A/D	Jan-Jun	0.0-1.0	>6.0	Apparent	0.0-1.0	Very long	Frequent	---	None
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	0.0-1.0	>6.0	Apparent	0.0-1.0	Very long	Frequent	---	None
LrE2:										
Lorenzo---------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Rodman----------	A	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
MaB:										
Martinsville----	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Ockley----------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Md:										
Medway----------	B	Jan-Apr	2.0-3.0	>6.0	Apparent	---	---	None	Brief	Occasional
		May-Jun	---	---	---	---	---	None	Brief	Occasional
		Jul-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	---	---	---	---	---	None	Brief	Occasional
MhA:										
Miamian---------	C	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
MhB:										
Miamian---------	C	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
MhB2:										
Miamian---------	C	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
MhC2:										
Miamian---------	C	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
MhD2:										
Miamian---------	C	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
MkA:										
Miamian---------	C	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
MkB:										
Miamian---------	C	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
MkB2:										
Miamian---------	C	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
MkC2:										
Miamian---------	C	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
MlC3:										
Miamian---------	C	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
MlD3:										
Miamian---------	C	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
MmE:										
Hennepin--------	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Miamian---------	C	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None

TABLE 32.--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
MmF:										
Hennepin	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
Miamian	C	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
MnA:										
Millsdale	B/D	Jan-Apr	0.0-1.0	>6.0	Apparent	0.0-1.0	Long	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
MnB:										
Millsdale	B/D	Jan-Apr	0.0-1.0	>6.0	Apparent	0.0-1.0	Long	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
MoA:										
Millsdale	B/D	Jan-Apr	0.0-1.0	>6.0	Apparent	0.0-1.0	Long	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
MoB:										
Millsdale	B/D	Jan-Apr	0.0-1.0	>6.0	Apparent	0.0-1.0	Long	Frequent	---	None
		May-Dec	---	---	---	---	---	None	---	None
MpA:										
Milton	C	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
MpB:										
Milton	C	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
MpB2:										
Milton	C	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
MpC2:										
Milton	C	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
MpD2:										
Milton	C	Jan-Dec	>4.0	>4.0	---	---	---	None	---	None
Mt:										
Montgomery	D	Jan-May	0.0-1.0	>6.0	Apparent	0.0-1.0	Long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.0-1.0	>6.0	Apparent	0.0-1.0	Long	Frequent	---	None
OcA:										
Ockley	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
OcB:										
Ockley	B	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None
OdA:										
Odell	B	Jan-Apr	1.0-2.0	>6.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
OdB:										
Odell	B	Jan-Apr	1.0-2.0	>6.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
Pe:										
Pewamo	C/D	Jan-May	0.0-1.0	>6.0	Apparent	0.0-1.0	Very long	Frequent	---	None
		Jun-Nov	---	---	---	---	---	None	---	None
		Dec	0.0-1.0	>6.0	Apparent	0.0-1.0	Very long	Frequent	---	None
Pq:										
Quarries	---	Jan-Dec	---	---	---	---	---	---	---	None
RdA:										
Randolph	C	Jan-Apr	1.0-2.0	1.0-2.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
RdB:										
Randolph	C	Jan-Apr	1.0-2.0	1.0-2.5	Perched	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
RgE:										
Rodman	A	Jan-Dec	>6.0	>6.0	---	---	---	None	---	None

TABLE 32.--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
RhB:										
Ritchey	D	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
RhC:										
Ritchey	D	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
RhE:										
Ritchey	D	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Rs:										
Ross	B	Jan-Jun	>4.0	>4.0	---	---	---	None	Brief	Occasional
		Jul-Oct	>4.0	>4.0	---	---	---	None	---	None
		Nov-Dec	>4.0	>4.0	---	---	---	None	Brief	Occasional
Rt:										
Ross Variant	D	Jan-Dec	>3.0	>3.0	---	---	---	None	---	None
Sh:										
Shoals	C	Jan-Apr	0.0-1.0	>6.0	Apparent	---	---	None	Brief	Occasional
		May-Jun	---	---	---	---	---	None	Brief	Occasional
		Jul-Sep	---	---	---	---	---	None	---	None
		Oct-Dec	---	---	---	---	---	None	Brief	Occasional
Sk:										
Shoals Variant	C	Jan-Apr	0.0-1.0	>6.0	Apparent	---	---	None	Brief	Frequent
		May	---	---	---	---	---	None	Brief	Frequent
		Jun-Oct	---	---	---	---	---	None	---	None
		Nov-Dec	---	---	---	---	---	None	Brief	Frequent
SlA:										
Sleeth	C	Jan-Apr	0.5-2.0	>6.0	Apparent	---	---	None	---	None
		May-Dec	---	---	---	---	---	None	---	None
St:										
Stonelick	B	Jan-Jun	>4.0	>4.0	---	---	---	None	Very brief	Occasional
		Jul-Oct	>4.0	>4.0	---	---	---	None	---	None
		Nov-Dec	>4.0	>4.0	---	---	---	None	Very brief	Occasional
Ts:										
Tremont	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
Ud:										
Udorthents	---	Jan-Dec	---	---	---	---	---	---	---	None
Uf:										
Udorthents	---	Jan-Dec	---	---	---	---	---	---	---	None
Wa:										
Wallkill	B/D	Jan-Jun	0.0-1.0	>6.0	Apparent	0.0-0.5	Very long	Frequent	---	

TABLE 33.--SOIL FEATURES

(See text on page 175 for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	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			
Ag:									
Algiers	---	> 60	---	---		---	High	High	Low.
BlA:									
Blount	---	> 60	---	---		---	High	High	Moderate.
BlB:									
Blount	---	> 60	---	---		---	High	High	Moderate.
BlB2:									
Blount	---	> 60	---	---		---	High	High	Moderate.
Bs:									
Brookston	---	> 60	---	---		---	High	High	Low.
CcD2:									
Casco	Strongly contrasting textural stratification	10- 20	---	---		---	Low	Moderate	Low.
CeA:									
Celina	---	> 60	---	---		---	High	High	Moderate.
CeB:									
Celina	---	> 60	---	---		---	High	High	Moderate.
CeB2:									
Celina	---	> 60	---	---		---	High	High	Moderate.
CoA:									
Corwin	---	> 60	---	---		---	Moderate	High	Low.
CoB:									
Corwin	---	> 60	---	---		---	Moderate	High	Low.
CrA:									
Crosby	---	> 60	---	---		---	High	High	Moderate.
CrB:									
Crosby	---	> 60	---	---		---	High	High	Moderate.
Ed:									
Edwards	---	> 60	---	---	4-12	25-30	High	High	Low.
Ee:									
Eel	Strongly contrasting textural stratification	40- 80	---	---		---	High	Moderate	Low.
ElA:									
Eldean	Strongly contrasting textural stratification	24- 40	---	---		---	Moderate	High	Moderate.
ElB:									
Eldean	Strongly contrasting textural stratification	24- 40	---	---		---	Moderate	High	Moderate.
ElB2:									
Eldean	Strongly contrasting textural stratification	24- 40	---	---		---	Moderate	High	Moderate.
EmA:									
Eldean	Strongly contrasting textural stratification	24- 40	---	---		---	Moderate	High	Moderate.
EmB:									
Eldean	Strongly contrasting textural stratification	24- 40	---	---		---	Moderate	High	Moderate.
EmB2:									
Eldean	Strongly contrasting textural stratification	20- 39	---	---		---	Moderate	High	Moderate.

TABLE 33.--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			
EoC2:									
Eldean	Strongly contrasting textural stratification	23- 40	---	---		---	Moderate	High	Moderate.
Casco	Strongly contrasting textural stratification	12- 24	---	---		---	Low	Moderate	Low.
EoD2:									
Eldean	Strongly contrasting textural stratification	24- 40	---	---		---	Moderate	High	Moderate.
Casco	Strongly contrasting textural stratification	12- 24	---	---		---	Low	Moderate	Low.
EpD3:									
Casco	Strongly contrasting textural stratification	12- 24	---	---		---	Low	Moderate	Low.
Eldean	Strongly contrasting textural stratification	12- 24	---	---		---	Moderate	High	Moderate.
EqC2:									
Eldean	Strongly contrasting textural stratification	20- 39	---	---		---	Moderate	High	Moderate.
Casco	Strongly contrasting textural stratification	10- 20	---	---		---	Low	Moderate	Low.
ErB:									
Eldean	Strongly contrasting textural stratification	24- 40	---	---		---	Moderate	High	Moderate.
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
ErC:									
Eldean	Strongly contrasting textural stratification	24- 40	---	---		---	Moderate	High	Moderate.
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
Gn:									
Genesee	Strongly contrasting textural stratification	40- 80	---	---		---	Moderate	Moderate	Low.
GwB:									
Glynwood	---	> 60	---	---		---	High	High	Moderate.
GwB2:									
Glynwood	---	> 60	---	---		---	High	High	Moderate.
GwC2:									
Glynwood	---	> 60	---	---		---	High	High	Moderate.
GwD2:									
Glynwood	---	> 60	---	---		---	High	High	Moderate.
GyC3:									
Glynwood	---	> 60	---	---		---	High	High	Moderate.
GyD3:									
Glynwood	---	> 60	---	---		---	High	High	Moderate.
HeE2:									
Hennepin	---	> 60	---	---		---	Moderate	Moderate	Low.
Miamian	---	> 60	---	---		---	Moderate	High	Moderate.
HeF2:									
Hennepin	---	> 60	---	---		---	Moderate	Moderate	Low.
Miamian	---	> 60	---	---		---	Moderate	High	Moderate.

TABLE 33.--SOIL FEATURES--Continued

Map symbol and soil name	Restrictive layer: Kind	Depth to top	Thickness	Hardness	Subsidence: Initial	Total	Potential for frost action	Risk of corrosion: Uncoated steel	Concrete
		In	In		In	In			
Ko:									
Kokomo	---	> 80	---	---		---	High	High	Low.
Ln:									
Linwood	---	> 60	---	---		15-40	High	High	Low.
LrE2:									
Lorenzo	Strongly contrasting textural stratification	12- 24	---	---		---	Low	Moderate	Low.
Rodman	Strongly contrasting textural stratification	8- 16	---	---		---	Low	Low	Low.
MaB:									
Martinsville	---	> 60	---	---		---	Moderate	Moderate	Moderate.
Ockley	Strongly contrasting textural stratification	40- 60	---	---		---	Moderate	Moderate	Low.
Md:									
Medway	---	> 60	---	---		---	High	Moderate	Low.
MhA:									
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
MhB:									
Miamian	---	> 80	---	---		---	Moderate	Moderate	Moderate.
MhB2:									
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
MhC2:									
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
MhD2:									
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
MkA:									
Miamian	Bedrock (lithic)	40- 80	---	---		---	Moderate	Moderate	Moderate.
MkB:									
Miamian	Bedrock (lithic)	40- 80	---	---		---	Moderate	Moderate	Moderate.
MkB2:									
Miamian	Bedrock (lithic)	40- 80	---	---		---	Moderate	Moderate	Moderate.
MkC2:									
Miamian	Bedrock (lithic)	40- 80	---	---		---	Moderate	Moderate	Moderate.
MlC3:									
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
MlD3:									
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
MmE:									
Hennepin	---	> 60	---	---		---	Moderate	Low	Low.
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
MmF:									
Hennepin	---	> 60	---	---		---	Moderate	Low	Low.
Miamian	---	> 60	---	---		---	Moderate	Moderate	Moderate.
MnA:									
Millsdale	Bedrock (lithic)	20- 40	---	---		---	High	High	Low.
MnB:									
Millsdale	Bedrock (lithic)	20- 40	---	---		---	High	High	Low.
MoA:									
Millsdale	Bedrock (lithic)	20- 40	---	---		---	High	High	Low.
MoB:									
Millsdale	Bedrock (lithic)	20- 40	---	---		---	High	High	Low.
MpA:									
Milton	Bedrock (lithic)	20- 40	---	---		---	Moderate	High	Moderate.
MpB:									
Milton	Bedrock (lithic)	20- 40	---	---		---	Moderate	High	Moderate.

TABLE 33.--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			
MpB2: Milton	Bedrock (lithic)	20- 40	---	---		---	Moderate	High	Moderate.
MpC2: Milton	Bedrock (lithic)	20- 40	---	---		---	Moderate	High	Moderate.
MpD2: Milton	Bedrock (lithic)	20- 40	---	---		---	Moderate	High	Moderate.
Mt: Montgomery	---	> 68	---	---		---	High	High	Low.
OcA: Ockley	Strongly contrasting textural stratification	40- 60	---	---		---	Moderate	Moderate	Low.
OcB: Ockley	Strongly contrasting textural stratification	40- 60	---	---		---	Moderate	Moderate	Low.
OdA: Odell	---	> 60	---	---		---	High	High	Low.
OdB: Odell	---	> 60	---	---		---	High	High	Low.
Pe: Pewamo	---	> 60	---	---		---	High	High	Low.
Pg: Gravel pits	---	---	---	---		---	---	---	---
Pq: Quarries	---	---	---	---		---	---	---	---
RdA: Randolph	Bedrock (lithic)	20- 40	---	---		---	High	High	Moderate.
RdB: Randolph	Bedrock (lithic)	20- 40	---	---		---	High	High	Moderate.
RgE: Rodman	Strongly contrasting textural stratification	10- 20	---	---		---	Low	Low	Low.
RhB: Ritchey	Bedrock (lithic)	10- 20	---	---		---	Moderate	Moderate	Moderate.
RhC: Ritchey	Bedrock (lithic)	10- 20	---	---		---	Moderate	Moderate	Moderate.
RhE: Ritchey	Bedrock (lithic)	10- 20	---	---		---	Moderate	Moderate	Moderate.
Rs: Ross	---	> 60	---	---		---	Moderate	Low	Low.
Rt: Ross Variant	Bedrock (lithic) Bedrock (paralithic)	10- 20	---	---		---	Moderate	Moderate	Low.
Sh: Shoals	Strongly contrasting textural stratification	40- 80	---	---		---	High	High	Low.
Sk: Shoals Variant	Bedrock (lithic)	20- 36	---	---		---	High	High	Low.
SlA: Sleeth	Strongly contrasting textural stratification	40- 56	---	---		---	High	High	Low.
St: Stonelick	---	> 60	---	---		---	Moderate	Low	Low.
Ts: Tremont	---	> 80	---	---		---	High	Moderate	Low.

TABLE 33.--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			
Ud: Udorthents	---	---	---	---		---	---	---	---
Uf: Udorthents	---	---	---	---		---	---	---	---
Wa: Wallkill	---	> 60	---	---		---	High	High	Low.
WdA: Warsaw	Strongly contrasting textural stratification	24- 40	---	---		---	Moderate	Moderate	Low.
WeA: Wea	Strongly contrasting textural stratification	40- 66	---	---		---	Moderate	Moderate	Low.
Wt: Westland	Strongly contrasting textural stratification	40- 60	---	---		---	High	High	Low.

TABLE 34.--CLASSIFICATION OF THE SOILS

(An asterisk in the first column indicates a taxadjunct to the series. See text on page 176 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
Blount	Fine, illitic, mesic Aeric Ochraqualfs
Brookston	Fine-loamy, mixed, mesic Typic Argiaquolls
Casco	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Hapludalfs
Celina	Fine, mixed, mesic Aquic Hapludalfs
Corwin	Fine-loamy, mixed, mesic Typic Argiudolls
Crosby	Fine, mixed, mesic Aeric Ochraqualfs
Edwards	Marly, euic, mesic Limnic Medisaprists
Eel	Fine-loamy, mixed, mesic Fluvaquentic Eutrochrepts
Eldean	Fine, mixed, mesic Typic Hapludalfs
Genesee	Fine-loamy, mixed, mesic Fluventic Eutrochrepts
Glynwood	Fine, illitic, mesic Aquic Hapludalfs
Hennepin	Fine-loamy, mixed, mesic Typic Eutrochrepts
Kokomo	Fine, mixed, mesic Typic Argiaquolls
Linwood	Loamy, mixed, euic, mesic Terric Medisaprists
Lorenzo	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Argiudolls
Martinsville	Fine-loamy, mixed, mesic Typic Hapludalfs
Medway	Fine-loamy, mixed, mesic Fluvaquentic Hapludolls
Miamian	Fine, mixed, mesic Typic Hapludalfs
Millsdale	Fine, mixed, mesic Typic Argiaquolls
Milton	Fine, mixed, mesic Typic Hapludalfs
Montgomery	Fine, mixed, mesic Typic Haplaquolls
Ockley	Fine-loamy, mixed, mesic Typic Hapludalfs
Odell	Fine-loamy, mixed, mesic Aquic Argiudolls
Pewamo	Fine, mixed, mesic Typic Argiaquolls
Randolph	Fine, mixed, mesic Aeric Ochraqualfs
*Ritchey	Loamy, mixed, mesic Lithic Hapludalfs
Rodman	Sandy-skeletal, mixed, mesic Typic Hapludolls
Ross	Fine-loamy, mixed, mesic Cumulic Hapludolls
Ross Variant	Loamy, mixed, mesic Lithic Hapludolls
*Shoals	Fine-loamy, mixed, nonacid, mesic Aeric Fluvaquents
Shoals Variant	Fine-loamy, mixed (calcareous), calcareous, mesic Aeric Fluvaquents
Sleeth	Fine-loamy, mixed, mesic Aeric Ochraqualfs
Stonelick	Coarse-loamy, mixed (calcareous), calcareous, mesic Typic Udifluvents
Tremont	Fine-loamy, mixed, calcareous, mesic Cumulic Haplaquolls
Wallkill	Fine-loamy, mixed, nonacid, mesic Thapto-Histic Fluvaquents
Warsaw	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Argiudolls
Wea	Fine-loamy, mixed, mesic Typic Argiudolls
Westland	Fine-loamy, mixed, mesic Typic Argiaquolls

TABLE 35.--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
BlA:	2w		Prime farmland if drained	
Blount		C-1		No
BlB:	2e		Prime farmland if drained	
Blount		C-1		No
BlB2:	2e		Prime farmland if drained	
Blount		C-1		No
Bs:	2w		Prime farmland if drained	
Brookston		C-1		Yes
CcD2:	6e		Not prime farmland	
Casco		B-1		No
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
CoA:	1		All areas are prime farmland	
Corwin		A-1		No
CoB:	2e		All areas are prime farmland	
Corwin		A-1		No
CrA:	2w		Prime farmland if drained	
Crosby		C-1		No
CrB:	2e		Prime farmland if drained	
Crosby		C-1		No
Ed:	6w		Not prime farmland	
Edwards		D-1		Yes
Ee:	2w		All areas are prime farmland	
Eel		A-5		No

TABLE 35.--INTERPRETIVE GROUPS--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitabilty group	Prime farmland	Hydric
ElA:	2s		All areas are prime farmland	
Eldean		B-1		No
ElB:	2e		All areas are prime farmland	
Eldean		B-1		No
ElB2:	2e		All areas are prime farmland	
Eldean		B-1		No
EmA:	2e		All areas are prime farmland	
Eldean		B-1		No
EmB:	2e		All areas are prime farmland	
Eldean		B-1		No
EmB2:	2e		All areas are prime farmland	
Eldean		B-1		No
EoC2:	4e		Farmland of local importance	
Eldean		B-1		No
Casco		B-1		No
EoD2:	4e		Not prime farmland	
Eldean		B-1		No
Casco		B-1		No
EpD3:	6e		Not prime farmland	
Eldean		B-1		No
Casco		B-1		No
EqC2:	3e		Not prime farmland	
Eldean		B-1		No
Casco		B-1		No
ErB:	2e		All areas are prime farmland	
Eldean		B-1		No
Miamian		A-1		No
ErC:	3e		Farmland of local importance	
Eldean		B-1		No
Miamian		A-1		No
Gn:	2w		All areas are prime farmland	
Genesee		A-5		No
GwB:	2e		All areas are prime farmland	
Glynwood		A-6		No

TABLE 35.--INTERPRETIVE GROUPS--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitabilty group	Prime farmland	Hydric
GwB2:	3e		All areas are prime farmland	
Glynwood		A-6		No
GwC2:	4e		Farmland of local importance	
Glynwood		A-6		No
GwD2:	4e		Not prime farmland	
Glynwood		A-6		No
GyC3:	4e		Not prime farmland	
Glynwood		A-6		No
GyD3:	6e		Not prime farmland	
Glynwood		A-6		No
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
Ko:	2w		Prime farmland if drained	
Kokomo		C-1		Yes
Ln:	2w		Not prime farmland	
Linwood		D-1		Yes
LrE2:	7s		Not prime farmland	
Lorenzo		B-2		No
Rodman		B-2		No
MaB:	2e		All areas are prime farmland	
Martinsville		A-1		No
Ockley		A-1		No
Md:	2w		All areas are prime farmland	
Medway		A-5		No
MhA:	1		All areas are prime farmland	
Miamian		A-1		No
MhB:	2e		All areas are prime farmland	
Miamian		A-1		No
MhB2:	2e		All areas are prime farmland	
Miamian		A-1		No
MhC2:	3e		Farmland of local importance	
Miamian		A-1		No

TABLE 35.--INTERPRETIVE GROUPS--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitabilty group	Prime farmland	Hydric
MhD2:	4e		Not prime farmland	
Miamian		A-1		No
MkA:	1		All areas are prime farmland	
Miamian		A-1		No
MkB:	2e		All areas are prime farmland	
Miamian		A-1		No
MkB2:	2e		All areas are prime farmland	
Miamian		A-1		No
MkC2:	3e		Not prime farmland	
Miamian		A-1		No
MlC3:	4e		Farmland of local importance	
Miamian		A-1		No
MlD3:	6e		Not prime farmland	
Miamian		A-1		No
MmE:	6e		Not prime farmland	
Miamian		A-2		No
Hennepin		B-1		No
MmF:	7e		Not prime farmland	
Miamian		A-3		No
Hennepin		B-2		No
MnA:	3w		Prime farmland if drained	
Millsdale		C-2		Yes
MnB:	3w		Prime farmland if drained	
Millsdale		C-2		Yes
MoA:	3w		Prime farmland if drained	
Millsdale		C-2		Yes
MoB:	3w		Prime farmland if drained	
Millsdale		C-2		Yes
MpA:	2s		All areas are prime farmland	
Milton		F-1		No
MpB:	2e		All areas are prime farmland	
Milton		F-1		No
MpB2:	2e		All areas are prime farmland	
Milton		F-1		No

TABLE 35.--INTERPRETIVE GROUPS--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitabilty group	Prime farmland	Hydric
MpC2:	3e		Farmland of local importance	
Milton		F-1		No
MpD2:	4e		Not prime farmland	
Milton		F-1		No
Mt:	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
OdA:	2w		Prime farmland if drained	
Odell		C-1		No
OdB:	2w		Prime farmland if drained	
Odell		C-1		No
Pe:	2w		Prime farmland if drained	
Pewamo		C-1		Yes
Pg:	---		Not prime farmland	
Gravel Pits		Not rated		Unranked
Pq:	---		Not prime farmland	
Quarries		Not rated		Unranked
RdA:	3w		Prime farmland if drained	
Randolph		C-2		No
RdB:	3w		Prime farmland if drained	
Randolph		C-2		No
RgE:	7s		Not prime farmland	
Rodman		B-2		No
RhB:	3e		Not prime farmland	
Ritchey		E-1		No
RhC:	6e		Not prime farmland	
Ritchey		E-1		No
RhE:	7e		Not prime farmland	
Ritchey		E-2		No
Rs:	2w		All areas are prime farmland	
Ross		A-5		No
Rt:	3s		Not prime farmland	
Ross Variant		E-1		No

TABLE 35.--INTERPRETIVE GROUPS--Continued

Map symbol and soil name	Land capability classification	Pasture and hayland suitabilty group	Prime farmland	Hydric
Sh:------------------	2w		Prime farmland if drained	
Shoals		C-3		No
Sk:------------------	5w		Prime farmland if drained	
Shoals Variant		C-3		No
SlA:-----------------	2w		Prime farmland if drained	
Sleeth		C-1		No
St:------------------	2s		All areas are prime farmland	
Stonelick		B-3		No
Ts:------------------	2w		All areas are prime farmland	
Tremont		A-5		No
Ud:------------------	---		Not prime farmland	
Udorthents		Not rated		No
Uf:------------------	---		Not prime farmland	
Udorthents		Not rated		Unranked
Wa:------------------	2w		Not prime farmland	
Wallkill		C-1		Yes
WdA:-----------------	2s		All areas are prime farmland	
Warsaw		A-1		No
WeA:-----------------	2s		All areas are prime farmland	
Wea		A-1		No
Wt:------------------	2w		Prime farmland if drained	
Westland		C-1		Yes