United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with Illinois Agricultural Experiment Station

Soil Survey of Crawford County, Illinois

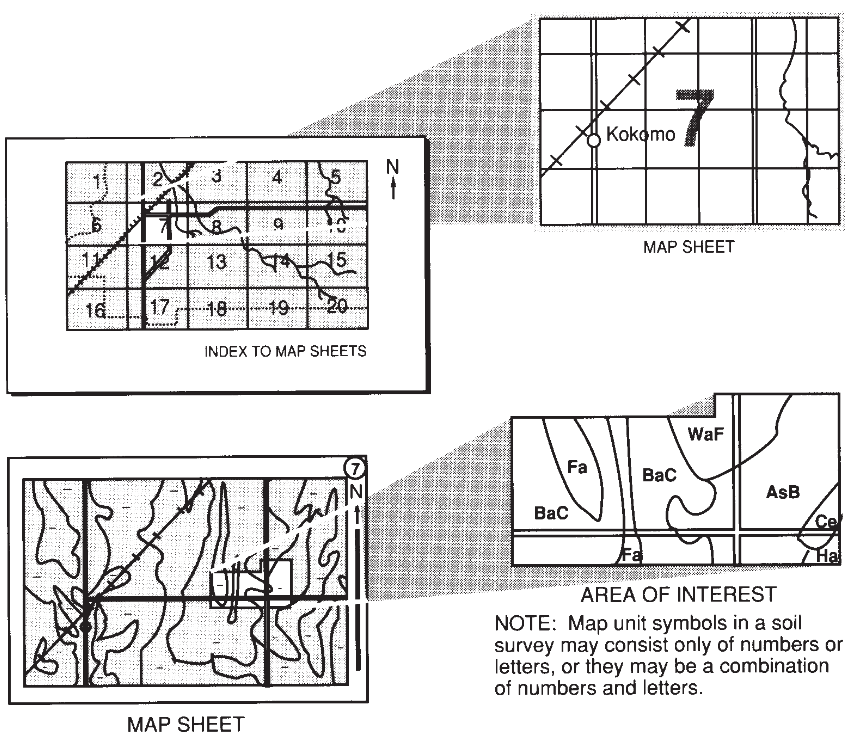
How To Use This Soil Survey

This publication consists of a manuscript and a set of soil maps. The information provided can be useful in planning the use and management of small areas.

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

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

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



National Cooperative Soil Survey

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey. This survey was made cooperatively by the Natural Resources Conservation Service and the Illinois Agricultural Experiment Station. It is part of the technical assistance furnished to the Crawford County Soil and Water Conservation District. Additional funding was provided by the Illinois Department of Agriculture and Crawford County.

Major fieldwork for this soil survey was completed in 1966. Soil names and descriptions for the updated survey were approved in 2003. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2003. The most current official data are available on the Internet.

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

Nondiscrimination Statement

Cover Photo Caption

Gravel roads are common in Crawford County. This picturesque road was constructed in an area of Hosmer and Hickory soils.

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

Contents

Issued 2007

Numerical Index to Map Units

Foreword

Soil surveys contain information that affects land use planning in survey areas. They include predictions of soil behavior for selected land uses. The surveys highlight soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

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

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

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

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

William J. Gradle
State Conservationist
Natural Resources Conservation Service

Soil Survey of
Crawford County, Illinois

By Christopher C. Cochran and Sam E. Werner, Natural Resources Conservation Service

Original fieldwork by Fred L. Awalt and Randall A. Leeper, Natural Resources Conservation Service, and Kevin T. Matthews, Roger T. Risley, and Douglas E. Walk, Crawford County

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with the Illinois Agricultural Experiment Station

Crawford County is in east-central Illinois (fig. 1). It has an area of 285,320 acres, or about 445.74 square miles. The county is bordered on the north by Clark County, on the west by Jasper County, on the south by Lawrence and Richland Counties, and on the east by the Wabash River. In 2002, the estimated population of Crawford County was 20,151. This estimate shows a decrease in population of about 1.5 percent since 2000. Robinson, the county seat and largest town in the county, had a population of 6,822 in 2002 (U.S. Department of Commerce, 2003).

This soil survey updates the previous survey of Crawford County (Awalt, 1996). It provides additional information and has larger maps.

General Nature of the County

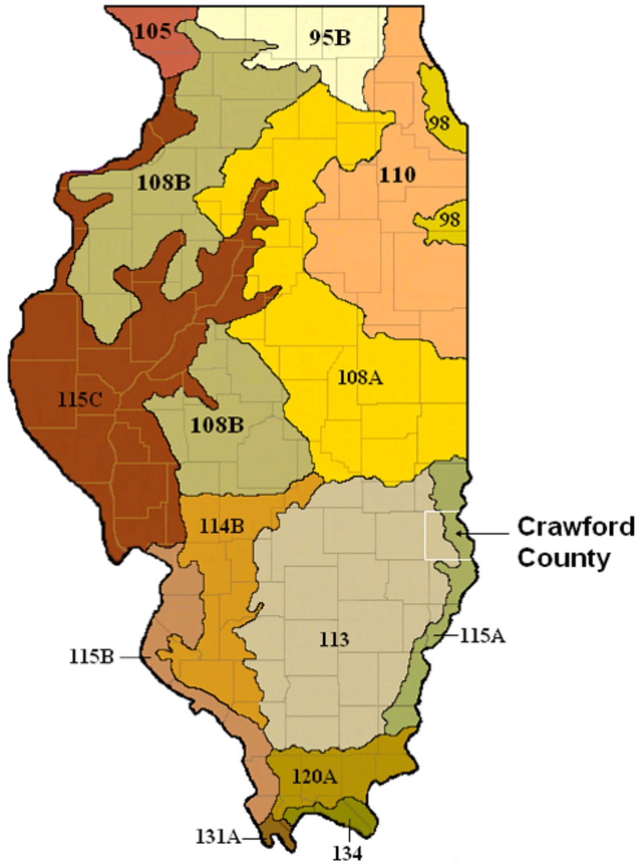
This section provides general information about Crawford County. It describes history and development; physiography, relief, and drainage; natural resources; and climate.

History and Development

The Indians known as Mound Builders were among the first people to inhabit the survey area. They prospered by hunting and by cultivating soil in a large fertile area known as Lamotte Prairie in the far eastern part of Crawford County.

In 1811, the first settlers arrived in Lamotte Prairie near what is now known as the village of Palestine. Following the War of 1812, there was an influx of people into the Palestine area and Palestine was established as the county seat of Crawford County. Robinson was established as the county seat in 1844. Palestine was an important commercial trading point for a large area to the northwest and the south. Later, steam-powered boats moving up and down the Wabash River improved trade and the ability to move goods more easily and quickly.

The county was named after William H. Crawford, who was a U.S. Senator from Georgia, Minister to France, Secretary of War, and Secretary of the Treasury. He was also a prominent presidential candidate in the 1824 election, losing to John Quincy Adams (Illinois GenWeb Project, 2005).



LEGEND

95B—Southern Wisconsin and Northern Illinois Drift Plain
98—Southern Michigan and Northern Indiana Drift Plain
105—Northern Mississippi Valley Loess Hills
108A and 108B—Illinois and Iowa Deep Loess and Drift
110—Northern Illinois and Indiana Heavy Till Plain
113—Central Claypan Areas
114B—Southern Illinois and Indiana Thin Loess and Till Plain, Western Part
115A, 115B, and 115C—Central Mississippi Valley Wooded Slopes
120A—Kentucky and Indiana Sandstone and Shale Hills and Valleys, Southern Part
131A—Southern Mississippi River Alluvium
134—Southern Mississippi Valley Loess

Figure 1.—Location of Crawford County and major land resource areas (MLRAs) in Illinois.

Agriculture is one of the leading industries in Crawford County. Corn and soybeans are the main crops. Wheat and pasture and hay crops also are grown (fig. 2). Some of the farmland in the county is used for livestock production, including pasture and feedlots.

The transportation systems in Crawford County include State highways, county and township roads, railroads, and a small airport. State Routes 1 and 33 cross the county. Several county and township roads also provide important transportation links.

Physiography, Relief, and Drainage

Leon Follmer, Ph.D., Senior Geologist (retired), Quaternary Geology Section, Illinois State Geological Survey, provided technical guidance for development of the geology information in this section.

Crawford County is mostly within the Springfield Plain. The southeastern quarter of the county is in the Mt. Vernon Hill Country. The Springfield Plain includes the level part of the Illinoian drift-sheet in central and southern Illinois. It is distinguished mainly by its flatness and shallow entrenchment of drainage. The Mt. Vernon Hill Country comprises the southern part of the Illinois drift-sheet and is characterized by mature topography and a relatively complete drainage system (Leighton and others, 1948).

During the Pleistocene, glaciers covered Crawford County. Most of the present surface materials and landforms are the result of the glacial ice, glacial meltwater, and wind passing over the landscape during the most recent glacial episodes, the Wisconsinan and the Illinoian. In the Mt. Vernon Hill Country area of the county, Illinoian till is thin and bedrock is the controlling factor of landform type (Piskin and Bergstrom, 1975).

During the Illinoian episode, glaciers deposited till over Pennsylvanian sandstone, shale, and limestone throughout the county. The till ranges from several feet to more than 100 feet in thickness. It is known as the Vandalia Till Member of the Glasford Formation (fig. 3). Windblown sand, known as the Parkland facies of the Henry Formation, occupies a narrow bluff area along the North Fork of the Embarras River in western Crawford County. A broad, coarse textured terrace system, known as the Mackinaw facies of the Henry Formation, extends the length of the county parallel to

Figure 2.—Cattle grazing in a field of clover in an area of Virden silty clay loam, 0 to 2 percent slopes.

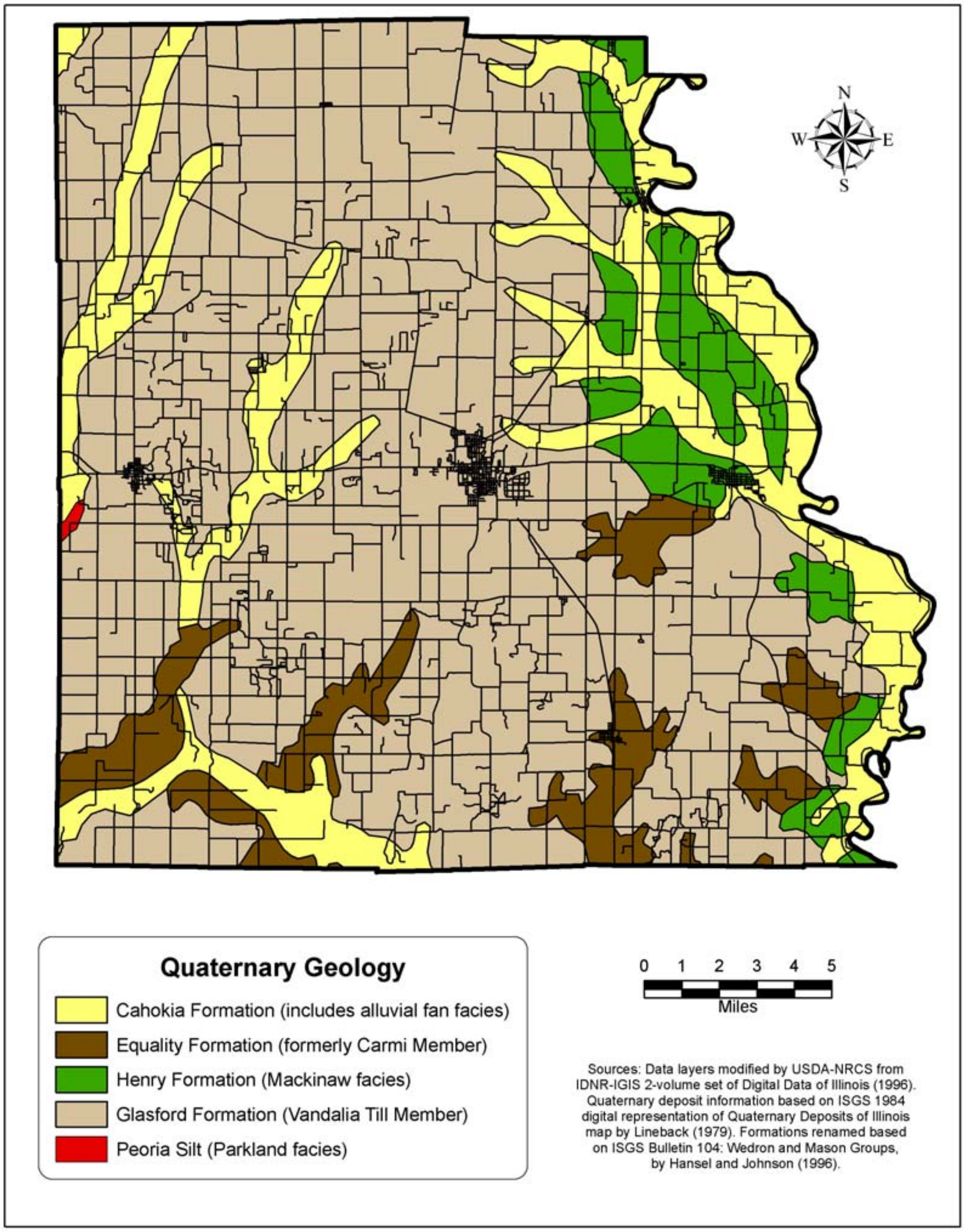


Figure 3.—Quaternary geology in Crawford County, Illinois. Source: Illinois State Geological Survey (Lineback and others, 1979).

the current Wabash River (Hansel and Johnson, 1996). These sand and gravel valley train sediments were deposited predominantly during the late Wisconsinan episode meltout. As the Wisconsinan glaciers were retreating from northern Illinois, a large volume of sediment-laden water moved down the preglacial Wabash River valley and deposited sand and gravel across the former flood plain for many miles. These presentday terraces provide a very good mineral resource for sand and gravel. They also provide highly productive and accessible ground water with a naturally high recharge rate. The high intake or recharge rates make these deposits susceptible to pollution from agricultural and urban land use and waste disposal activities

(Reinertsen and others, 1993). In most areas the till was covered with as much as 5 feet of windblown silt or loess, known as Peoria Silt.

The relief in Crawford County is low on the nearly level to gently sloping uplands. The greatest change in relief is in areas along major drainageways. In these areas, there can be as much as a 75-foot drop in elevation from the adjacent uplands. The highest elevation in the county is slightly more than 640 feet above sea level, about 2 miles northwest of the village of Flat Rock. The lowest elevation is approximately 410 feet above sea level at the point in the southeast corner where the Wabash River leaves the county. The elevation cross-section in figure 4 depicts topographic changes along a nearly straight line roughly paralleling State Route 33 across the county from west to east. The geological materials and their thicknesses are drawn in for illustrative purposes and do not represent actual measurements taken along this transect.

The North Fork, Embarras, and Wabash Rivers (fig. 5) drain most of the county. The North Fork is a tributary of the Embarras River. The Embarras is a tributary of the Wabash River and ultimately drains into it in Lawrence County. The Wabash River drains into the Ohio River.

The flood plains along these rivers and their tributaries generally are flooded annually, and most of the soils in these areas have a seasonal high water table.

Most areas are sufficiently drained for the crops commonly grown in the county. Subsurface tile drains have been installed in fields across the county.

Natural Resources

In 1990, Crawford County ranked 15th in the State in value of mineral production. Oil, sand and gravel, sulfur, clay for clay products, and ground water for municipal and industrial purposes were the primary mineral resources extracted. Coal has ceased to have commercial value in Crawford County. Oil production, which began in the 1880s, continues to be the most valuable mineral resource in the county. In 1990, 2,072,000 barrels of oil valued at more than $42,200,000 were extracted, making Crawford County the second highest oil-producing county in the State (Reinertsen, 1993).

Soil is a major natural resource in Crawford County. The soils range from low to high in natural fertility. With the additions of fertilizers and lime, most of the soils are well

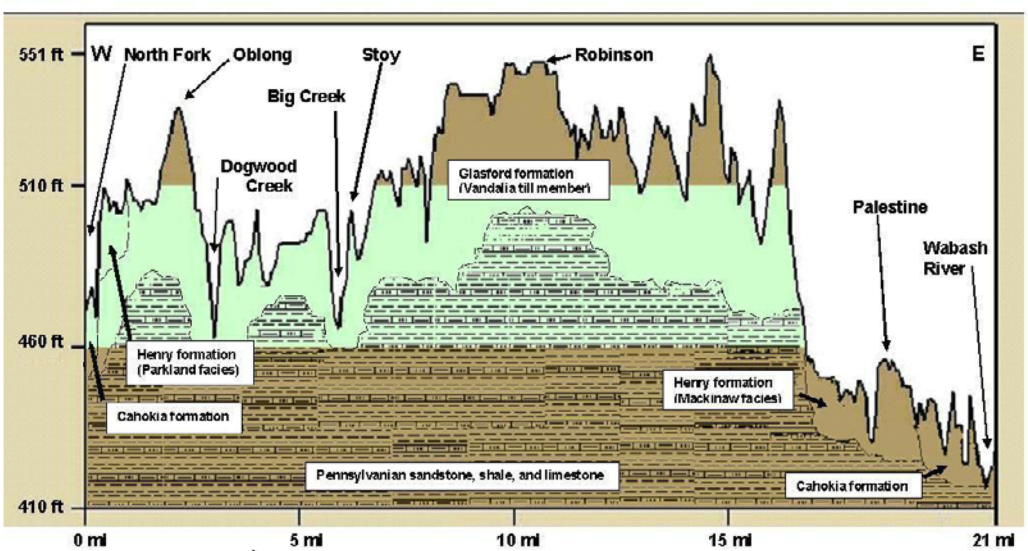


Figure 4.—Elevation cross-section of Crawford County, Illinois. Source: 3-D Topoquads, Copyright 1999 DeLorme Yarmouth, ME 04096; Datum NAD 27.

Figure 5.—The Wabash River serves as the boundary between Illinois and Indiana and forms most of the eastern boundary of Crawford County. The riverbank pictured is an area of Stockland gravelly sandy loam, 0 to 2 percent slopes, rarely flooded. Upstream, the soil is Armiesburg silty clay loam, 0 to 2 percent slopes, frequently flooded. Across the river in Indiana, the soil is Haymond silt loam, 0 to 2 percent slopes, frequently flooded.

suited to the cultivation of crops, particularly corn and soybeans. Many of the soils are nearly level or gently sloping and formed in medium textured material under either woodland or a mixture of woodland and prairie grass vegetation. Combined with a favorable climate, these soils have good potential for highly productive farmland.

At the time of settlement, most of the county was forested. About 50,000 acres in Crawford County still supports woodland. Most of the woodland is along the major streams and their tributaries and in the Mt. Vernon Hill Country in the southeastern part of the county. These areas are still wooded primarily because they are too sloping for cultivation, have low fertility, or are shallow to bedrock. Woodland provides important wildlife habitat, watershed protection, and recreation areas.

The county has approximately 1,230 acres of impounded water. Brooks Lake, the largest single body of impounded water, makes up about 57 acres of this total. The rest of the impounded water is in about 840 farm ponds scattered throughout the county or in gravel pit ponds along the Wabash River.

The county has an abundant supply of ground water in the sand and gravel deposits in the fill of river valleys, buried valleys, and in areas where till is thick. The Robinson-Palestine Water Commission obtains its water from six active community water supply wells. These wells supply an average of 1,977,999 gallons per day to a population of 17,102. The Hardinville Water Company is a rural water district that utilizes two active community water supply wells. The wells produce an average of 425,000 gallons per day delivered to an estimated population of 1,171 individuals and to approximately 400 individuals in the village of Flat Rock. The village of Hutsonville utilizes one active community water supply well. The well produces approximately 63,000 gallons per day delivered to an estimated population of 700 individuals. Other municipalities and rural residents are either served by wells from these communities or depend on private ground-water wells (Illinois Environmental Protection Agency, 2005; Birch, 2006).

Climate

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

In winter, the average temperature is 32.4 degrees F and the average daily minimum temperature is 24.1 degrees. The lowest temperature on record, which occurred at Palestine on December 22, 1989, was -23 degrees. In summer, the average temperature is 75.5 degrees and the average daily maximum temperature is 86.4 degrees. The highest temperature, which occurred at Palestine on July 14, 1954, was 114 degrees.

Growing degree days are shown in table 1. They are equivalent to “heat units.” During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The average annual total precipitation is 42.94 inches. Of this total, about 26.8 inches, or 63 percent, usually falls in April through October. The growing season for most crops falls within this period. The heaviest 1-day rainfall on record was 6.10 inches at Palestine on July 11, 1958. Thunderstorms occur on about 48 days each year, and most occur between April and August.

The average seasonal snowfall is 18.6 inches. The greatest snow depth at any one time during the period of record was 21 inches recorded on December 13, 1985. On average, 20 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 14.5 inches recorded on January 26, 1904.

The average relative humidity in midafternoon is about 52 percent in May and June and about 70 percent in December. Humidity is higher at night, and the average at dawn is about 84 percent in most months. The sun shines 70 percent of the time possible in summer and 48 percent in winter. The prevailing wind is from the south in most months, except in January, February, and March, when it is from the northwest. Average windspeed is highest, around 13 miles per hour, in March.

How This Survey Was Made

Land resource regions (LRRs) and their component major land resource areas (MLRAs) serve as a basis for making decisions about national and regional agricultural and natural resources concerns. These land categories group geographical areas that are characterized by a particular pattern of soils, climate, water resources, and land use. Major land resource areas are geographically associated land resource units that share a common land use, elevation, topography, climate, water, soils, and potential natural vegetation (USDA/NRCS, 2006). Crawford County is in LRR M (Central Feed Grains and Livestock Region) and in MLRAs 113 (Central Claypan Areas) and 115A (Central Mississippi Valley Wooded Slopes, Eastern Part) (fig. 1).

Soil surveys are updated as part of maintenance projects that are conducted for a major land resource area or other region. Maintaining and coordinating soil survey information within a broad area result in uniformly delineated and joined soil maps and in coordinated interpretations and map unit descriptions for areas within each MLRA.

Updated soil survey information is coordinated within the major land resource area or other region and meets the standards established and defined in the memorandum of understanding. Soil surveys that are consistent and uniform within a broad area enable the coordination of soil management recommendations and a uniform program application of soil information.

The current survey was made to provide updated information about the soils and miscellaneous areas in Crawford County. Map unit design and the detailed soil descriptions are based on the occurrence of each soil throughout the MLRA. 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; and the kinds of crops and native plants. To study the soil profile, which is the sequence of natural layers, or horizons, in a soil, soil scientists use soil probes or spades. 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 landform.

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.

The information contained in this report was based on a review of field notes, laboratory data, and other data collected during the previous soil survey of Crawford County (Awalt, 1996). In addition, data from other soil surveys within MLRAs 113 and 115A were reviewed. Selected soils were resampled to a greater depth. Reviewing data on a regional basis allows for improved consistency in the identification, classification, and interpretations of soils on similar landscapes.

Aerial photographs used in this survey were taken in 1998 and 1999. Soil scientists also studied U.S. Geological Survey topographic maps (enlarged to a scale of 1:12,000) and orthophotographs to relate land and image features. Specific soil boundaries were drawn on the orthophotographs. Adjustments of soil boundary lines were made to coincide with the U.S. Geological Survey topographic map contour lines and tonal patterns on aerial photographs.

Formation and Classification of the Soils

This section relates the soils in the survey area to the major factors of soil formation and describes the system of soil classification.

Formation of the Soils

Soil is produced by soil-forming processes acting on materials deposited or accumulated by geologic agents. The characteristics of the soil are determined by (1) the physical and mineralogical composition of the parent material; (2) the climate under which the soil formed; (3) the plant and animal life on and in the soil; (4) the relief, or lay of the land; and (5) the length of time the forces of soil formation have acted on the parent material (Jenny, 1941).

Climate and plant and animal life are the active factors of soil formation. They act directly on the parent material, either in place or after it has been relocated by water, glaciers, or the wind. They slowly change the parent material to a natural body that has genetically related layers, or horizons. The effects of climate and plant and animal life on soil formation are modified by relief. In sloping areas, for example, erosion can inhibit the processes of soil formation. Wetness can slow these processes in level areas or depressions. Parent material also affects the kind of soil profile that is formed. Finally, time is needed for changing the parent material into a soil profile that has clearly differentiated horizons.

The factors of soil formation are so closely interrelated in their effects on the soil that few generalizations can be made regarding the effects of any one factor unless the effects of the other factors are known. Many of the processes of soil formation are unknown.

Parent Material

Parent material is the unconsolidated geologic material in which a soil forms. It determines the chemical and mineralogical composition of the soil. Most of the parent material in Crawford County is a direct result of the glaciers of the Illinoian Age and meltout of the Wisconsinan Age (Willman and Frye, 1970). Although the kinds of parent material are associated with glacial deposits, the properties vary greatly, mostly because of varying methods of deposition. The dominant kinds of parent material in Crawford County are till, loess, outwash, alluvium, and weathered bedrock. Except for bedrock, these materials were deposited by wind, water, glaciers, or glacial meltwater. In some areas the materials have been reworked by wind or water after they were deposited. Many of the soils formed in more than one kind of parent material. For example, many of the soils in Crawford County formed in loess and in the underlying sediment, geosol, or till (fig. 6).

Till is material laid down directly by glaciers. It consists of clay, silt, sand, gravel, and boulders, all of which are mixed together. The gravel has distinct edges and corners, indicating that they have not been subjected to intensive washing by water. Unweathered till is generally alkaline, calcareous, and very dense. Through the processes of soil formation, the upper 1 to 2 meters of the till that is exposed to biological activity becomes less alkaline and less dense.

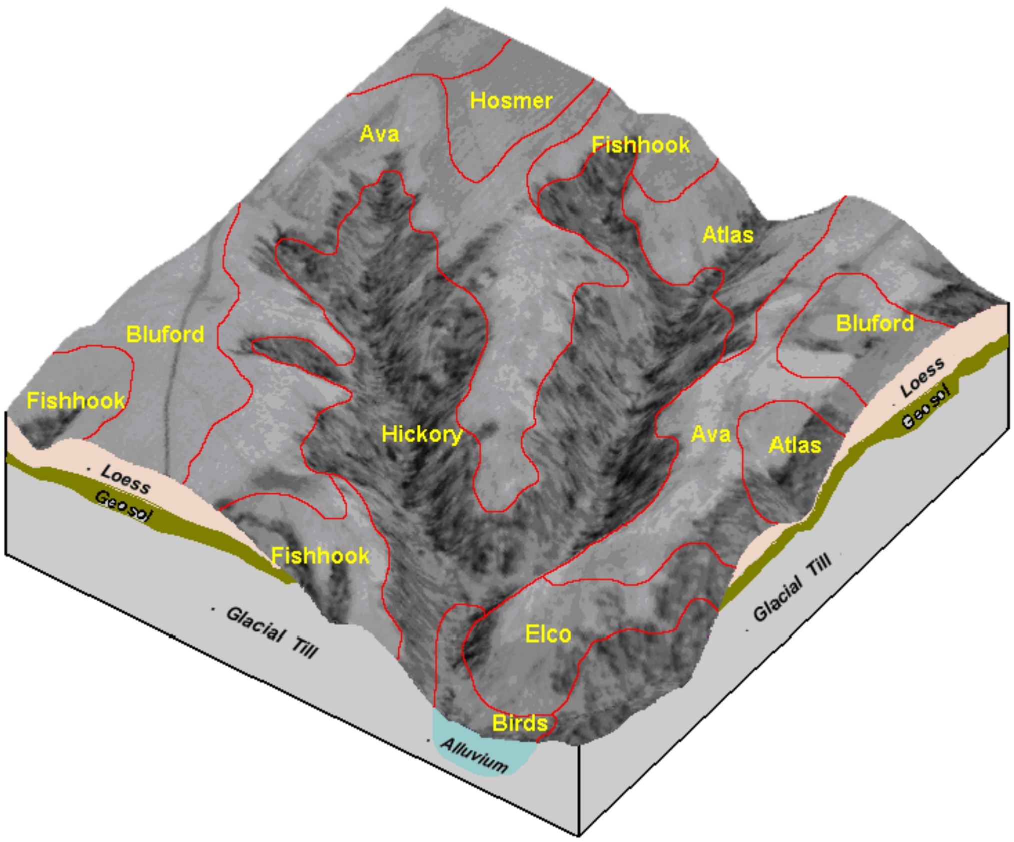


Figure 6.—Typical relationship between soils and landscape in Crawford County, Illinois.

The till in Crawford County was deposited during the glacial ice advance of the Illinoian Age during the Pleistocene (Willman and Frye, 1970). This advance occurred during a period that began almost 300,000 years ago and continued for almost 175,000 years. Most of the county is covered by a till deposit known as the Vandalia Till Member of the Glasford Formation. An interglacial period known as the Sangamon Episode began about 100,000 to 125,000 years ago and lasted for about 50,000 to 75,000 years. Soils that formed during the Sangamon Episode developed at a time when large mammals, such as mammoths, giant bison, huge ground sloths, giant camels, and beavers nearly 6$^{1}/_{2}$ feet (2 meters) tall at the shoulder, roamed the survey area (Wicander and Monroe, 1993). These old soils were subsequently buried during the Wisconsinan Age, first by Roxana Silt and later by Peoria Loess. The soils are called paleosols or the Sangamon Geosol. The majority of modern soils on the Illinoian till plain are underlain by this geosol, typically at a depth of 1$^{1}/_{2}$ meters or more, and are not appreciably being affected by presentday soil-forming factors. Such modern soils as Atlas, Elco, and Fishhook soils are examples of soils in which the Sangamon Geosol is within a depth of 1 meter. The paleosols in these soils are close enough to the surface to be subjected to presentday soil-forming factors. In dissected areas on the till plain along many of the drainageways in the county, the Sangamon Geosol has been eroded away. The Hickory series formed in the exposed till (fig. 6).

Loess is material deposited by the wind. It consists of uniform, silt-sized particles that were typically calcareous before being acted upon by soil-forming factors. The meltwaters from the glaciers carried vast quantities of silt, which were deposited in the major river valleys. As these sediments were exposed when the meltwaters subsided, the winds carried the silts and deposited them over much of the land. Most of the soils in the county formed at least partially in loess. The thickness of the loess ranges from virtually zero in areas where slopes are very steep to more than 7 feet in the uplands along the Wabash River. Iona, Menfro, and Muren soils are in these latter areas. They formed in more than 80 inches (2 meters) of loess. Soils with a fragic or dense layer developed in historically forested areas where Peoria Loess, typically less than 1 meter thick, overlies Roxana Silt. The moderately well drained Ava and Hosmer soils are examples of soils that have a fragipan within 1 meter of the soil surface (fig. 7).

Outwash is stratified material deposited by flowing glacial meltwater. The size of the particles that make up outwash varies, depending on the velocity of the moving water. Typically, outwash is dominated by material that is fine sand or coarser. The coarser material was deposited nearer to the ice or in rapidly moving glacial meltwater streams. Most of the outwash deposits were later covered by loess. In Crawford County, coarse outwash material filled in glacial valleys now dominated by stream terraces. Alvin, Carmi, Ridgway, and Stockland soils are examples of soils that formed in outwash. These soils are commonly on stream terraces.

Alluvium is material that was deposited by floodwater from modern streams. Soils that formed in alluvium are generally stratified in both color and texture. The alluvial soils mostly consist of silty sediments, but in some places the soils have thin layers of loamy and sandy material. Beaucoup, Birds, Haymond, Petrolia, Tice, and Wakeland soils formed in silty alluvium and have weakly developed horizons. Shoals and Stonelick soils formed in loamy alluvium, and Darwin soils formed in clayey sediments. The largest areas of alluvial soils are along the Wabash River and its tributaries.

Bedrock is at a depth of less than 50 feet throughout most of Crawford County and is at a depth of as much as 100 feet in very few places. In areas where bedrock is at or

Figure 7.—The top of the fragipan is exposed in Hosmer silt loam, revealing very coarse prismatic structure outlined by light gray silt.

near the surface, soils formed in the material weathered from the bedrock. Kell and Vanmeter soils are examples.

Climate

Crawford County has a temperate, humid, continental climate that is essentially uniform throughout the county. Climatic differences within the county are too small to have caused any obvious differences among the soils. In some areas of the county, however, the effects of climate are modified locally by relief. The influence of climate becomes more obvious, however, when comparisons are made on a broad regional basis.

Climate affects soil formation through its effects on weathering, plant and animal life, and erosion. Water from rains and melting snow seeps slowly downward through the soil and allows physical and chemical reactions to take place in the parent material. Where the water can move downward, it moves clay from the surface soil into the subsoil. Water also dissolves minerals and moves them downward through the soil. Leaching has removed calcium carbonate in the upper part of soils with limy parent materials to a depth of more than 40 inches in most of the survey area. As a result, other pedogenic processes act on the soil, resulting in the biochemical breakdown of minerals and the translocation of clay. Also, with the removal of bases, these soils tend to be strongly acid or very strongly acid in the upper part.

The temperature of the soil affects soil formation. When the soil is frozen, for example, many of the processes of soil formation are halted or restricted.

Climate also influences the kind and extent of plant and animal life. The climate in Crawford County has favored tall prairie grasses and deciduous hardwoods. It also has favored the decomposition of plants and animals, which provides humus to the soil.

Heavy, untimely rains can be destructive when they fall on soils that are bare of vegetation. The raindrops disperse the soil particles, thereby contributing to erosion and the formation of crusts. Early spring rains in these areas can cause extensive erosion when the soils are partially frozen and the runoff rate is higher than it would otherwise be.

Plant and Animal Life

Soils are greatly affected by the type of vegetation under which they formed. The chief contribution of vegetation and biological processes to soil formation is the addition of organic material and nitrogen to the soil. The amount of organic material in the soil depends primarily on the kind of native plants that grew on the soil. The remains of plants accumulated on or below the surface, decayed, and eventually became soil organic matter, or humus. The roots of the plants provided channels for the downward movement of water through the soil and added organic matter as they decayed.

The native vegetation in Crawford County consisted primarily of deciduous hardwoods and, to a lesser extent, tall prairie grasses. At the time of early settlement, about 45 percent of the county supported prairie grasses (Iverson and others, 1989). These grasses have many fibrous roots that contributed large amounts of organic material to the soil, especially where they were concentrated near the surface. Soils that formed under prairie vegetation have a thick, black or dark brown surface layer. They generally are in areas of low relief and/or in areas that were naturally poorly drained or somewhat poorly drained. Carmi, Patton, Shiloh, and Virden soils are examples.

About 55 percent of the county supported timber at the time of early settlement (Iverson and others, 1989). The organic material that deciduous hardwoods contributed to the soil consisted mainly of leaf litter because the root systems of the hardwoods were less fibrous than those of grasses and generally were not so concentrated near the surface. The soils that formed under forest vegetation have a surface layer that is thinner and lighter colored than that of the prairie soils. Alvin, Ava, Bluford, Hickory, and Navlys soils formed under forest vegetation. They generally are on summits, on broad interfluves, and on backslopes along drainageways (fig. 6).

Micro-organisms, earthworms, insects, and burrowing animals that live in or on the soil have also affected soil formation. Bacteria and fungi help to decompose plant and animal remains and change them into humus. Burrowing animals, such as earthworms, cicadas, and ground squirrels, help to incorporate the humus into the soil and create small channels that influence soil aeration and the percolation of water. Humus is very important in the formation of soil structure and good tilth.

Human activities, such as installing subsurface drains, building levees for flood protection, constructing buildings and other structures, and clearing the native forests, have significantly altered the nature of the existing plant and animal communities. These activities have also contributed to the loss of soil material and organic material through accelerated erosion.

Relief

Relief, or local changes in elevation, has markedly affected the soils in Crawford County through its effect on runoff, erosion, deposition, and natural drainage. Relief includes such landform characteristics as position on the landform, slope gradient, slope shape, and slope aspect.

Variations in relief in the county reflect the variety of landforms. The most extensive landforms in the county are ground moraines, stream terraces, and flood plains.

Ground moraines of the Illinoian Age generally consist of broad, nearly level to gently sloping interfluves. The relief on ground moraines is less variable than the relief along tributaries of major streams and rivers. The ground moraines are dominated by such soils as Cisne, Bluford, and Wynoose soils. Where the ground moraine is incised by tributaries of major streams and rivers, such soils as Hickory, Atlas, and Fishhook soils are prevalent.

Stream terraces occur primarily along the Embarras and Wabash Rivers and their tributaries. They are generally nearly level to gently sloping areas that lie above adjacent flood plains. Carmi, Ridgway, Roby, Ruark, and Stockland soils are on stream terraces in the county.

Where the parent material is relatively uniform, differences in natural drainage are closely related to landform position, such as summit or backslope, and to slope gradient and slope shape. Wynoose and Ava soils, for example, both formed in loess and in the underlying pedisediment and geosol. Wynoose soils are on toeslopes. The slopes are nearly level and are commonly concave. Precipitation and runoff from the higher adjacent soils contribute to the ponding of surface water on the poorly drained Wynoose soils. The water in the saturated soil pores restricts the circulation of air in the soil. Under these conditions, naturally occurring iron and manganese compounds are chemically reduced. The reduced form of iron and manganese is more soluble than the oxidized form and can be leached readily from the soil, leaving the subsoil with a grayish color. Ava soils, conversely, are moderately well drained and are on gently sloping summits and backslopes that are convex. The water table is lower in the Ava soils than in the Wynoose soils, and some of the rainfall runs off the more sloping surface. The soil pores in the Ava soils contain less water and more air. The iron and manganese compounds are well oxidized, resulting in a brownish subsoil.

Relief also affects the susceptibility to and intensity of both geologic and recent accelerated erosion. Soils on the steeper slopes and in areas where slopes are long are more susceptible to erosion than soils that formed in nearly level or level areas or where slopes are short. Maintaining a cover of vegetation or plant residue on much or all of the soil surface can significantly reduce the hazard of erosion caused by relief. For example, Hickory soils that have slopes of 18 to 35 percent generally support trees, herbaceous plants, and grasses. Because of the vegetative cover, these soils are susceptible to little or no erosion. Most areas of Hickory soils that have slopes of 10 to 18 percent are cultivated. Failure to maintain erosion-control systems on these soils has resulted in moderate or severe accelerated erosion of the surface soil. The loss of surface soil material in one place results in deposition and accumulation in another place, affecting both the rate of soil formation and the development and thickness of soil horizons.

Time

To a great extent, time determines the degree of profile development in a soil. The amount of time available for soil development is strongly influenced by the degree and amount of erosion or deposition of material at any given point in the county.

The differences among soils resulting from the length of time that the parent material has been in place are commonly expressed in the degree of profile development. Beaucoup soils have a very weakly expressed profile because they are on low flood plains that periodically receive new alluvial sediments. Consequently, they have not been in place long enough for the development of distinct horizons. Cisne soils, however, which are on ground moraines, are more strongly developed than the Beaucoup soils. They have distinct horizons because the loess and underlying pedisediment in which they formed have been in place a much longer time.

In most of the upland soils, enough time has passed to allow for the removal of calcium carbonate from the upper 40 or more inches of the profile through leaching. In sloping areas, however, geologic and modern erosion has kept pace with or has exceeded the rate of soil development. Calcium carbonate typically occurs closer to the soil surface in these soils as this leached upper mantle is eroded away. Soils in these areas, such as Navlys soils, are calcareous within a depth of 40 inches.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1999 and 2003). 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 4 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. An example is the Hickory series.

Soil Series and Detailed Soil Map Units

In this section, arranged in alphabetical order, each soil series recognized in the survey area is described. Each series description is followed by descriptions of the associated detailed soil map units.

Characteristics of the soil and the material in which it formed are identified for each soil series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the “Soil Survey Manual” (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, 2003). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

In some instances, the typical pedon for the series is located outside Crawford County. The selection of typical pedons is based on the range of characteristics of the series as it occurs throughout a particular major land resource area. The Cisne series, for example, is common in MLRA 113 (Central Claypan Areas), which covers most of central and south-central Illinois. The typical pedon for the Cisne series is located in Jasper County, Illinois. The soil properties of this pedon are representative of the Cisne soils that occur not only in Jasper County but also in Crawford County and other counties in MLRA 113.

The map units 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. More information about each map unit is given under the headings “Use and Management of the Soils” and “Soil Properties.”

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

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

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

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

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

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Atlas silt loam, 10 to 18 percent slopes, eroded, is a phase of the Atlas series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are called complexes. A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Hickory-Atlas complex, 10 to 18 percent slopes, eroded, is an example.

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

Table 5 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.

Alvin Series

Taxonomic classification: Coarse-loamy, mixed, superactive, mesic Typic Hapludalfs

Typical Pedon

Alvin fine sandy loam, 2 to 5 percent slopes, on a slope of 3 percent in a cultivated field, at an elevation of 660 feet above mean sea level; Vermilion County, Illinois; about 7 miles north of Danville; 2,320 feet south and 1,760 feet east of the northwest corner of sec. 32, T. 21 N., R. 11 W.; USGS Danville, Illinois, topographic quadrangle; lat. 40 degrees 14 minutes 08.1 seconds N. and long. 87 degrees 36 minutes 57.8 seconds W.; UTM Zone 16T 0447596E 4454087N; NAD 83:

Ap—0 to 8 inches; brown (10YR 4/3) fine sandy loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; very friable; moderately acid; abrupt smooth boundary.

BE—8 to 11 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak fine subangular blocky structure; very friable; few distinct grayish brown (10YR 5/2) silt coatings on faces of peds; moderately acid; clear smooth boundary.

Bt1—11 to 15 inches; dark yellowish brown (10YR 4/4) fine sandy loam; moderate fine subangular blocky structure; friable; few distinct brown (10YR 4/3) clay films on faces of peds; moderately acid; clear smooth boundary.

Bt2—15 to 25 inches; dark yellowish brown (10YR 4/4) fine sandy loam; moderate medium subangular blocky structure; friable; common distinct brown (10YR 4/3) clay films on faces of peds; strongly acid; clear smooth boundary.

E and Bt—25 to 74 inches; yellowish brown (10YR 5/4) loamy fine sand (E); weak medium subangular blocky structure; very friable; strongly acid; dark yellowish brown (10YR 4/6) fine sandy loam (Bt); 3 to 10 percent of volume; occurs as common or many thin lamellae; moderate medium subangular blocky structure; friable; common distinct brown (10YR 4/3) clay films on faces of peds; strongly acid; clear smooth boundary.

C—74 to 80 inches; 80 percent brown (10YR 4/3) and 20 percent yellowish brown (10YR 5/6), stratified fine sandy loam; massive; friable; moderately acid.

Range in Characteristics

Thickness of the loess: Typically less than 10 inches
Depth to carbonates: More than 40 inches
Depth to the base of the argillic horizon: More than 40 inches

A horizon:
Hue—10YR
Value—3 or 4
Chroma—1 to 4
Texture—fine sandy loam
Reaction—very strongly acid to neutral (depending on liming history)

E, EB, or BE horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—2 to 4
Texture—fine sandy loam or sandy loam
Reaction—very strongly acid to neutral (depending on liming history)

Bt horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—3 to 6
Texture—loam, fine sandy loam, or sandy loam
Content of rock fragments—0 to 5 percent
Reaction—very strongly acid to neutral

E and Bt horizon (if it occurs):
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—2 to 6 (E part); 3 to 6 (Bt part)
Texture—loamy fine sand (E part); fine sandy loam or loam (Bt part)
Content of rock fragments—0 to 5 percent
Reaction—strongly acid to neutral

C horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—3 to 6
Texture—loamy fine sand, fine sand, very fine sand, or fine sandy loam
Content of rock fragments—0 to 5 percent
Reaction—strongly acid to moderately alkaline

131A—Alvin fine sandy loam, 0 to 2 percent slopes

Setting

Landform: Outwash terraces and stream terraces
Position on the landform: Summits

Map Unit Composition

Alvin and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have less sand in the subsoil and underlying material
- Soils that have a surface layer of very fine sandy loam or sandy loam
- Soils that are subject to very rare flooding

Dissimilar soils:
- The somewhat poorly drained Roby soils in swales
- Soils that are subject to more than very rare flooding; at an elevation below 460 feet along the Embarras and Wabash Rivers
- The poorly drained Ruark, Westland, and Patton soils on toeslopes and in swales
- The poorly drained Sawmill soils on flood plains

Properties and Qualities of the Alvin Soil

Parent material: Sandy and silty alluvium and/or eolian deposits
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderately rapid
Permeability below a depth of 60 inches: Moderately rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 6.2 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 1.0 percent
Shrink-swell potential: Low
Ponding: None
Flooding: None
Potential for frost action: Moderate
Hazard of corrosion: Low for steel and moderate for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Moderately high

Interpretive Groups

Land capability classification: 2s
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

131B—Alvin fine sandy loam, 2 to 5 percent slopes

Setting

Landform: Outwash terraces and stream terraces
Position on the landform: Shoulders and summits

Map Unit Composition

Alvin and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have less sand in the subsoil and underlying material
- Soils that have a surface layer of very fine sandy loam or sandy loam
- Soils that are subject to very rare flooding

Dissimilar soils:
- The somewhat poorly drained Roby soils in swales
- Soils that are subject to more than very rare flooding; at an elevation below 460 feet along the Embarras and Wabash Rivers
- The poorly drained Ruark, Westland, and Patton soils on toeslopes and in swales
- The poorly drained Sawmill soils on flood plains

Properties and Qualities of the Alvin Soil

Parent material: Sandy and silty alluvium and/or eolian deposits
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderately rapid
Permeability below a depth of 60 inches: Moderately rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 5.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 1.0 percent
Shrink-swell potential: Low
Ponding: None
Flooding: None
Potential for frost action: Moderate
Hazard of corrosion: Low for steel and high for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Moderately high

Interpretive Groups

Land capability classification: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

131C2—Alvin fine sandy loam, 5 to 10 percent slopes, eroded

Setting

Landform: Stream terraces and outwash terraces
Position on the landform: Shoulders and backslopes

Map Unit Composition

Alvin and similar soils: 95 percent
Dissimilar soils: 5 percent

Soils of Minor Extent

Similar soils:
- Soils that have less sand in the subsoil and underlying material
- Soils that have a surface layer of very fine sandy loam or sandy loam
- Soils that are subject to very rare flooding

Dissimilar soils:
- Soils that are subject to more than very rare flooding; at an elevation below 460 feet along the Embarras and Wabash Rivers
- The poorly drained Ambraw and Sawmill soils on flood plains
- The poorly drained Ruark soils in swales

Properties and Qualities of the Alvin Soil

Parent material: Sandy and silty alluvium and/or eolian deposits
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderately rapid
Permeability below a depth of 60 inches: Moderately rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 6.0 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 1.0 percent
Shrink-swell potential: Low
Ponding: None
Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: Moderate
Hazard of corrosion: Low for steel and high for concrete
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Moderately high

Interpretive Groups

Land capability classification: 3e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

131D2—Alvin fine sandy loam, 10 to 18 percent slopes, eroded

Setting

Landform: Stream terraces and outwash terraces
Position on the landform: Backslopes

Map Unit Composition

Alvin and similar soils: 94 percent
Dissimilar soils: 6 percent

Soils of Minor Extent

Similar soils:
- Soils that have less sand in the subsoil and underlying material
- Soils that have a surface layer of very fine sandy loam or sandy loam
- Soils that are subject to very rare flooding

Dissimilar soils:
- Soils that are subject to more than very rare flooding; at an elevation below 460 feet along the Embarras and Wabash Rivers
- The poorly drained Sawmill soils on flood plains

Properties and Qualities of the Alvin Soil

Parent material: Sandy and silty alluvium and/or eolian deposits
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderately rapid

Permeability below a depth of 60 inches: Moderately rapid or rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 6.9 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 1.0 percent
Shrink-swell potential: Low
Ponding: None
Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: Moderate
Hazard of corrosion: Low for steel and high for concrete
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Moderately high

Interpretive Groups

Land capability classification: 4e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

131F—Alvin fine sandy loam, 18 to 35 percent slopes

Setting

Landform: Outwash terraces and stream terraces
Position on the landform: Backslopes

Map Unit Composition

Alvin and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have less sand in the subsoil and underlying material
- Soils that have a surface layer of very fine sandy loam or sandy loam
- Soils that are subject to very rare flooding

Dissimilar soils:
- Soils that are subject to more than very rare flooding; at an elevation below 460 feet along the Embarras and Wabash Rivers
- The poorly drained Sawmill soils on flood plains

Properties and Qualities of the Alvin Soil

Parent material: Sandy and silty alluvium and/or eolian deposits
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderately rapid
Permeability below a depth of 60 inches: Moderately rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 6.4 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 1.0 percent
Shrink-swell potential: Low
Ponding: None
Flooding: None
Potential for frost action: Moderate
Hazard of corrosion: Low for steel and high for concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Moderately high

Interpretive Groups

Land capability classification: 6e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

Armiesburg Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Fluventic Hapludolls

Typical Pedon

Armiesburg silty clay loam, 0 to 2 percent slopes, frequently flooded, in a nearly level area in a cultivated field, at an elevation of 420 feet above mean sea level; Crawford County, Illinois; 1,430 feet north and 2,295 feet east of the southwest corner of sec. 17, T. 5 N., R. 10 W.; USGS Russellville, Illinois, topographic quadrangle; lat. 38 degrees 52 minutes 16.5 seconds N. and long. 87 degrees 32 minutes 56.9 seconds W.; UTM Zone 16S 0452361E 4302425N; NAD 27:

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) silty clay loam, brown (10YR 5/3) dry; moderate fine granular structure; friable; many very fine and common fine roots; slightly alkaline; abrupt smooth boundary.

A—6 to 14 inches; very dark grayish brown (10YR 3/2) silty clay loam, brown (10YR 5/3) dry; moderate medium angular blocky structure parting to moderate fine subangular blocky; firm; common very fine roots; common faint very dark grayish brown (10YR 3/2) organic coatings on faces of peds; slightly alkaline; clear smooth boundary.

Bw1—14 to 28 inches; brown (10YR 4/3) silty clay loam; weak medium prismatic structure parting to weak fine angular blocky; firm; common very fine roots; many distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; slightly alkaline; clear smooth boundary.

Bw2—28 to 40 inches; brown (10YR 4/3) silty clay loam; weak medium prismatic structure parting to weak fine subangular blocky; firm; few very fine roots; common faint dark brown (10YR 3/3) organic coatings on faces of peds; slightly alkaline; gradual smooth boundary.

C—40 to 75 inches; yellowish brown (10YR 5/4) silty clay loam; massive; friable; few very fine roots; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Depth to carbonates: More than 35 inches
Depth to the base of the cambic horizon: 35 to 60 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silty clay loam
Content of rock fragments—none
Reaction—moderately acid to slightly alkaline

B horizon:
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—silty clay loam or silt loam; clay loam included in the lower part

Content of rock fragments—none
Reaction—slightly acid to slightly alkaline

C horizon:
Hue—10YR
Value—3 to 5
Chroma—3 or 4
Texture—silty clay loam, silt loam, or loam
Content of rock fragments—none
Reaction—slightly acid to slightly alkaline

3597A—Armiesburg silty clay loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Flood-plain steps

Map Unit Composition

Armiesburg and similar soils: 85 percent
Dissimilar soils: 15 percent

Soils of Minor Extent

Similar soils:
- Soils that have more sand in the substratum
- Soils that are more acid in the subsoil and substratum

Dissimilar soils:
- The poorly drained Beaucoup and somewhat poorly drained Tice soils in positions below those of the Armiesburg soil

Properties and Qualities of the Armiesburg Soil

Parent material: Silty and clayey alluvium
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 11.8 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.5 to 7.0 percent
Shrink-swell potential: Moderate
Depth and months of highest apparent seasonal high water table: 3.5 feet, February to April
Ponding: None
Frequency and most likely period of flooding: Frequent, November to June
Potential for frost action: High
Hazard of corrosion: Moderate for steel and low for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w
Prime farmland category: Prime farmland where protected from flooding or not frequently flooded during the growing season
Hydric soil status: Not hydric

Atlas Series

Taxonomic classification: Fine, smectitic, mesic Aeric Chromic Vertic Epiaqualfs

Taxadjunct features: The Atlas soil in map unit 7C3 has a slightly lower shrink-swell potential than is defined as the range for the series. In addition, it is saturated in all layers from the upper boundary of saturation to a depth of more than 2 meters during the period when the water table is high. This soil is classified as a fine, smectitic, mesic Aeric Endoaqualf. The Atlas soils in map units 7C2, 7D2, and 946D2 have a slightly lower shrink-swell potential than is defined as the range for the series and are slightly better drained. These soils are classified as fine, smectitic, mesic Aquic Hapludalfs.

Typical Pedon

Atlas silt loam, 5 to 10 percent slopes, eroded, on a slope of 7 percent in a pasture, at an elevation of 528 feet above mean sea level; Crawford County, Illinois; 300 feet north and 1,700 feet east of the southwest corner of sec. 4, T. 7 N., R. 13 W.; USGS Eaton, Illinois, topographic quadrangle; lat. 39 degrees 04 minutes 20.2 seconds N. and long. 87 degrees 51 minutes 56.8 seconds W.; UTM Zone 16S 0425106E 4325155N; NAD 83:

Ap—0 to 4 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak fine subangular blocky structure parting to weak fine granular; friable; few fine and many very fine roots; few fine irregular masses of iron and manganese accumulation throughout; slightly acid; abrupt smooth boundary.

Bt—4 to 9 inches; yellowish brown (10YR 5/4) and brown (10YR 4/3) silty clay loam; moderate fine subangular blocky structure; firm; few fine and many very fine roots; common faint brown (10YR 4/3) clay films on faces of peds; few fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; few fine irregular masses of iron and manganese accumulation throughout; strongly acid; clear smooth boundary.

2Btg1—9 to 23 inches; gray (5Y 5/1) clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; very firm; common fine and very fine roots; many distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine irregular masses of iron and manganese accumulation throughout; about 1 percent pebbles; strongly acid; gradual smooth boundary.

2Btg2—23 to 34 inches; gray (5Y 5/1) clay loam; moderate medium prismatic structure; very firm; few very fine roots; many distinct dark grayish brown (2.5Y 4/2) clay films on faces of peds; common medium prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; few fine irregular masses of iron and manganese accumulation throughout; about 3 percent pebbles; neutral; gradual smooth boundary.

2Btg3—34 to 52 inches; gray (5Y 6/1) clay loam; weak medium prismatic structure; very firm; few very fine roots; common prominent dark grayish brown (2.5Y 4/2) clay films on faces of peds; common medium prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; few fine irregular masses of iron and manganese accumulation throughout; about 2 percent pebbles; neutral; gradual smooth boundary.

2Btg4—52 to 68 inches; gray (5Y 6/1) clay loam; weak medium prismatic structure; firm; common prominent dark grayish brown (2.5Y 4/2) clay films on faces of peds; many coarse prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; common fine irregular masses of iron and manganese accumulation throughout; about 2 percent pebbles; neutral.

Range in Characteristics

Thickness of the loess: 0 to 20 inches
Depth to the base of the argillic horizon: More than 42 inches

Ap or A horizon:
Hue—10YR
Value—4 or 5
Chroma—1 to 4
Texture—silt loam; silty clay loam in severely eroded pedons
Content of rock fragments—0 to 5 percent
Reaction—very strongly acid to neutral

B horizon:
Hue—N, 10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—0 to 4
Texture—clay loam, clay, silty clay loam, or silty clay
Content of rock fragments—0 to 5 percent
Reaction—very strongly acid to neutral

2B horizon:
Hue—N, 10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—0 to 2
Texture—clay loam, clay, silty clay loam, or silty clay
Content of rock fragments—0 to 5 percent
Reaction—very strongly acid to neutral

2BC or 2C horizon (if it occurs):
Hue—N, 7.5YR, 10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—0 to 6
Texture—clay loam, clay, or loam
Content of rock fragments—2 to 15 percent
Reaction—slightly acid to slightly alkaline

7C2—Atlas silt loam, 5 to 10 percent slopes, eroded

Setting

Landform: Till plains
Position on the landform: Backslopes

Map Unit Composition

Atlas and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Bluford and Fishhook soils on gently sloping side slopes
- Soils that have a darker surface layer
- Severely eroded soils that have a surface layer of silty clay loam

Dissimilar soils:
- The well drained Hickory soils in moderately steep areas
- The poorly drained Wynoose soils on flats in positions above those of the Atlas soil

- The moderately well drained Elco and Ava soils in narrow interfluves above the Atlas soil
- Soils that have a high content of sodium in the subsoil; in landform positions similar to those of the Atlas soil

Properties and Qualities of the Atlas Soil

Parent material: Accretion gley and/or loamy till
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Slow or moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 7.8 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Depth and months of highest apparent seasonal high water table: 1 foot, January to May
Ponding: None
Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

7C3—Atlas silty clay loam, 5 to 10 percent slopes, severely eroded

Setting

Landform: Till plains
Position on the landform: Backslopes

Map Unit Composition

Atlas and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Bluford and Fishhook soils on gently sloping side slopes
- Soils that have a darker surface layer
- Soils that have a surface layer of silt loam

Dissimilar soils:
- The well drained Hickory soils in moderately steep areas
- The moderately well drained Elco and Ava soils in narrow interfluves in positions above those of the Atlas soil
- The poorly drained Wynoose soils on flats in positions above those of the Atlas soil
- Soils that have a high content of sodium in the subsoil; in landform positions similar to those of the Atlas soil

Properties and Qualities of the Atlas Soil

Parent material: Accretion gley and/or loamy till
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 8.3 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Depth and months of highest apparent seasonal high water table: 0.5 foot, January to May
Ponding: None
Flooding: None
Accelerated erosion: The surface layer is mostly subsoil material.
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 4e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

7D2—Atlas silt loam, 10 to 18 percent slopes, eroded

Setting

Landform: Till plains
Position on the landform: Backslopes

Map Unit Composition

Atlas and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Bluford and Fishhook soils on gently sloping side slopes
- Soils that have a darker surface layer
- Severely eroded soils that have a surface layer of silty clay loam

Dissimilar soils:
- The well drained Hickory soils in moderately steep areas
- The moderately well drained Elco and Ava soils in narrow interfluves in positions above those of the Atlas soil

Properties and Qualities of the Atlas Soil

Parent material: Accretion gley and/or loamy till
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Slow or moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 8.4 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent

Shrink-swell potential: Moderate
Depth and months of highest apparent seasonal high water table: 1 foot, January to May
Ponding: None
Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: Moderate
Hazard of corrosion: High for steel and concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 4e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

946D2—Hickory-Atlas complex, 10 to 18 percent slopes, eroded

Setting

Landform: Till plains
Position on the landform: Backslopes

Map Unit Composition

Hickory and similar soils: 45 percent
Atlas and similar soils: 40 percent
Dissimilar soils: 15 percent

Soils of Minor Extent

Similar soils:
- Bluford and Fishhook soils on gently sloping side slopes
- Severely eroded soils that have a surface layer of silty clay loam

Dissimilar soils:
- The somewhat poorly drained Wakeland and Shoals soils on narrow flood plains in positions below those of the Hickory and Atlas soils

Properties and Qualities of the Hickory Soil

Parent material: Loamy till
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 7.9 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Properties and Qualities of the Atlas Soil

Parent material: Accretion gley and/or loamy till
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Slow or moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 8.4 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Depth and months of highest apparent seasonal high water table: 1 foot, January to May
Ponding: None
Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: Moderate
Hazard of corrosion: High for steel and concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: Hickory—3e; Atlas—4e
Prime farmland category: Not prime farmland
Hydric soil status: Hickory—not hydric; Atlas—not hydric

Ava Series

Taxonomic classification: Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs

Typical Pedon

Ava silt loam, 2 to 5 percent slopes, on a slope of 3 percent in a pasture, at an elevation of 440 feet above mean sea level; Edwards County, Illinois; about 10 miles north and 3 miles west of Albion; 925 feet south and 1,575 feet west of the northeast corner of sec. 17, T. 1 N., R. 10 E.; USGS West Salem, Illinois, topographic quadrangle; lat. 38 degrees 30 minutes 56.5 seconds N. and long. 88 degrees 06 minutes 47.2 seconds W.; UTM Zone 16S 0402959E 4263622N; NAD 83:

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate fine granular structure; friable; many fine roots; slightly acid; abrupt smooth boundary.
E—6 to 10 inches; brown (10YR 4/3) silt loam; weak medium platy structure; friable; few fine roots; strongly acid; clear smooth boundary.
BE—10 to 14 inches; yellowish brown (10YR 5/6) silt loam; moderate fine and medium subangular blocky structure; friable; common fine roots; strongly acid; clear smooth boundary.
Bt—14 to 24 inches; yellowish brown (10YR 5/4) silty clay loam; strong fine and medium subangular blocky structure; firm; few fine roots; very few distinct brown (7.5YR 5/4) clay films and very few faint light yellowish brown (10YR 6/4) clay depletions on faces of peds; very strongly acid; clear smooth boundary.
Bt/E—24 to 27 inches; yellowish brown (10YR 5/4) silty clay loam (Bt) and light yellowish brown (10YR 6/4) silt (E), light gray (10YR 7/2) dry; the E material occurs as common distinct clay depletions on faces of peds and as fillings in spaces between peds; moderate fine and medium subangular blocky structure; firm; few fine roots; common medium faint brown (7.5YR 4/4) masses of iron and

manganese accumulation in the matrix; very few fine black (10YR 2/1) manganese concretions; very strongly acid; clear smooth boundary.

B´t—27 to 34 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; common distinct brown (10YR 4/3) clay films and few distinct light gray (10YR 7/2) clay depletions on faces of peds; common fine distinct grayish brown (10YR 5/2) iron depletions and few fine distinct yellowish brown (10YR 5/6) masses of iron and manganese accumulation in the matrix; very strongly acid; gradual smooth boundary.

2Btx1—34 to 44 inches; grayish brown (10YR 5/2) silty clay loam; moderate very coarse prismatic structure parting to weak coarse subangular blocky; very firm; cracks between polygons filled with light gray (10YR 7/1) silt loam; brittle; common coarse prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; common coarse prominent dark red (2.5YR 3/6) and brown (7.5YR 4/4) weakly cemented nodules (iron and manganese oxides) and few fine black (10YR 2/1) manganese concretions; about 12 percent sand; brittle; very strongly acid; gradual smooth boundary.

2Btx2—44 to 50 inches; brown (10YR 5/3) loam; weak very coarse prismatic structure parting to weak coarse subangular blocky; very firm; few vertical streaks and cracks between polygons filled with light gray (10YR 7/1) silt; brittle; common coarse faint dark yellowish brown (10YR 4/4) masses of iron and manganese accumulation and common fine faint grayish brown (10YR 5/2) iron depletions in the matrix; few black (10YR 2/1) manganese concretions; about 30 percent sand; brittle; very strongly acid; gradual smooth boundary.

2C—50 to 60 inches; brown (10YR 5/3) loam; massive, friable; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; strongly acid.

Range in Characteristics

Thickness of the loess: 30 to 55 inches
Depth to the fragipan: 25 to 40 inches
Depth to the base of the argillic horizon: More than 48 inches

Ap or A horizon:
Hue—10YR
Value—4 or 5
Chroma—2 or 3
Texture—silt loam
Content of rock fragments—none
Reaction—very strongly acid to neutral

E or BE horizon (if it occurs):
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Texture—silt loam
Content of rock fragments—none
Reaction—very strongly acid or strongly acid

B, B/E, and B´t horizons:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—3 to 6
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—very strongly acid or strongly acid

Btx, Bx, 2Bx, or 2Btx horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—2 to 8
Texture—silt loam, silty clay loam, loam, or clay loam
Content of rock fragments—0 to 4 percent
Reaction—very strongly acid or strongly acid

2C or 2Btb horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—2 to 6
Texture—loam, silt loam, silty clay loam, or clay loam
Content of rock fragments—0 to 5 percent
Reaction—very strongly acid to moderately acid

14B—Ava silt loam, 2 to 5 percent slopes

Setting

Landform: Till plains
Position on the landform: Summits and shoulders

Map Unit Composition

Ava and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a thicker, darker surface layer
- Soils that are moderately eroded and have a thinner surface layer

Dissimilar soils:
- The somewhat poorly drained Bluford soils in swales and on the broader parts of interfluves
- The poorly drained Wynoose soils on flats in positions above those of the Ava soil

Properties and Qualities of the Ava Soil

Parent material: Loess over loamy pedisediment
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Slow or moderately slow
Depth to restrictive feature: 25 to 40 inches to a fragipan
Available water capacity: About 11.0 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Depth and months of highest perched seasonal high water table: 1.5 feet, February to April
Ponding: None
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and concrete
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

14C2—Ava silt loam, 5 to 10 percent slopes, eroded

Setting

Landform: Till plains
Position on the landform: Backslopes and shoulders

Map Unit Composition

Ava and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that are only slightly eroded and have a thicker surface layer
- Soils that formed in a thinner layer of loess

Dissimilar soils:
- The somewhat poorly drained Atlas soils near the head of drainageways
- The somewhat poorly drained Bluford soils on the less sloping summits
- Soils within the 100-year flood plain that are more than very rarely flooded
- The poorly drained Wynoose soils on flats in positions above those of the Ava soil

Properties and Qualities of the Ava Soil

Parent material: Loess over loamy pedisediment
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Slow or moderately slow
Depth to restrictive feature: 25 to 40 inches to a fragipan
Available water capacity: About 10.4 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Depth and months of highest perched seasonal high water table: 1.5 feet, February to April
Ponding: None
Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

Beaucoup Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Fluvaquentic Endoaquolls

Typical Pedon

Beaucoup silty clay loam, 0 to 2 percent slopes, frequently flooded, in a nearly level cultivated field, at an elevation of 430 feet above mean sea level; Crawford County, Illinois; 2,400 feet north and 390 feet west of the southeast corner of sec. 17, T. 6 N., R. 10 W.; USGS Heathsville, Illinois, topographic quadrangle; lat. 38 degrees 57 minutes 51.9 seconds N. and long. 87 degrees 32 minutes 22.7 W.; UTM Zone 16S 0453246E 4312758N; NAD 27:

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; weak fine granular structure; firm; common very fine and few fine roots; few fine irregular accumulations of iron and manganese oxides; about 1 percent pebbles; neutral; abrupt smooth boundary.

A—7 to 12 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; weak fine angular blocky structure; firm; common very fine and few fine roots; common fine irregular accumulations of iron and manganese oxides; about 1 percent pebbles; neutral; clear smooth boundary.

Bg1—12 to 23 inches; dark grayish brown (2.5Y 4/2) silty clay loam; weak fine prismatic structure parting to moderate fine angular blocky; firm; few very fine and fine roots; many distinct dark olive gray (5Y 3/2) pressure faces on faces of peds; common fine prominent dark yellowish brown (10YR 4/4) irregular accumulations of iron and manganese oxides; about 1 percent pebbles; neutral; gradual smooth boundary.

Bg2—23 to 41 inches; very dark gray (2.5Y 3/1) silty clay loam; weak fine prismatic structure parting to weak fine angular blocky; firm; common faint very dark gray (2.5Y 3/1) pressure faces on faces of peds; common fine prominent yellowish brown (10YR 5/6) irregular accumulations of iron and manganese oxides; about 1 percent pebbles; neutral; gradual smooth boundary.

BCg—41 to 65 inches; dark gray (5Y 4/1) silty clay loam; weak medium prismatic structure; firm; few faint very dark gray (5Y 3/1) pressure faces on faces of peds; many fine prominent yellowish brown (10YR 5/6) irregular accumulations of iron and manganese oxides; neutral; abrupt smooth boundary.

2Cr—65 to 80 inches; extremely paraflaggy sand weathered from sandstone; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 24 inches
Depth to carbonates: More than 40 inches
Depth to the base of the cambic horizon: More than 35 inches
Depth to bedrock: More than 60 inches

Ap or A horizon:
Hue—10YR or N
Value—2 or 3
Chroma—0 to 2
Texture—silty clay loam
Content of rock fragments—none
Reaction—moderately acid to slightly alkaline

B horizon:
Hue—N, 10YR, 2.5Y, or 5Y
Value—3 to 6
Chroma—0 to 2
Texture—silty clay loam
Content of rock fragments—none
Reaction—moderately acid to slightly alkaline

BC and/or C horizon:
Hue—N, 10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—0 to 2
Texture—silty clay loam or silt loam with strata of loam, sandy loam, fine sandy loam, or very fine sandy loam
Content of rock fragments—none
Reaction—slightly acid to moderately alkaline

2Cr horizon:
Type of rock—weathered sandstone or shale bedrock that can be broken out in fragments ranging from 10 inches to more than 10 feet in diameter

3070A—Beaucoup silty clay loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Flood plains

Map Unit Composition

Beaucoup and similar soils: 85 percent
Dissimilar soils: 15 percent

Soils of Minor Extent

Similar soils:
- Soils that have a light-colored surface layer
- Soils that have more clay in the subsoil
- Soils that are deep or very deep to bedrock
- Soils that are subject to occasional flooding

Dissimilar soils:
- The well drained Armiesburg and Stonelick soils and the somewhat poorly drained Tice soils in the higher positions on the flood plain
- Soils that are moderately deep to bedrock

Properties and Qualities of the Beaucoup Soil

Parent material: Silty and clayey alluvium
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Very slow to moderately slow
Depth to restrictive feature: 60 to 80 inches to bedrock (paralithic)
Available water capacity: About 11.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 2.5 to 7.0 percent
Shrink-swell potential: Moderate
Depth and months of highest perched seasonal high water table: At the surface, January to May
Ponding duration: Brief, January to May
Frequency and most likely period of flooding: Frequent, November to June
Potential for frost action: High
Hazard of corrosion: High for steel and low for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w
Prime farmland category: Prime farmland where drained and either protected from flooding or not frequently flooded during the growing season
Hydric soil status: Hydric

Birds Series

Taxonomic classification: Fine-silty, mixed, superactive, nonacid, mesic Typic Fluvaquents
Taxadjunct features: The Birds soils in this survey area have slightly more development in the subsoil than is defined as the range for the series. These soils are classified as fine-silty, mixed, superactive, nonacid, mesic Fluvaquentic Endoaquepts.

Typical Pedon

Birds silt loam, 0 to 2 percent slopes, frequently flooded, in a nearly level area in a cultivated field, at an elevation of 418 feet above mean sea level; Lawrence County, Illinois; 2,643 feet south and 2,044 feet east of the northwest corner of sec. 13, T. 3 N., R. 12 W.; USGS Lawrenceville, Illinois, topographic quadrangle; lat. 38 degrees 41 minutes 42.5 seconds N. and long. 87 degrees 41 minutes 45.8 seconds W.; UTM Zone 16S 0439466E 4282973N; NAD 27:

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate fine granular structure; friable; few very fine roots throughout; few fine distinct dark yellowish brown (10YR 4/4) masses of iron and manganese accumulation; few fine rounded iron and manganese concretions; neutral; abrupt smooth boundary.

Bg1—6 to 13 inches; gray (10YR 5/1) silt loam; weak fine prismatic structure; friable; few very fine roots throughout; common fine distinct dark yellowish brown (10YR 4/4) and common fine prominent strong brown (7.5YR 4/6) masses of iron accumulation; few fine irregular masses of iron and manganese accumulation; neutral; clear smooth boundary.

Bg2—13 to 22 inches; light brownish gray (10YR 6/2) silt loam; weak medium prismatic structure; friable; few very fine roots throughout; few prominent black (N 2.5/) manganese coatings on faces of peds; common fine prominent yellowish brown (10YR 5/6) masses of iron accumulation; common fine irregular masses of iron and manganese accumulation; neutral; clear smooth boundary.

Bg3—22 to 40 inches; gray (10YR 6/1) silt loam; weak medium prismatic structure; friable; few very fine roots throughout; few prominent black (N 2.5/) manganese coatings on faces of peds; common fine prominent yellowish brown (10YR 5/8) masses of iron accumulation; common fine and medium irregular masses of iron and manganese accumulation; neutral; clear smooth boundary.

BCg—40 to 58 inches; gray (10YR 5/1) silt loam; weak coarse prismatic structure; friable; few very fine roots throughout; very few prominent black (N 2.5/) manganese coatings on faces of peds; common fine prominent yellowish brown (10YR 5/8) masses of iron accumulation; common fine and medium irregular masses of iron and manganese accumulation; neutral; clear smooth boundary.

Cg—58 to 80 inches; light brownish gray (10YR 6/2) silt loam; weak coarse prismatic structure; friable; few prominent black (N 2.5/) manganese coatings on faces of aggregates; common fine prominent yellowish brown (10YR 5/6) masses of iron accumulation; common fine and medium irregular masses of iron and manganese accumulation; slightly alkaline.

Range in Characteristics

Ap, A, or AC horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to slightly alkaline

Bg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 7
Chroma—1 or 2
Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to slightly alkaline

BCg or Cg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 7
Chroma—1 or 2
Texture—dominantly silt loam; strata of silty clay loam, clay loam, loam, or sandy loam below a depth of 40 inches in some pedons
Content of rock fragments—none
Reaction—moderately acid to slightly alkaline

3334A—Birds silt loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Flood plains

Map Unit Composition

Birds and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have more clay in the substratum
- Soils that have more sand in the substratum
- The somewhat poorly drained Wakeland soils on steps in positions above those of the Birds soil
- Soils that are flooded for long periods
- Soils that are subject to occasional flooding
- Soils that are very deep to bedrock

Dissimilar soils:
- Soils that are deep to bedrock
- Moderately well drained soils on terraces in positions above those of the Birds soil

Properties and Qualities of the Birds Soil

Parent material: Silty alluvium
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow

Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 11.5 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 3.0 percent
Shrink-swell potential: Low
Depth and months of highest apparent seasonal high water table: At the surface, January to May
Ponding duration: Brief, January to May
Frequency and most likely period of flooding: Frequent, November to June
Potential for frost action: High
Hazard of corrosion: High for steel and low for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w
Prime farmland category: Prime farmland where drained and either protected from flooding or not frequently flooded during the growing season
Hydric soil status: Hydric

Bluford Series

Taxonomic classification: Fine, smectitic, mesic Aeric Fragic Epiaqualfs

Typical Pedon

Bluford silt loam, 0 to 2 percent slopes, on a slope of 2 percent in a cultivated field, at an elevation of 549 feet above mean sea level; Crawford County, Illinois; 1,585 feet south and 925 feet west of the northeast corner of sec. 16, T. 8 N., R. 13 W.; USGS Annapolis, Illinois, topographic quadrangle; lat. 39 degrees 08 minutes 22.7 seconds N. and long. 87 degrees 51 minutes 27.9 seconds W.; UTM Zone 16S 0425872E 4332623N; NAD 83:

Ap—0 to 7 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium granular structure; very friable; few very fine roots; few fine rounded masses of iron and manganese accumulation throughout; neutral; abrupt smooth boundary.

E1—7 to 15 inches; light brownish gray (10YR 6/2) silt loam, white (2.5Y 8/1) dry; moderate medium platy structure; very friable; few very fine roots; many medium distinct yellowish brown (10YR 5/4) and few medium faint brown (10YR 5/3) masses of iron and manganese accumulation in the matrix; common fine rounded masses of iron and manganese accumulation throughout; very strongly acid; clear smooth boundary.

E2—15 to 20 inches; pale brown (10YR 6/3) silt loam, pale yellow (2.5Y 8/2) dry; moderate medium platy structure parting to moderate very fine subangular blocky; very friable; few very fine roots; common prominent white (10YR 8/1) (dry) silt coatings on faces of peds; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; very strongly acid; clear smooth boundary.

Btg—20 to 35 inches; grayish brown (10YR 5/2) silty clay; moderate medium subangular blocky structure; firm; few very fine roots; common faint grayish brown (10YR 5/2) clay films on faces of peds; common medium faint gray (10YR 5/1) iron depletions in the matrix; common medium distinct dark yellowish brown (10YR 4/4) and many medium prominent yellowish brown (10YR 5/6) masses of iron and manganese accumulation in the matrix; common prominent strong brown (7.5YR 5/6) iron stains on faces of peds and in pores; few fine rounded masses of iron and manganese accumulation throughout; very strongly acid; clear smooth boundary.

2Btgx—35 to 42 inches; grayish brown (10YR 5/2) silty clay loam; moderate coarse prismatic structure; firm; few faint grayish brown (10YR 5/2) clay films and common prominent white (10YR 8/1) silt coatings on faces of peds; brittle; few fine faint gray (10YR 6/1) iron depletions and common medium distinct dark yellowish brown (10YR 4/4) masses of iron and manganese accumulation in the matrix; common prominent strong brown (7.5YR 5/6) iron stains on faces of peds and in pores; few fine rounded masses of iron and manganese accumulation throughout; very strongly acid; gradual smooth boundary.

2Btg—42 to 60 inches; gray (10YR 5/1) silty clay loam; weak coarse prismatic structure; very firm; few faint dark gray (10YR 4/1) clay films in root channels; common medium distinct yellowish brown (10YR 5/4) and common medium prominent yellowish brown (10YR 5/6) masses of iron and manganese accumulation in the matrix; common fine rounded masses of iron and manganese accumulation throughout; about 1 percent gravel; very strongly acid.

Range in Characteristics

Thickness of the loess: 30 to 55 inches
Depth to carbonates: More than 80 inches

Ap or A horizon:
Hue—10YR
Value—3 to 5 (6 or 7 dry)
Chroma—1 to 3
Texture—silt loam
Content of rock fragments—none
Reaction—very strongly acid or strongly acid; ranges to neutral in areas that have been limed

E, EB, or BE horizon (if it occurs):
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—silt loam
Content of rock fragments—none
Reaction—very strongly acid or strongly acid; ranges to slightly acid in areas that have been limed

Bt and/or Btg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 3
Texture—silty clay loam or silty clay
Content of rock fragments—none
Reaction—very strongly acid to slightly acid

2Btgx and/or 2Bgx horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—1 or 2 (ranges to 8 in multicolored horizons)
Texture—silt loam, loam, silty clay loam, or clay loam
Content of rock fragments—0 to 5 percent by volume
Reaction—very strongly acid to moderately acid
Brittleness—30 to 60 percent by volume

2Btg or 2BCg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 or 2 (ranges to 6 in multicolored horizons)
Texture—silty clay loam, silt loam, or loam
Content of rock fragments—0 to 5 percent by volume
Reaction—very strongly acid to moderately acid

13A—Bluford silt loam, 0 to 2 percent slopes

Setting

Landform: Till plains and broad interfluves
Position on the landform: Summits

Map Unit Composition

Bluford and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a thicker dark surface layer
- Soils that have slopes of more than 2 percent

Dissimilar soils:
- Darmstadt soils, which have a high content of sodium in the subsoil; in landscape positions similar to those of the Bluford soil
- The moderately well drained Ava soils in landscape positions above those of the Bluford soil
- The poorly drained Wynoose and Cisne soils on flats in positions above those of the Bluford soil

Properties and Qualities of the Bluford Soil

Parent material: Loess over silty or loamy pedisediment
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Slow
Depth to restrictive feature: 30 to 55 inches to a fragic layer
Available water capacity: About 10.9 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: High
Depth and months of highest perched seasonal high water table: 0.5 foot, January to May
Ponding: None
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2w
Prime farmland category: Prime farmland where drained
Hydric soil status: Not hydric

13B2—Bluford silt loam, 2 to 5 percent slopes, eroded

Setting

Landform: Till plains
Position on the landform: Shoulders

Map Unit Composition

Bluford and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have less clay in the subsoil
- Soils that are not eroded and have a thicker surface layer

Dissimilar soils:
- Darmstadt soils, which have a high concentration of sodium in the subsoil; in landscape positions similar to those of the Bluford soil
- The moderately well drained Ava soils in moderately sloping areas
- The poorly drained Wynoose and Cisne soils on flats in positions above those of the Bluford soil

Properties and Qualities of the Bluford Soil

Parent material: Loess over loamy pedisediment
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Slow or moderately slow
Depth to restrictive feature: 30 to 55 inches to a fragic layer
Available water capacity: About 9.5 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Very high
Depth and months of highest perched seasonal high water table: 0.5 foot, January to May
Ponding: None
Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: Moderate
Hazard of corrosion: High for steel and concrete
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

Carmi Series

Taxonomic classification: Coarse-loamy, mixed, superactive, mesic Pachic Hapludolls

Typical Pedon

Carmi sandy loam, 0 to 2 percent slopes, on a slope of 1 percent in a cultivated field, at an elevation of 456 feet above mean sea level; Clark County, Illinois; 1,326 feet south and 81 feet east of the northwest corner of sec. 33, T. 9 N., R. 11 W.; USGS West Union, Illinois, topographic quadrangle; lat. 39 degrees 10 minutes 59.2

seconds N. and long. 87 degrees 38 minutes 49.8 seconds W.; UTM Zone 16S 0444104E 4337090N; NAD 27:

Ap—0 to 10 inches; very dark brown (10YR 2/2) sandy loam, dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure parting to moderate medium granular; friable; common very fine roots throughout; about 1 percent rounded rock fragments; slightly acid; abrupt smooth boundary.

A—10 to 18 inches; very dark brown (10YR 2/2) sandy loam, dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure parting to moderate medium granular; friable; common very fine roots throughout; about 2 percent rounded rock fragments; strongly acid; gradual smooth boundary.

Bt1—18 to 26 inches; dark brown (10YR 3/3) sandy loam, dark grayish brown (10YR 4/2) dry; moderate medium prismatic structure parting to moderate medium subangular blocky; friable; common very fine roots throughout; common distinct very dark grayish brown (10YR 3/2) organo-clay bridging between sand grains; about 2 percent rounded rock fragments; moderately acid; clear smooth boundary.

2Bt2—26 to 37 inches; dark brown (10YR 3/3) gravelly coarse sandy loam, brown (10YR 4/3) dry; weak medium subangular blocky structure; friable; common very fine roots throughout; many distinct very dark grayish brown (10YR 3/2) organo-clay films on faces of peds and many distinct very dark grayish brown (10YR 3/2) organo-clay bridges between sand grains; about 35 percent rounded rock fragments; moderately acid; clear smooth boundary.

2Bt3—37 to 44 inches; dark brown (7.5YR 3/3) sandy loam, dark brown (7.5YR 3/2) dry; moderate medium subangular blocky structure; friable; few very fine roots throughout; many distinct very dark grayish brown (10YR 3/2) organo-clay films on faces of peds and many distinct very dark grayish brown (10YR 3/2) organo-clay bridges between sand grains; about 12 percent rounded rock fragments; moderately acid; clear smooth boundary.

2Bt4—44 to 57 inches; brown (7.5YR 4/3), stratified sandy loam and coarse sandy loam; weak medium subangular blocky structure; very friable; few very fine roots throughout; common distinct dark brown (7.5YR 3/2) organo-clay films on faces of peds and many distinct dark brown (7.5YR 3/2) organo-clay bridges between sand grains; about 10 percent rounded rock fragments; moderately acid; clear smooth boundary.

2Bt5—57 to 68 inches; brown (7.5YR 4/3) loamy coarse sand; weak medium subangular blocky structure; very friable; common faint patchy brown (7.5YR 4/3) clay bridging between sand grains; about 10 percent rounded rock fragments; moderately acid; clear smooth boundary.

2BCt—68 to 82 inches; 70 percent brown (7.5YR 4/3) and 30 percent brown (10YR 5/3), stratified loamy sand, loamy coarse sand, and coarse sand; single grain; loose; common faint patchy brown (7.5YR 4/3) clay bridging between sand grains; about 10 percent rounded rock fragments; moderately acid; clear smooth boundary.

2C—82 to 93 inches; brown (10YR 5/3), stratified coarse sand, gravelly coarse sand, and very gravelly coarse sand, light gray (10YR 7/2) dry; single grain; loose; strongly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 20 to 34 inches
Depth to carbonates: More than 40 inches
Depth to the base of the cambic horizon: More than 40 inches
Content of clay in the particle-size control section: Averages 12 to 18 percent

Ap or A horizon:
Hue—10YR

Value—2 or 3
Chroma—1 to 3
Texture—sandy loam
Content of rock fragments—less than 15 percent
Reaction—strongly acid to neutral

Bt and/or 2Bt horizon:
Hue—7.5YR or 10YR
Value—3 to 5
Chroma—2 to 6
Texture—loam, sandy loam, coarse sandy loam, or sandy clay loam
Content of rock fragments—0 to 35 percent
Reaction—very strongly acid to moderately acid

2BC horizon:
Hue—5YR, 7.5YR, or 10YR
Value—3 to 5
Chroma—2 to 6
Texture—sandy loam, coarse sandy loam, loamy sand, loamy coarse sand, sand, or coarse sand; typically stratified
Content of rock fragments—averages less than 35 percent
Reaction—strongly acid to neutral

2C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—2 to 4
Texture—sand or coarse sand or the gravelly analogs of these textures; typically stratified
Content of rock fragments—averages less than 35 percent
Reaction—slightly alkaline or moderately alkaline
Effervescence—slightly effervescent to strongly effervescent

7286A—Carmi sandy loam, 0 to 2 percent slopes, rarely flooded

Setting

Landform: Stream terraces and outwash terraces
Position on the landform: Summits

Map Unit Composition

Carmi and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Stockland soils in landscape positions similar to those of the Carmi soil
- Soils that are subject to occasional flooding

Dissimilar soils:
- The somewhat poorly drained Roby soils on a lower part of the terrace tread
- Soils that are subject to frequent flooding
- The poorly drained Westland soils in swales

Properties and Qualities of the Carmi Soil

Parent material: Loamy alluvium over sandy outwash
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderately rapid
Permeability below a depth of 60 inches: Rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 6.6 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 5.0 percent
Shrink-swell potential: Low
Ponding: None
Frequency and most likely period of flooding: Rare, November to June
Potential for frost action: Moderate
Hazard of corrosion: Low for steel and moderate for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Moderately high

Interpretive Groups

Land capability classification: 2s
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

7286B—Carmi sandy loam, 2 to 5 percent slopes, rarely flooded

Setting

Landform: Stream terraces and outwash terraces
Position on the landform: Shoulders

Map Unit Composition

Carmi and similar soils: 95 percent
Dissimilar soils: 5 percent

Soils of Minor Extent

Similar soils:
- Stockland soils in landscape positions similar to those of the Carmi soil
- Soils that are subject to occasional flooding

Dissimilar soils:
- The somewhat poorly drained Roby soils on a lower part of the terrace tread
- Soils that are subject to frequent flooding
- The poorly drained Westland soils in swales

Properties and Qualities of the Carmi Soil

Parent material: Loamy alluvium over sandy outwash
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderately rapid
Permeability below a depth of 60 inches: Very rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 4.9 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 5.0 percent
Shrink-swell potential: Low
Ponding: None

Frequency and most likely period of flooding: Rare, November to June
Potential for frost action: Moderate
Hazard of corrosion: Low for steel and moderate for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Moderately high

Interpretive Groups

Land capability classification: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

7841A—Carmi-Westland complex, 0 to 2 percent slopes, rarely flooded

Setting

Landform: Stream terraces and outwash terraces
Position on the landform: Summits

Map Unit Composition

Carmi and similar soils: 50 percent
Westland and similar soils: 45 percent
Dissimilar soils: 5 percent

Soils of Minor Extent

Similar soils:
- Soils that have more gravel in the substratum
- Soils that have a light-colored surface layer
- Soils that have more clay and less sand in the subsoil
- Soils that are subject to occasional flooding

Dissimilar soils:
- Soils that are subject to frequent flooding

Properties and Qualities of the Carmi Soil

Parent material: Loamy alluvium over sandy outwash
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderately rapid
Permeability below a depth of 60 inches: Rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 6.6 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 5.0 percent
Shrink-swell potential: Low
Ponding: None
Frequency and most likely period of flooding: Rare, November to June
Potential for frost action: Moderate
Hazard of corrosion: Low for steel and moderate for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Moderately high

Properties and Qualities of the Westland Soil

Parent material: Loamy alluvium over sandy and gravelly outwash
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Moderate

Permeability below a depth of 60 inches: Very rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 7.3 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.5 to 6.0 percent
Shrink-swell potential: Moderate
Depth and months of highest apparent seasonal high water table: At the surface, January to May
Ponding duration: Brief, January to May
Frequency and most likely period of flooding: Rare, November to June
Potential for frost action: High
Hazard of corrosion: High for steel and low for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: Carmi—2s; Westland—2w
Prime farmland category: Prime farmland
Hydric soil status: Carmi—not hydric; Westland—hydric

Cisne Series

Taxonomic classification: Fine, smectitic, mesic Mollic Albaqualfs

Typical Pedon

Cisne silt loam, 0 to 2 percent slopes, in a cultivated field, at an elevation of 556 feet above mean sea level; Jasper County, Illinois; 1,960 feet west and 420 feet south of the northeast corner of sec. 3, T. 6 N., R. 9 E.; USGS Newton, Illinois, topographic quadrangle; lat. 38 degrees 59 minutes 36.6 seconds N. and long. 88 degrees 11 minutes 42.9 seconds W.; UTM Zone 16S 0396490E 4316734N; NAD 83:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; friable; few very dark gray (10YR 3/1) organic coatings on faces of peds; about 1 percent fine and medium weakly cemented iron and manganese nodules throughout; moderately acid; abrupt smooth boundary.

Eg1—8 to 13 inches; grayish brown (10YR 5/2) silt loam, light gray (10YR 7/2) dry; moderate medium platy structure; friable; common fine prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; about 2 percent fine and medium weakly cemented iron and manganese nodules throughout; strongly acid; clear smooth boundary.

Eg2—13 to 17 inches; light gray (10YR 7/2) and light brownish gray (10YR 6/2) silt loam, very pale brown (10YR 8/2) dry; moderate medium platy structure; friable; about 2 percent fine and medium weakly cemented iron-manganese nodules throughout; strongly acid; abrupt smooth boundary.

B/E—17 to 19 inches; gray (10YR 6/1) silty clay loam (Bt); moderate fine angular blocky structure; friable; common prominent light gray (10YR 7/1) silt coatings on faces of peds (E); common medium prominent yellowish red (5YR 4/6) masses of iron and manganese accumulation in the matrix; about 3 percent fine and medium weakly cemented iron-manganese nodules throughout; strongly acid; clear smooth boundary.

Btg1—19 to 28 inches; grayish brown (10YR 5/2) silty clay loam; strong fine prismatic structure parting to strong fine angular blocky; firm; many distinct gray (10YR 5/1) clay films on faces of peds; common medium prominent yellowish red (5YR 4/6) masses of iron and manganese accumulation in the matrix; strongly acid; clear smooth boundary.

Btg2—28 to 37 inches; grayish brown (10YR 5/2) silty clay loam; moderate medium angular blocky structure; firm; common distinct gray (10YR 5/1) clay films on faces of peds; common medium distinct dark yellowish brown (10YR 4/4) masses of iron and manganese accumulation in the matrix; strongly acid; clear smooth boundary.

2Btg3—37 to 43 inches; light brownish gray (2.5Y 6/2) silty clay loam; weak coarse angular blocky structure; firm; few faint gray (10YR 5/1) clay films on faces of peds; common medium and coarse distinct dark yellowish brown (10YR 4/4) masses of iron and manganese accumulation in the matrix; about 15 percent sand; few pebbles; strongly acid; gradual smooth boundary.

2BCg—43 to 60 inches; light brownish gray (2.5Y 6/2) silty clay loam; weak coarse angular blocky structure; firm; common coarse distinct dark yellowish brown (10YR 4/4) masses of iron and manganese accumulation in the matrix; about 15 percent sand in the upper part (the content of sand increases with increasing depth); few pebbles; moderately acid; gradual smooth boundary.

2Cg—60 to 80 inches; dark grayish brown (10YR 4/2) silt loam; massive; firm; many coarse prominent gray (N 6/ and 7/) iron depletions in the matrix; few fine and medium iron and manganese concretions throughout; about 20 percent sand; about 2 percent pebbles; slightly acid.

Range in Characteristics

Thickness of the mollic epipedon: 7 to 10 inches
Thickness of the loess: 30 to 55 inches
Depth to the base of the argillic horizon: 40 to 65 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

E horizon:
Hue—10YR or 2.5Y
Value—4 to 7
Chroma—1 or 2
Texture—silt loam or silt
Content of rock fragments—none
Reaction—very strongly acid to moderately acid; ranges to neutral in areas that have been limed

B/E, BE, or EB horizon:
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—1 or 2
Texture—silt loam or silty clay loam
Content of rock fragments—none
Reaction—very strongly acid to moderately acid

Btg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 or 2
Texture—silty clay loam or silty clay

Content of rock fragments—none
Reaction—very strongly acid to moderately acid

2Btg or 2BCg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 or 2
Texture—silty clay loam, clay loam, loam, or silt loam
Content of rock fragments—0 to 10 percent
Reaction—strongly acid to slightly acid

2Cg, 3Ab, or 3Btb horizon:
Hue—10YR or 2.5Y
Value—3 to 6
Chroma—1 or 2
Texture—silty clay loam, clay loam, loam, or silt loam
Content of rock fragments—2 to 15 percent
Reaction—moderately acid to neutral

2A—Cisne silt loam, 0 to 2 percent slopes

Setting

Landform: Till plains
Position on the landform: Summits

Map Unit Composition

Cisne and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a thicker surface layer
- Soils that have a light-colored surface layer
- Soils that have a gradual clay increase from the surface layer to the subsoil

Dissimilar soils:
- The somewhat poorly drained Darmstadt soils, which have a high concentration of sodium in the subsoil
- The somewhat poorly drained Bluford and Hoyleton soils in the slightly higher landscape positions or on side slopes of drainageways

Properties and Qualities of the Cisne Soil

Parent material: Loess over loamy pedisediment
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Slow or moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 10.0 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: High
Depth and months of highest apparent seasonal high water table: At the surface, January to May
Ponding duration: Brief, January to May
Flooding: None
Potential for frost action: High

Hazard of corrosion: High for steel and moderate for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w
Prime farmland category: Prime farmland where drained
Hydric soil status: Hydric

Cowden Series

Taxonomic classification: Fine, smectitic, mesic Mollic Albaqualfs

Typical Pedon

Cowden silt loam, 0 to 2 percent slopes, in a nearly level area in a cultivated field, at an elevation of 665 feet above mean sea level; Montgomery County, Illinois; 30 feet north and 1,980 feet west of the southeast corner of sec. 8, T. 9 N., R. 4 W.; USGS Butler, Illinois, topographic quadrangle; lat. 39 degrees 13 minutes 56.1 seconds N. and long. 89 degrees 33 minutes 18.8 seconds W.; UTM Zone 16S 0279444E 4345453N; NAD 27:

Ap—0 to 8 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; weak fine granular structure; friable; common very fine and few fine roots; few fine continuous tubular pores; few fine irregular dark brown (10YR 3/3) masses of iron-manganese accumulation in the matrix; moderately acid; abrupt smooth boundary.

Eg1—8 to 14 inches; dark gray (10YR 4/1) silt loam, gray (10YR 6/1) dry; weak medium platy structure parting to weak fine subangular blocky; friable; few very fine roots; common fine and medium tubular and vesicular pores; many distinct very dark gray (10YR 3/1) organic coatings on faces of peds and filling pores; few fine irregular dark brown (10YR 3/3) masses of iron-manganese accumulation in the matrix; moderately acid; clear smooth boundary.

Eg2—14 to 19 inches; gray (10YR 5/1) silt loam, light gray (10YR 7/1) dry; weak medium platy structure parting to weak fine subangular blocky; friable; few very fine roots; common fine and medium continuous tubular pores; common fine faint grayish brown (10YR 5/2) masses of iron accumulation in the matrix; common fine irregular dark brown (10YR 3/3) masses of iron accumulation in the matrix; strongly acid; abrupt smooth boundary.

Btg1—19 to 26 inches; grayish brown (10YR 5/2) silty clay loam; moderate fine and medium prismatic structure parting to moderate medium angular and subangular blocky; firm; common very fine roots; few fine continuous tubular pores; common distinct light gray (10YR 7/1) (dry) clay depletions on faces of peds in the upper 2 inches; many prominent very dark gray (10YR 3/1) organo-clay films on faces of peds; few fine distinct yellowish brown (10YR 5/4) and prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine and medium irregular black (10YR 2/1) iron-manganese nodules with sharp boundaries throughout; strongly acid; clear smooth boundary.

Btg2—26 to 43 inches; grayish brown (10YR 5/2) silty clay loam; moderate medium prismatic structure parting to moderate medium and coarse angular blocky; firm; few very fine roots; many prominent very dark grayish brown (10YR 3/2) organo-clay films on faces of peds; many medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common fine and medium irregular black (10YR 2/1) and dark reddish brown (5YR 3/4) iron-manganese nodules with sharp boundaries throughout; moderately acid; gradual smooth boundary.

Btg3—43 to 50 inches; light brownish gray (10YR 6/2) silty clay loam; weak coarse angular blocky structure; firm; few very fine roots; few fine vesicular and tubular pores; few prominent black (10YR 2/1) organic coatings lining root channels and pores; common distinct dark grayish brown (10YR 4/2) clay films on vertical faces of peds; common coarse prominent yellowish brown (10YR 5/8) and strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few medium and coarse irregular black (10YR 2/1) iron-manganese nodules with clear boundaries throughout; slightly acid; gradual smooth boundary.

BCtg—50 to 58 inches; gray (10YR 6/1) silt loam; weak medium and coarse angular blocky structure; friable; few very fine roots; few fine vesicular and tubular pores; few prominent very dark gray (10YR 3/1) organic coatings lining root channels and pores; few distinct dark grayish brown (10YR 4/2) clay films on vertical faces of peds; common coarse prominent strong brown (7.5YR 5/8 and 4/6) masses of iron accumulation in the matrix; few fine and medium irregular black (10YR 2/1) iron-manganese nodules with clear boundaries throughout; neutral; clear smooth boundary.

Cg—58 to 69 inches; grayish brown (10YR 5/2) silt loam; massive, friable; few fine and medium vesicular and tubular pores; few prominent very dark gray (10YR 3/1) organic coatings lining root channels and pores; many medium and coarse prominent strong brown (7.5YR 5/6) and yellowish red (5YR 5/6) masses of iron accumulation in the matrix; common fine and medium irregular black (5YR 2.5/1) iron-manganese nodules with diffuse boundaries throughout; about 8 percent sand; neutral; clear smooth boundary.

2Btgb—69 to 80 inches; grayish brown (10YR 5/2) silty clay loam; moderate fine and medium prismatic structure parting to weak medium angular blocky; firm; common medium and coarse vesicular and tubular pores; few prominent very dark gray (10YR 3/1) organic coatings lining root channels and pores; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few medium and coarse irregular black (5YR 2.5/1) and yellowish red (5YR 4/6) iron-manganese nodules with clear boundaries throughout; about 15 percent sand and 2 percent pebbles; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 7 to 10 inches
Thickness of the loess: More than 55 inches
Depth to the base of the argillic horizon: 40 to 65 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

E horizon:
Hue—10YR
Value—4 to 6
Chroma—1 or 2
Texture—silt loam
Content of rock fragments—none
Reaction—very strongly acid to moderately acid

Btg horizon:
Hue—10YR, 2.5Y, or 5Y

Value—4 to 6
Chroma—1 or 2
Texture—silty clay loam, silty clay, or silt loam
Content of rock fragments—none
Reaction—very strongly acid to moderately acid in the upper part and strongly acid to neutral in the lower part

BCtg or Cg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—4 to 6
Chroma—0 to 2
Texture—silt loam or silty clay loam
Content of rock fragments—none
Reaction—moderately acid to slightly alkaline

2Cg, 2Ab, or 2Btg horizon:
Hue—7.5YR, 10YR, 2.5Y, 5Y, or N
Value—3 to 6
Chroma—0 to 2
Texture—silt loam, silty clay loam, loam, or clay loam
Content of rock fragments—0 to 5 percent
Reaction—moderately acid to slightly alkaline

112A—Cowden silt loam, 0 to 2 percent slopes

Setting

Landform: Interfluves on till plains

Map Unit Composition

Cowden and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a thicker dark surface layer
- Soils that have a lighter colored surface layer
- Soils that have more sand in the lower part of the subsoil

Dissimilar soils:
- The somewhat poorly drained Stoy and Hoyleton soils in the slightly higher positions on the landscape

Properties and Qualities of the Cowden Soil

Parent material: Loess over till or loess over silty pedisediment
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 10.9 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.5 to 3.5 percent
Shrink-swell potential: High
Depth and months of highest apparent seasonal high water table: At the surface, January to May
Ponding duration: Brief, January to May
Flooding: None

Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2w
Prime farmland category: Prime farmland where drained
Hydric soil status: Hydric

Darmstadt Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Aquic Natrudalfs

Typical Pedon

Darmstadt silt loam, 0 to 2 percent slopes, on a slope of 1 percent in a cultivated field, at an elevation of 600 feet above mean sea level; Fayette County, Illinois; 140 feet west and 1,600 feet north of the southeast corner of sec. 20, T. 7 N., R. 3 E.; USGS Avena, Illinois, topographic quadrangle; lat. 39 degrees 01 minute 56.1 seconds N. and long. 88 degrees 52 minutes 51.7 seconds W.; UTM Zone 16S 0337187E 4322039N; NAD 83:

Ap1—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate fine granular structure; friable; very few very fine roots; neutral; abrupt smooth boundary.

Ap2—5 to 10 inches; dark grayish brown (10YR 4/2) silt loam; moderate medium platy structure; friable; very few very fine roots; neutral; clear smooth boundary.

E—10 to 16 inches; grayish brown (10YR 5/2) silt loam; moderate medium platy structure; friable; very few very fine roots; common distinct very pale brown (10YR 7/3) silt coatings on faces of peds; light gray (10YR 7/2) silt band between depths of 15 and 16 inches; few fine rounded masses of iron-manganese oxide accumulation throughout; neutral; abrupt smooth boundary.

Bt—16 to 24 inches; pale brown (10YR 6/3) silty clay loam; moderate fine prismatic structure parting to moderate fine and medium subangular blocky; friable; very few very fine roots; common distinct dark gray (10YR 4/1) clay films in root channels; common distinct grayish brown (10YR 5/2) clay films on faces of peds; few fine prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; few fine rounded masses of iron-manganese oxide accumulation throughout; neutral; clear smooth boundary.

Btng1—24 to 30 inches; light brownish gray (10YR 6/2) silty clay loam; moderate fine prismatic structure parting to moderate fine and medium subangular blocky; friable; very few very fine roots; common distinct dark gray (10YR 4/1) clay films in root channels; common distinct grayish brown (10YR 5/2) clay films on faces of peds; many fine prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; few fine rounded masses of iron-manganese oxide accumulation throughout; moderately alkaline; clear smooth boundary.

Btng2—30 to 36 inches; light brownish gray (10YR 6/2) silty clay loam; moderate medium prismatic structure; friable; common distinct grayish brown (10YR 5/2) clay films on faces of peds; many fine prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; few fine rounded masses of iron-manganese oxide accumulation throughout; moderately alkaline; clear smooth boundary.

Btng3—36 to 47 inches; light brownish gray (2.5Y 6/2) silty clay loam; moderate medium prismatic structure; friable; common distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; few fine rounded masses of iron-manganese oxide accumulation throughout; moderately alkaline; clear smooth boundary.

2Cng1—47 to 52 inches; light brownish gray (2.5Y 6/2) clay loam; massive; friable; few fine distinct grayish brown (2.5Y 5/2) clay films along cleavage planes; few fine medium prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; few fine rounded masses of iron and manganese oxide accumulation throughout; moderately alkaline; clear smooth boundary.

2Cng2—52 to 60 inches; gray (5Y 6/1) clay loam; massive; friable; few medium prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; few fine rounded masses of iron and manganese oxide accumulation throughout; moderately alkaline.

Range in Characteristics

Thickness of the loess: More than 45 inches
Carbonates: Commonly in the natric horizon
Depth to the base of the natric horizon: 30 to 60 inches

Ap or A horizon:
Hue—10YR
Value—3 to 5
Chroma—2 or 3
Texture—silt loam
Content of rock fragments—none
Reaction—very strongly acid to neutral

E horizon:
Hue—10YR
Value—5 or 6
Chroma—2
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

Bt and Btng horizons:
Hue—10YR or 2.5Y
Value—4 to 7
Chroma—2 to 6
Texture—silty clay loam
Content of rock fragments—none
Reaction—very strongly acid to slightly alkaline in the upper part and neutral to strongly alkaline in the lower part
Exchangeable sodium percentage—less than 15 percent throughout the upper 6 inches of the natric horizon or in all horizons within 16 inches of the soil surface, whichever is deeper

BCng, Cng, or 2Cng horizon:
Hue—10YR, 2.5Y, or 5Y
Value—5 to 7
Chroma—1 or 2
Texture—silt loam, loam, clay loam, or silty clay loam

Content of rock fragments—0 to 5 percent
Reaction—slightly alkaline to strongly alkaline

912A—Hoyleton-Darmstadt silt loams, 0 to 2 percent slopes

Setting

Landform: Till plains
Position on the landform: Summits

Map Unit Composition

Hoyleton and similar soils: 55 percent
Darmstadt and similar soils: 35 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have less clay in the subsoil
- Bluford soils in landscape positions similar to those of the Hoyleton and Darmstadt soils

Dissimilar soils:
- The poorly drained Cisne, Cowden, and Newberry soils in swales

Properties and Qualities of the Hoyleton Soil

Parent material: Loess over loamy pedisediment
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.6 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.5 to 3.5 percent
Shrink-swell potential: High
Depth and months of highest apparent seasonal high water table: 1 foot, January to May
Ponding: None
Flooding: None
Potential for frost action: Moderate
Hazard of corrosion: High for steel and moderate for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Properties and Qualities of the Darmstadt Soil

Parent material: Loess over loamy pedisediment
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Slow
Depth to restrictive feature: 16 to 25 inches to natric horizon; high sodium content within a depth of 30 inches
Available water capacity: About 8.3 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate

Depth and months of highest apparent seasonal high water table: 1 foot, January to May
Ponding: None
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and low for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: Hoyleton—2w; Darmstadt—3s
Prime farmland category: Not prime farmland
Hydric soil status: Hoyleton—not hydric; Darmstadt—not hydric

Darwin Series

Taxonomic classification: Fine, smectitic, mesic Fluvaquentic Vertic Endoaquolls

Typical Pedon

Darwin silty clay, 0 to 2 percent slopes, frequently flooded, in a cultivated field, at an elevation of 433 feet above mean sea level; Lawrence County, Illinois; 838 feet south and 1,280 feet west of the northeast corner of sec. 6, T. 4 N., R. 10 W.; USGS Russellville, Illinois, topographic quadrangle; lat. 38 degrees 49 minutes 14.4 seconds N. and long. 87 degrees 34 minutes 00.8 second W.; UTM Zone 16S 0450789E 4297030N; NAD 83:

Ap—0 to 7 inches; very dark gray (10YR 3/1) silty clay, dark gray (10YR 4/1) dry; weak very fine granular structure in the upper part and moderate fine and medium angular blocky structure in the lower part; very firm; slightly acid; abrupt smooth boundary.

A—7 to 14 inches; very dark gray (N 3/) silty clay, dark gray (10YR 4/1) dry; weak medium prismatic structure parting to moderate medium angular blocky; firm; few fine distinct dark yellowish brown (10YR 3/4) masses of iron and manganese accumulation in the matrix; neutral; gradual smooth boundary.

Bg1—14 to 24 inches; dark gray (5Y 4/1) silty clay; weak medium prismatic structure parting to moderate medium and coarse angular blocky; firm; common fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; neutral; gradual smooth boundary.

Bg2—24 to 33 inches; dark gray (5Y 4/1) silty clay; weak coarse prismatic structure parting to moderate medium angular blocky; firm; common fine and medium prominent yellowish brown (10YR 5/4 and 5/6) masses of iron accumulation in the matrix; few fine dark iron-manganese concretions throughout; neutral; gradual smooth boundary.

Bg3—33 to 46 inches; gray (5Y 5/1) silty clay; weak coarse prismatic structure parting to weak medium angular blocky; firm; few medium carbonate concretions increasing in number in the lower part of the horizon; common fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few dark iron-manganese concretions throughout; slightly alkaline; abrupt wavy boundary.

BCg—46 to 56 inches; gray (5Y 5/1) silty clay loam; weak medium and coarse angular blocky structure; very firm; many fine prominent brown (7.5YR 4/4) and strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; slightly alkaline; gradual smooth boundary.

Cg—56 to 68 inches; gray (5Y 5/1) silty clay loam; massive; firm; many fine and medium prominent yellowish brown (10YR 5/6 and 5/8) masses of iron accumulation in the matrix; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 24 inches
Depth to the base of the cambic horizon: 40 to 60 inches

Ap or A horizon:
Hue—10YR, 2.5Y, or N
Value—2 or 3
Chroma—0 to 2
Texture—silty clay
Content of rock fragments—none
Reaction—slightly acid or neutral

Bg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—3 to 6
Chroma—0 to 2
Texture—silty clay or clay
Content of rock fragments—none
Reaction—slightly acid to slightly alkaline

BCg or Cg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—4 to 6
Chroma—0 to 2
Texture—silty clay loam, silty clay, or clay
Content of rock fragments—none
Reaction—neutral to moderately alkaline
Carbonates—present in some pedons

3071A—Darwin silty clay, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Depressions on flood plains

Map Unit Composition

Darwin and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have more gravel in the subsoil
- Soils that have less clay in the subsoil
- Soils that are subject to less than frequent flooding
- Soils that have bedrock at a depth of 60 to 80 inches

Dissimilar soils:
- Soils that have bedrock at a depth of less than 60 inches

Properties and Qualities of the Darwin Soil

Parent material: Clayey alluvium
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Very slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 7.9 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.5 to 5.0 percent
Shrink-swell potential: High
Depth and months of highest apparent seasonal high water table: At the surface, January to May
Frequency and duration of ponding: Frequent, brief (January, February, March, April, May)
Frequency and most likely period of flooding: Frequent, November to June
Potential for frost action: High
Hazard of corrosion: High for steel and low for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Moderate

Interpretive Groups

Land capability classification: 3w
Prime farmland category: Prime farmland where drained and either protected from flooding or not frequently flooded during the growing season
Hydric soil status: Hydric

Elco Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Oxyaquic Hapludalfs

Typical Pedon

Elco silt loam, 10 to 18 percent slopes, on a slope of 11 percent in a pasture, at an elevation of about 575 feet above mean sea level; Crawford County, Illinois; about 1,700 feet south and 2,200 feet west of the northeast corner of sec. 2, T. 8 N., R. 12 W.; USGS West Union, Illinois, topographic quadrangle; lat. 39 degrees 10 minutes 03.2 seconds N. and long. 87 degrees 42 minutes 38.0 seconds W.; UTM Zone 16S 0438615E 4335402N; NAD 27:

A—0 to 3 inches; dark brown (10YR 3/3) silt loam; weak fine granular structure; very friable; few fine and many very fine roots; neutral; abrupt smooth boundary.
E—3 to 9 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium granular structure; very friable; common very fine roots; very few distinct light gray (10YR 7/2) silt coatings on faces of peds; slightly acid; clear smooth boundary.
Bt1—9 to 26 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine subangular blocky structure; firm; few very fine roots; common faint dark yellowish brown (10YR 4/6) clay films on faces of peds; common distinct light gray (10YR 7/2) silt coatings on faces of peds; few fine and medium irregular masses of iron-manganese accumulation; moderately acid; gradual smooth boundary.
Bt2—26 to 37 inches; yellowish brown (10YR 5/6) silty clay loam; weak coarse prismatic structure; firm; few very fine roots; few distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; few fine irregular masses of iron-manganese accumulation; few fine prominent grayish brown (10YR 5/2) iron depletions in the matrix; strongly acid; gradual smooth boundary.

2Bt3—37 to 50 inches; yellowish brown (10YR 5/4) silty clay loam; weak coarse prismatic structure; firm; few faint dark yellowish brown (10YR 4/4) clay films on faces of peds; few fine irregular masses of iron-manganese accumulation; few fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; moderately acid; diffuse smooth boundary.

2C—50 to 69 inches; yellowish brown (10YR 5/4) loam; massive; firm; few fine and medium irregular masses of iron and manganese accumulation; few fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; about 1 percent pebbles; moderately acid.

Range in Characteristics

Thickness of the loess: 20 to 40 inches
Depth to carbonates: More than 60 inches
Depth to the base of the argillic horizon: More than 48 inches

A or Ap horizon:
Hue—10YR
Value—3 to 5
Chroma—1 to 4
Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

E horizon:
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

BE horizon (if it occurs):
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Texture—silt loam or silty clay loam
Content of rock fragments—none
Reaction—strongly acid to neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5
Chroma—2 to 6
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—strongly acid to slightly acid

2Bt or 2C horizon:
Hue—7.5YR, 10YR, 2.5Y, or 5Y
Value—3 to 6
Chroma—1 to 6
Texture—clay, silty clay, silty clay loam, clay loam, or loam
Content of rock fragments—0 to 5 percent
Reaction—strongly acid to slightly alkaline

119C2—Elco silt loam, 5 to 10 percent slopes, eroded

Setting

Landform: Till plains
Position on the landform: Shoulders and backslopes

Map Unit Composition

Elco and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Severely eroded soils that have a surface layer of silty clay loam
- Hickory soils in landscape positions similar to those of the Elco soil
- Soils that are grayer in the upper part of the subsoil

Dissimilar soils:
- The somewhat poorly drained Wakeland and Shoals soils on narrow flood plains in positions below those of the Elco soil

Properties and Qualities of the Elco Soil

Parent material: Loess over a paleosol that formed in till
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 8.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Depth and months of highest perched seasonal high water table: 1.5 feet, February to May
Ponding: None
Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

119D—Elco silt loam, 10 to 18 percent slopes

Setting

Landform: Till plains
Position on the landform: Backslopes

Map Unit Composition

Elco and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Eroded soils that have a surface layer of silty clay loam
- Hickory soils that have less than 20 inches of loess over loam till
- Soils that do not have a strongly developed paleosol within a depth of 60 inches

Dissimilar soils:
- The somewhat poorly drained Atlas soils in hillslope positions below those of the Elco soil
- The somewhat poorly drained Wakeland and Shoals soils on narrow flood plains in positions below those of the Elco soil

Properties and Qualities of the Elco Soil

Parent material: Loess over a paleosol that formed in till
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 8.5 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Depth and months of highest perched seasonal high water table: 1.5 feet, February to May
Ponding: None
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

Fishhook Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Aquic Hapludalfs

Typical Pedon

Fishhook silt loam, 2 to 5 percent slopes, eroded, on a west-southwest-facing slope of 3 percent, at an elevation of about 518 feet above mean sea level; Crawford County, Illinois; about 700 feet north and 1,450 feet west of the southeast corner of sec. 19, T. 6 N., R. 11 W.; USGS Flat Rock, Illinois, topographic quadrangle; lat. 38 degrees 56 minutes 35.3 seconds N. and long. 87 degrees 40 minutes 31.3 seconds W.; UTM Zone 16S 0441471E 4310478E; NAD 27:

Ap—0 to 5 inches; yellowish brown (10YR 5/4) silt loam, very pale brown (10YR 7/4) dry; moderate very fine subangular blocky structure; friable; many very fine and fine roots; few fine rounded masses of iron-manganese accumulation throughout; neutral; abrupt smooth boundary.

Bt1—5 to 12 inches; yellowish brown (10YR 5/4) silty clay loam; strong fine and medium angular blocky structure; firm; many very fine and few fine roots; many prominent dark grayish brown (10YR 4/2) clay films on faces of peds; common medium prominent grayish brown (10YR 5/2) iron depletions and common fine faint strong brown (7.5YR 5/6) iron accumulations in the matrix; few fine rounded masses of iron-manganese accumulation throughout; moderately acid; clear smooth boundary.

Bt2—12 to 22 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine prismatic structure; firm; common very fine and few fine roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions and many medium distinct strong brown (7.5YR 5/6) iron accumulations in the matrix; common medium irregular masses of iron-manganese accumulation throughout; moderately acid; clear smooth boundary.

Btg1—22 to 31 inches; light brownish gray (10YR 6/2) silty clay loam; weak fine prismatic structure parting to weak fine subangular blocky; firm; common very fine roots; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; many medium prominent strong brown (7.5YR 5/6) iron accumulations in the matrix; few fine rounded masses of iron-manganese accumulation throughout; moderately acid; abrupt smooth boundary.

2Btg2—31 to 47 inches; dark gray (10YR 4/1) silty clay loam; moderate fine prismatic structure; firm; many faint dark gray (10YR 4/1) clay films on faces of peds; common medium prominent olive brown (2.5Y 4/4) iron and manganese accumulations in the matrix; common fine rounded masses of iron-manganese accumulation throughout; about 1 percent pebbles; neutral; clear smooth boundary.

2BCtg—47 to 58 inches; gray (10YR 5/1) clay loam; weak fine prismatic structure; firm; common faint gray (10YR 5/1) clay films on faces of peds; common medium prominent olive brown (2.5Y 4/4) iron and manganese accumulations in the matrix; few fine rounded masses of iron-manganese accumulation throughout; about 1 percent pebbles; neutral; clear smooth boundary.

2Cg—58 to 60 inches; gray (10YR 5/1) clay loam; massive; firm; many coarse prominent yellowish brown (10YR 5/8) and common fine prominent olive brown (2.5Y 4/4) iron accumulations in the matrix; few fine rounded masses of iron-manganese accumulation throughout; about 3 percent pebbles; neutral.

Range in Characteristics

Thickness of the loess: 20 to 40 inches
Depth to the base of the argillic horizon: More than 50 inches
Content of clay in the particle-size control section: Averages 27 to 35 percent

Ap or A horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 4
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

E, EB, or BE horizon (if it occurs):
Hue—10YR
Value—4 to 6
Chroma—2 to 4
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

Bt and Btg horizons:
Hue—10YR or 2.5Y

Value—4 to 6
Chroma—2 to 4
Texture—silty clay loam
Content of rock fragments—none
Reaction—very strongly acid to neutral

2Btg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—2 to 7
Chroma—1 to 4; as high as 6 for redoximorphic features
Texture—clay loam, silty clay loam, clay, or silty clay
Content of rock fragments—0 to 15 percent
Reaction—very strongly acid to neutral

2BCg and/or 2Cg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—clay loam or loam
Content of rock fragments—0 to 15 percent
Reaction—slightly acid to slightly alkaline

6B2—Fishhook silt loam, 2 to 5 percent slopes, eroded

Setting

Landform: Till plains
Position on the landform: Backslopes and shoulders

Map Unit Composition

Fishhook and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that do not have a clayey paleosol within a depth of 80 inches
- Soils that have a surface layer of silty clay loam
- Soils that have more clay in the subsoil

Dissimilar soils:
- The well drained Hosmer soils in narrow interfluves in the higher positions
- Darmstadt soils, which have a high concentration of sodium in the subsoil; in landscape positions similar to those of the Fishhook soil

Properties and Qualities of the Fishhook Soil

Parent material: Loess over till
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 8.5 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Depth and months of highest perched seasonal high water table: 1 foot, January to May

Ponding: None
Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

Haymond Series

Taxonomic classification: Coarse-silty, mixed, superactive, mesic Dystric Fluventic Eutrudepts

Typical Pedon

Haymond silt loam, 0 to 2 percent slopes, frequently flooded, in a cultivated field, at an elevation of 458 feet above mean sea level; Jasper County, Illinois; 2,165 feet north and 1,890 feet east of the southwest corner of sec. 30, T. 6 N., R. 14 W.; USGS Sainte Marie, Illinois, topographic quadrangle; lat. 38 degrees 55 minutes 44.2 seconds N. and long. 88 degrees 00 minutes 58.1 seconds W.; UTM Zone 16S 0411922E 4309384N; NAD 83:

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate fine granular structure; friable; common very fine and fine roots; common faint dark brown (10YR 3/3) organic stains on faces of peds; moderately acid; abrupt smooth boundary.

Bw1—9 to 13 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine subangular blocky structure; friable; few very fine and fine roots; common distinct dark brown (10YR 3/3) organic stains on faces of peds; slightly acid; clear smooth boundary.

Bw2—13 to 32 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine and medium subangular blocky structure; friable; few very fine and fine roots; few fine brown (10YR 4/3) organic stains on faces of peds; slightly acid; gradual smooth boundary.

Bw3—32 to 44 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; friable; few fine roots; few fine dark brown (10YR 3/3) organic stains on faces of peds; few fine prominent strong brown (7.5YR 5/8) masses of iron accumulation and common fine faint brown (10YR 5/3) iron depletions in the matrix; neutral; gradual smooth boundary.

C—44 to 65 inches; yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) very fine sandy loam; massive; friable; few very fine roots; common fine distinct dark yellowish brown (10YR 4/6) masses of iron and manganese accumulation and few medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; neutral.

Range in Characteristics

Depth to the base of the cambic horizon: 30 to 60 inches

Ap or A horizon:
Hue—10YR
Value—4 or 5
Chroma—2 to 4

Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

Bw horizon:
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

C horizon:
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—silt loam, sandy loam, fine sandy loam, very fine sandy loam, or loam or stratified with these textures
Content of rock fragments—0 to 5 percent
Reaction—slightly acid to slightly alkaline

3331A—Haymond silt loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Flood-plain steps

Map Unit Composition

Haymond and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have more sand in the subsoil
- Soils that are subject to less than frequent flooding
- Soils that have bedrock at a depth of 60 to 80 inches

Dissimilar soils:
- Soils that have bedrock at a depth of less than 60 inches
- The somewhat poorly drained Wakeland soils on toeslopes
- The poorly drained Birds and Petrolia soils in swales on flood plains

Properties and Qualities of the Haymond Soil

Parent material: Silty alluvium
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 13.1 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 3.0 percent
Shrink-swell potential: Low
Depth and months of highest apparent seasonal high water table: 3.5 feet, February to April

Ponding: None
Frequency and most likely period of flooding: Frequent, November to June
Potential for frost action: High
Hazard of corrosion: Low for steel and moderate for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w
Prime farmland category: Prime farmland where protected from flooding or not frequently flooded during the growing season
Hydric soil status: Not hydric

Hickory Series

Taxonomic classification: Fine-loamy, mixed, active, mesic Typic Hapludalfs

Typical Pedon

Hickory silt loam, 18 to 35 percent slopes, on a slope of 30 percent in a wooded area, at an elevation of 590 feet above mean sea level; Bond County, Illinois; 38 feet north and 792 feet west of the southeast corner of sec. 28, T. 7 N., R. 3 W.; USGS Coffeen, Illinois, topographic quadrangle; lat. 39 degrees 00 minutes 48.3 seconds N. and long. 89 degrees 25 minutes 13.1 seconds W.; UTM Zone 16S 0290448E 4321051N; NAD 83:

A—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable; many very fine and few fine and medium roots; few fine and medium continuous tubular pores; about 20 percent sand; very strongly acid; clear smooth boundary.

E—4 to 12 inches; light yellowish brown (10YR 6/4) silt loam, very pale brown (10YR 7/4) dry; weak very thick platy structure parting to weak fine granular; friable; few very fine to medium roots; few fine and medium continuous tubular pores; pockets of dark grayish brown (10YR 4/2) surface soil filling large root channels; 20 percent sand and 1 percent pebbles; strongly acid; clear smooth boundary.

Bt1—12 to 17 inches; yellowish brown (10YR 5/6) clay loam; moderate fine subangular blocky structure; firm; common very fine and few fine and medium roots; common distinct brown (10YR 4/3) clay films on faces of peds; 1 percent pebbles; very strongly acid; clear smooth boundary.

Bt2—17 to 26 inches; dark yellowish brown (10YR 4/6) clay loam; moderate medium subangular blocky structure; firm; few very fine and medium roots; common distinct brown (10YR 5/3) clay films on faces of peds; 2 percent fine and medium pebbles; very strongly acid; gradual smooth boundary.

Bt3—26 to 35 inches; yellowish brown (10YR 5/4) clay loam; moderate coarse and medium angular blocky structure; firm; few very fine and medium roots; many distinct dark yellowish brown (10YR 4/4) clay films on faces of peds and few prominent brown (7.5YR 4/4) clay films coating medium pebbles; many medium and coarse prominent brownish yellow (10YR 6/8) and strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; few fine rounded black (10YR 2/1) iron-manganese nodules with sharp boundaries; about 3 percent fine and medium pebbles; very strongly acid; gradual smooth boundary.

Bt4—35 to 46 inches; yellowish brown (10YR 5/4) clay loam; weak medium and coarse prismatic structure parting to weak coarse angular blocky; firm; few very fine and medium roots; common distinct dark yellowish brown (10YR 4/4) clay films on vertical faces of peds and few prominent brown (7.5YR 4/4) clay films coating medium and coarse pebbles; many coarse distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few fine rounded black (10YR 2/1) iron-manganese nodules with sharp boundaries; 4 percent fine to coarse pebbles; strongly acid; diffuse smooth boundary.

BCt—46 to 58 inches; light yellowish brown (10YR 6/4) loam; weak medium and coarse subangular blocky structure; friable; few very fine and fine roots; few distinct dark yellowish brown (10YR 4/4) clay films on vertical faces of peds and few prominent brown (7.5YR 4/4) clay films coating medium pebbles; common medium distinct dark yellowish brown (10YR 4/6) masses of iron and manganese accumulation and few fine distinct strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few fine rounded black (10YR 2/1) iron-manganese nodules with sharp boundaries; 5 percent fine and medium pebbles; strongly acid; gradual smooth boundary.

CBt—58 to 65 inches; yellowish brown (10YR 5/6) loam; massive; friable; few very fine and fine roots; few distinct brown (10YR 4/3) clay films lining root channels and coating medium pebbles; few fine distinct brown (10YR 5/3) iron depletions in the matrix; 5 percent fine and medium gravel; moderately acid; clear smooth boundary.

C—65 to 80 inches; yellowish brown (10YR 5/4), strong brown (7.5YR 5/6), and light gray (10YR 7/1) loam; massive; friable; few very fine roots; 3 percent fine and medium gravel; slightly acid.

Range in Characteristics

Thickness of the loess: Less than 20 inches
Depth to carbonates: More than 40 inches
Depth to the base of the argillic horizon: More than 40 inches
Content of clay in the particle-size control section: Averages 24 to 35 percent
Content of rock fragments in the particle-size control section: Averages less than 20 percent

A horizon:
Hue—10YR or 7.5YR
Value—2 to 5
Chroma—2 to 4
Texture—silt loam
Content of rock fragments—0 to 5 percent
Reaction—very strongly acid to moderately acid, except in areas that have been limed

E horizon:
Hue—10YR
Value—4 to 6
Chroma—2 to 4
Texture—silt loam or loam
Content of rock fragments—0 to 5 percent
Reaction—very strongly acid to moderately acid, except in areas that have been limed

Bt horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—3 to 6
Texture—clay loam, loam, gravelly clay loam, or silty clay loam
Content of rock fragments—0 to 20 percent
Reaction—very strongly acid to moderately acid; ranges to neutral in the lower part

BC horizon (if it occurs):
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—3 to 6
Texture—clay loam, loam, gravelly clay loam, or sandy loam
Content of rock fragments—0 to 20 percent
Reaction—strongly acid to moderately acid; ranges to neutral in the lower part

C horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—5 to 7
Chroma—1 to 8
Texture—loam, clay loam, or sandy loam or the gravelly analogs of these textures
Content of rock fragments—2 to 20 percent
Reaction—moderately acid to moderately alkaline
Content of carbonates—0 to 25 percent

8F—Hickory silt loam, 18 to 35 percent slopes

Setting

Landform: Till plains
Position on the landform: Backslopes

Map Unit Composition

Hickory and similar soils: 91 percent
Dissimilar soils: 9 percent

Soils of Minor Extent

Similar soils:
- Soils that have slopes of more than 35 percent
- Soils that have carbonates at a shallower depth
- Soils that have a fragipan at a moderate depth

Dissimilar soils:
- Wakeland and Shoals soils on narrow flood plains in positions below those of the Hickory soil
- The somewhat poorly drained Atlas and Fishhook soils in positions above those of the Hickory soil

Properties and Qualities of the Hickory Soil

Parent material: Till
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 10.3 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 3.0 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and high for concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 6e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

908D2—Hickory-Kell complex, 10 to 18 percent slopes, eroded

Setting

Landform: Till plains
Position on the landform: Backslopes

Map Unit Composition

Hickory and similar soils: 60 percent
Kell and similar soils: 30 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have slopes of more than 18 percent
- Soils that have carbonates at a depth of less than 40 inches
- Soils that have a fragipan at a moderate depth; on summits in positions above those of the Hickory and Kell soils
- Soils that have a clayey subsoil

Dissimilar soils:
- Wakeland and Shoals soils on flood plains in positions below those of the Hickory and Kell soils
- The somewhat poorly drained Atlas and Fishhook soils and the moderately well drained Elco soils in positions above those of the Hickory and Kell soils

Properties and Qualities of the Hickory Soil

Parent material: Till
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 7.9 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Properties and Qualities of the Kell Soil

Parent material: Loamy diamicton over material weathered from sandstone, siltstone, or shale
Drainage class: Well drained

Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Very slow to moderately slow
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Available water capacity: About 5.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and high for concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: Hickory—3e; Kell—4e
Prime farmland category: Not prime farmland
Hydric soil status: Hickory—not hydric; Kell—not hydric

908F—Hickory-Kell complex, 18 to 35 percent slopes

Setting

Landform: Till plains
Position on the landform: Backslopes

Map Unit Composition

Hickory and similar soils: 55 percent
Kell and similar soils: 35 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have slopes of more than 35 percent and have escarpments
- Soils that have a fragipan at a moderate depth; on summits in positions above those of the Hickory and Kell soils
- Soils that have a clayey subsoil
- Soils that have carbonates at a depth of less than 40 inches

Dissimilar soils:
- Wakeland and Shoals soils on flood plains in positions below those of the Hickory and Kell soils

Properties and Qualities of the Hickory Soil

Parent material: Till
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 7.9 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 3.0 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None
Potential for frost action: Moderate

Hazard of corrosion: Moderate for steel and high for concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Properties and Qualities of the Kell Soil

Parent material: Diamicton over material weathered from sandstone and shale
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Very slow to moderately slow
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Available water capacity: About 4.6 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and high for concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: Hickory—6e; Kell—6e
Prime farmland category: Not prime farmland
Hydric soil status: Hickory—not hydric; Kell—not hydric

946D2—Hickory-Atlas complex, 10 to 18 percent slopes, eroded

Setting

Landform: Till plains
Position on the landform: Backslopes

Map Unit Composition

Hickory and similar soils: 45 percent
Atlas and similar soils: 40 percent
Dissimilar soils: 15 percent

Soils of Minor Extent

Similar soils:
- Bluford and Fishhook soils on gently sloping side slopes
- Severely eroded soils that have a surface layer of silty clay loam

Dissimilar soils:
- The somewhat poorly drained Wakeland and Shoals soils on narrow flood plains in positions below those of the Hickory and Atlas soils

Properties and Qualities of the Hickory Soil

Parent material: Loamy till
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 7.9 inches to a depth of 60 inches

Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Properties and Qualities of the Atlas Soil

Parent material: Accretion gley and/or loamy till
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Slow or moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 8.4 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Depth and months of highest apparent seasonal high water table: 1 foot, January to May
Ponding: None
Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: Moderate
Hazard of corrosion: High for steel and concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: Hickory—3e; Atlas—4e
Prime farmland category: Not prime farmland
Hydric soil status: Hickory—not hydric; Atlas—not hydric

Hosmer Series

Taxonomic classification: Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs

Typical Pedon

Hosmer silt loam, 2 to 5 percent slopes, on a slope of 4 percent in a cultivated field, at an elevation of 510 feet above mean sea level; Crawford County, Illinois; 2,250 feet south and 1,350 feet east of the northwest corner of sec. 9, T. 5 N., R. 11 W.; USGS Heathsville, Illinois, topographic quadrangle; lat. 38 degrees 53 minutes 25.4 seconds N. and long. 87 degrees 38 minutes 46.9 seconds W.; UTM Zone 16S 0443942E 4304604N; NAD 27:

Ap—0 to 8 inches; brown (10YR 4/3) silt loam, light yellowish brown (10YR 6/4) dry; moderate fine and medium granular structure parting to moderate very fine granular; friable; many very fine roots; neutral; clear smooth boundary.
E—8 to 10 inches; brown (10YR 5/3) silt loam; moderate thin and medium platy structure; friable; many very fine and few fine roots; moderately acid; clear smooth boundary.
BE—10 to 15 inches; yellowish brown (10YR 5/6) silt loam; moderate medium platy structure parting to weak fine subangular blocky; firm; common very fine and few

fine roots; few fine faint brownish yellow (10YR 6/6) masses of iron accumulation and common fine and medium distinct dark yellowish brown (10YR 4/4) masses of iron and manganese accumulation in the matrix; moderately acid; clear smooth boundary.

Bt—15 to 24 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; few very fine and fine roots; common faint yellowish brown (10YR 5/4) clay films and common prominent white (10YR 8/1) silt coatings on faces of peds; common fine distinct brownish yellow (10YR 6/8) masses of iron accumulation in the matrix; moderately acid; clear smooth boundary.

Btx1—24 to 32 inches; yellowish brown (10YR 5/6 and 5/4) silty clay loam; moderate very coarse prismatic structure; firm; common very fine and few fine roots; many prominent white (10YR 8/1) silt coatings, few distinct brown (10YR 5/3) clay films, and few prominent black (N 2.5/) manganese coatings on faces of peds; 75 percent brittle; common fine distinct brownish yellow (10YR 6/8) and few fine prominent yellowish red (5YR 5/8) masses of iron accumulation in the matrix; moderately acid; clear smooth boundary.

Btx2—32 to 53 inches; yellowish brown (10YR 5/6) silty clay loam; moderate very coarse prismatic structure; firm; few distinct pale brown (10YR 6/3) clay films and many prominent white (10YR 8/1) silt coatings on faces of peds; few distinct grayish brown (10YR 5/2) clay films in root channels; 65 percent brittle; common fine and medium distinct yellowish brown (10YR 5/8) masses of iron accumulation and few fine and medium distinct light yellowish brown (10YR 6/4) iron depletions in the matrix; strongly acid; abrupt smooth boundary.

C—53 to 60 inches; yellowish brown (10YR 5/6) silt loam; massive; firm; few fine roots; common prominent white (10YR 8/1) silt coatings in pores; common fine and medium prominent yellowish red (5YR 5/8) masses of iron accumulation in the matrix; moderately acid.

Range in Characteristics

Thickness of the loess: More than 60 inches
Depth to the fragipan: 20 to 36 inches
Depth to the base of the argillic horizon: More than 50 inches
Content of clay in the particle-size control section: Averages 16 to 33 percent
Content of sand in the particle-size control section: Averages 2 to 15 percent

Ap horizon:
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

E or BE horizon (if it occurs):
Hue—10YR
Value—4 or 5
Chroma—2 to 6
Texture—silt loam or silty clay loam
Content of rock fragments—none
Reaction—very strongly acid to moderately acid

Bt, Btx, or 2Btx horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 8
Texture—silt loam or silty clay loam

Content of rock fragments—none
Reaction—very strongly acid to moderately acid

BC, C, 2BC, or 2C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—3 to 8
Texture—silt loam or silty clay loam
Content of rock fragments—none
Reaction—very strongly acid to moderately acid

214B—Hosmer silt loam, 2 to 5 percent slopes

Setting

Landform: Loess hills and uplands
Position on the landform: Summits and shoulders

Map Unit Composition

Hosmer and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have more sand in the subsoil and underlying material
- Soils that have a thinner surface layer as a result of erosion

Dissimilar soils:
- The somewhat poorly drained Stoy soils in the less sloping areas on broad interfluves
- The somewhat poorly drained Atlas soils at the head of drainageways

Properties and Qualities of the Hosmer Soil

Parent material: Loess
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: 20 to 36 inches to a fragipan
Available water capacity: About 11.0 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Depth and months of highest perched seasonal high water table: 1.5 feet, February to April
Ponding: None
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and concrete
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

214C2—Hosmer silt loam, 5 to 10 percent slopes, eroded

Setting

Landform: Uplands and loess hills
Position on the landform: Backslopes and shoulders

Map Unit Composition

Hosmer and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have more sand in the lower part of the subsoil
- Soils that have a thicker surface layer
- Soils that do not have fragic characteristics in the subsoil

Dissimilar soils:
- The somewhat poorly drained Stoy soils in the less sloping areas on broad interfluves
- The somewhat poorly drained Atlas soils at the upper end of incised drainageways

Properties and Qualities of the Hosmer Soil

Parent material: Loess
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: 20 to 36 inches to a fragipan
Available water capacity: About 10.8 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Depth and months of highest perched seasonal high water table: 1.5 feet, February to April
Ponding: None
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

Hoyleton Series

Taxonomic classification: Fine, smectitic, mesic Aquollic Hapludalfs

Typical Pedon

Hoyleton silt loam, 0 to 2 percent slopes, on a slope of 2 percent in a cultivated field, at an elevation of 655 feet above mean sea level; Shelby County, Illinois; 295 feet south and 2,160 feet east of the northwest corner of sec. 15, T. 9 N., R. 5 E.; USGS Shumway, Illinois, topographic quadrangle; lat. 39 degrees 13 minutes 46.1 seconds N.

and long. 88 degrees 37 minutes 48.4 seconds W.; UTM Zone 16S 0359299E 4343508N; NAD 83:

Ap—0 to 8 inches; dark brown (10YR 3/3) and very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; many very fine roots; few fine rounded iron-manganese concretions throughout; moderately acid; abrupt smooth boundary.

E—8 to 11 inches; brown (10YR 5/3) silt loam; weak thin platy structure; friable; common very fine and few fine roots; common faint dark grayish brown (10YR 4/2) organic stains lining root channels and pores; few fine rounded iron-manganese concretions and stains throughout; strongly acid; clear smooth boundary.

BEt—11 to 14 inches; brown (10YR 5/3) silty clay loam; weak fine subangular blocky structure; friable; few very fine roots; few faint grayish brown (10YR 5/2) clay films and few distinct very pale brown (10YR 7/3) silt coatings on faces of peds; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine rounded iron-manganese concretions throughout; strongly acid; clear smooth boundary.

Bt1—14 to 20 inches; brown (10YR 5/3) silty clay loam; strong fine subangular blocky structure; firm; few very fine roots; many distinct grayish brown (10YR 5/2) clay films and many prominent very pale brown (10YR 8/2) silt coatings on faces of peds; common medium prominent yellowish red (5YR 5/6 and 5/8) masses of iron accumulation in the matrix; common fine rounded iron-manganese concretions throughout; strongly acid; clear smooth boundary.

Bt2—20 to 33 inches; brown (10YR 5/3) silty clay; moderate medium subangular blocky structure; firm; few fine and very fine roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few distinct dark gray (10YR 4/1) clay films lining root channels and pores; common fine prominent yellowish red (5YR 5/8) masses of iron accumulation and common medium faint light brownish gray (2.5Y 6/2) iron depletions in the matrix; common fine rounded iron-manganese concretions throughout; strongly acid; gradual smooth boundary.

2Bt3—33 to 39 inches; pale brown (10YR 6/3) silty clay loam; weak coarse subangular blocky structure; firm; few fine and very fine roots; few faint grayish brown (10YR 5/2) clay films on faces of peds; few faint very dark grayish brown (10YR 3/2) organo-clay films lining root channels and pores; many medium prominent yellowish brown (10YR 5/8) masses of iron accumulation and common medium faint light brownish gray (2.5Y 6/2) iron depletions in the matrix; common fine rounded iron-manganese concretions throughout; about 10 percent fine sand; strongly acid; gradual smooth boundary.

2BCt—39 to 54 inches; pale brown (10YR 6/3) silt loam; weak very coarse subangular blocky structure; friable; few very fine roots; few faint dark gray (10YR 4/1) clay films lining root channels and pores; few fine prominent yellowish brown (10YR 5/8) masses of iron accumulation and few fine faint yellowish brown (10YR 5/4) masses of iron and manganese accumulation in the matrix; common medium faint grayish brown (2.5Y 5/2) iron depletions in the matrix; common fine rounded iron-manganese concretions throughout; about 15 percent fine sand; slightly acid; gradual smooth boundary.

2Cg—54 to 80 inches; brown (7.5YR 5/2) silt loam; massive; friable; many medium prominent strong brown (7.5YR 4/6) and many medium distinct brown (7.5YR 4/4) masses of iron and manganese accumulation in the matrix; few fine rounded iron-manganese concretions throughout; about 25 percent fine sand; slightly acid.

Range in Characteristics

Thickness of the loess: 30 to 55 inches
Depth to carbonates: More than 60 inches
Depth to the base of the argillic horizon: More than 36 inches

Content of clay in the particle-size control section: Averages 35 to 45 percent
Content of sand in the particle-size control section: Averages less than 7 percent fine sand or coarser

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—silt loam
Content of rock fragments—none
Reaction—very strongly acid to moderately acid, except in areas that have been limed

E, EB, or BE horizon (if it occurs):
Hue—10YR
Value—4 to 6
Chroma—3 or 4
Texture—silt loam
Content of rock fragments—none
Reaction—very strongly acid to moderately acid, except in areas that have been limed

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—2 to 4
Texture—silty clay loam or silty clay
Content of rock fragments—none
Reaction—very strongly acid or strongly acid

2BC horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—1 to 4
Texture—silt loam, loam, silty clay loam, or clay loam
Content of rock fragments—0 to 5 percent
Reaction—strongly acid to slightly acid

2C horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—5 or 6
Chroma—1 to 4
Texture—silty clay loam, clay loam, or silt loam
Content of rock fragments—0 to 5 percent by volume
Reaction—moderately acid to neutral

3A—Hoyleton silt loam, 0 to 2 percent slopes

Setting

Landform: Till plains
Position on the landform: Summits

Map Unit Composition

Hoyleton and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a lighter colored surface layer
- Soils that have less clay in the subsoil

Dissimilar soils:
- Darmstadt soils, which have a high content of sodium in the subsoil; in landform positions similar to those of the Hoyleton soil
- The moderately well drained Ava soils in positions below those of the Hoyleton soil
- The poorly drained Cisne, Cowden, Newberry, and Virden soils on toeslopes and in swales in positions below those of the Hoyleton soil

Properties and Qualities of the Hoyleton Soil

Parent material: Loess over loamy pedisediment
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.6 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.5 to 3.5 percent
Shrink-swell potential: High
Depth and months of highest apparent seasonal high water table: 1 foot, January to May
Ponding: None
Flooding: None
Potential for frost action: Moderate
Hazard of corrosion: High for steel and moderate for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2w
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

3B—Hoyleton silt loam, 2 to 5 percent slopes

Setting

Landform: Till plains
Position on the landform: Summits and backslopes

Map Unit Composition

Hoyleton and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a lighter colored surface layer
- Soils that have less clay in the subsoil

Dissimilar soils:
- The somewhat poorly drained Darmstadt soils, which have a high content of sodium in the subsoil; in landform positions similar to those of the Hoyleton soil
- The moderately well drained Ava soils in positions below those of the Hoyleton soil

- The poorly drained Cisne, Cowden, Newberry, and Virden soils on toeslopes and in swales in positions below those of the Hoyleton soil

Properties and Qualities of the Hoyleton Soil

Parent material: Loess over loamy pedisediment
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.9 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.5 to 3.5 percent
Shrink-swell potential: High
Depth and months of highest apparent seasonal high water table: 1 foot, January to May
Ponding: None
Flooding: None
Potential for frost action: Moderate
Hazard of corrosion: High for steel and concrete
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

912A—Hoyleton-Darmstadt silt loams, 0 to 2 percent slopes

Setting

Landform: Till plains
Position on the landform: Summits

Map Unit Composition

Hoyleton and similar soils: 55 percent
Darmstadt and similar soils: 35 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have less clay in the subsoil
- Bluford soils in landscape positions similar to those of the Hoyleton and Darmstadt soils

Dissimilar soils:
- The poorly drained Cisne, Cowden, and Newberry soils in swales

Properties and Qualities of the Hoyleton Soil

Parent material: Loess over loamy pedisediment
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderately slow

Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.6 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.5 to 3.5 percent
Shrink-swell potential: High
Depth and months of highest apparent seasonal high water table: 1.0 foot, January to May
Ponding: None
Flooding: None
Potential for frost action: Moderate
Hazard of corrosion: High for steel and moderate for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Properties and Qualities of the Darmstadt Soil

Parent material: Loess over loamy pedisediment
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Slow
Depth to restrictive feature: 16 to 25 inches to a natric horizon; high sodium content within a depth of 30 inches
Available water capacity: About 8.3 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Depth and months of highest apparent seasonal high water table: 1 foot, January to May
Ponding: None
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and low for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: Hoyleton—2w; Darmstadt—3s
Prime farmland category: Not prime farmland
Hydric soil status: Hoyleton—not hydric; Darmstadt—not hydric

Iona Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Oxyaquic Hapludalfs

Typical Pedon

Iona silt loam, 2 to 5 percent slopes, eroded, on a slope of 4 percent in a cultivated field, at an elevation of 535 feet above mean sea level; Crawford County, Illinois; 2,245 feet north and 1,650 feet east of the southwest corner of sec. 6, T. 6 N., R. 11 W.; USGS Flat Rock, Illinois, topographic quadrangle; lat. 38 degrees 59 minutes 30.4 seconds N. and long. 87 degrees 40 minutes 44.0 seconds W.; UTM Zone 16S 0441206E 4315876N; NAD 27:

Ap—0 to 8 inches; dark yellowish brown (10YR 4/4) silt loam, light yellowish brown (10YR 6/4) dry; mixed with common pockets of yellowish brown (10YR 5/6) subsoil material; moderate medium granular structure; friable; common very fine roots; few fine irregular accumulations of iron and manganese oxides; slightly acid; abrupt smooth boundary.

Bt1—8 to 18 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; firm; common very fine roots; common distinct brown (10YR 5/3) clay films on faces of peds; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation and few very fine irregular masses of iron and manganese accumulation; moderately acid; clear smooth boundary.

Bt2—18 to 23 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine and medium subangular blocky structure; firm; common very fine roots; very few faint grayish brown (10YR 5/2) clay films on faces of peds and common prominent light gray (10YR 7/2) silt coatings on faces of peds and in pores; common fine distinct grayish brown (10YR 5/2) iron depletions, few fine prominent yellowish brown (10YR 5/8) masses of iron accumulation, and common fine irregular masses of iron and manganese accumulation; moderately acid; clear smooth boundary.

Bt3—23 to 30 inches; yellowish brown (10YR 5/4) silty clay loam; moderate coarse subangular blocky structure parting to moderate fine subangular blocky; firm; common very fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions and few fine irregular masses of iron and manganese accumulation; very strongly acid; clear smooth boundary.

Bt4—30 to 35 inches; yellowish brown (10YR 5/4) silty clay loam; weak coarse subangular blocky structure; firm; few very fine roots; few distinct dark gray (10YR 4/1) clay films on faces of peds; few fine distinct strong brown (7.5YR 5/6) masses of iron accumulation, common fine distinct grayish brown (10YR 5/2) iron depletions, and few fine irregular masses of iron and manganese accumulation; very strongly acid; clear smooth boundary.

BC—35 to 60 inches; yellowish brown (10YR 5/4) silt loam; weak very coarse subangular blocky structure; friable; common medium distinct grayish brown (10YR 5/2) iron depletions, common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation, and few fine faint dark yellowish brown (10YR 4/4) masses of iron and manganese accumulation; very strongly acid.

Range in Characteristics

Thickness of the loess: More than 60 inches
Depth to carbonates: More than 40 inches
Depth to the base of the argillic horizon: 30 to 50 inches

Ap or A horizon:
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

Bt horizon:
Hue—10YR
Value—4 to 6
Chroma—3 to 6
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—very strongly acid to slightly acid

BC horizon:
Hue—10YR
Value—5 or 6
Chroma—3 to 6
Texture—silt loam or silt
Content of rock fragments—none
Reaction—very strongly acid to neutral

307B2—Iona silt loam, 2 to 5 percent slopes, eroded

Setting

Landform: Loess bluffs and uplands
Position on the landform: Shoulders

Map Unit Composition

Iona and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that do not have gray colors within a depth of 5 feet; in the more sloping areas
- Soils that are grayer in the upper part of the subsoil; in the less sloping areas
- Soils that have more sand in the lower part of the subsoil
- Soils that have carbonates closer to the surface; in the steeper areas along the bluff

Dissimilar soils:
- The poorly drained Pierron soils in swales

Properties and Qualities of the Iona Soil

Parent material: Loess
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 12.9 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 3.0 percent
Shrink-swell potential: Moderate
Depth and months of highest apparent seasonal high water table: 2.0 feet, February to April
Ponding: None
Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: High
Hazard of corrosion: Moderate for steel and high for concrete
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

Kell Series

Taxonomic classification: Fine-loamy, mixed, active, mesic Ultic Hapludalfs

Typical Pedon

Kell silt loam, 18 to 35 percent slopes, on a slope of 25 percent in a wooded area, at an elevation of 450 feet above mean sea level; Jefferson County, Illinois; about 3.5 miles west of Opdyke; 1,975 feet west and 1,175 feet north of the southeast corner of sec. 15, T. 3 S., R. 3 E.; USGS Opdyke, Illinois, topographic quadrangle; lat. 38 degrees 15 minutes 40.3 seconds N. and long. 88 degrees 51 minutes 27.9 seconds W.; UTM Zone 16S 0337465E 4236221N; NAD 27:

A—0 to 3 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable; common fine and medium roots throughout; moderately acid; abrupt smooth boundary.

E—3 to 7 inches; 60 percent dark grayish brown (10YR 4/2) and 40 percent dark yellowish brown (10YR 4/4) silt loam; weak thin platy structure; friable; common fine and medium roots; few fine round iron-manganese concretions throughout; 1 percent shale pebbles; few subrounded quartz pebbles; moderately acid; clear smooth boundary.

Bt1—7 to 13 inches; yellowish brown (10YR 5/4) silty clay loam; strong fine subangular blocky structure; friable; common fine and medium roots; very few distinct yellowish brown (10YR 5/8) iron stains on faces of peds; few distinct brown (10YR 4/3) clay films on faces of peds; common fine round iron-manganese concretions throughout; 1 percent shale pebbles; few subrounded quartz pebbles; moderately acid; clear smooth boundary.

2Bt2—13 to 18 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine subangular blocky structure; friable; few medium roots between peds; few distinct yellowish brown (10YR 5/8) iron stains on faces of peds; many distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; common fine round iron-manganese concretions throughout; 1 percent shale pebbles; few subrounded quartz pebbles; very strongly acid; clear smooth boundary.

2Bt3—18 to 25 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; few medium roots between peds; few distinct yellowish brown (10YR 5/8) iron stains on faces of peds; few distinct yellowish brown (10YR 5/4) clay films on faces of peds; common fine round iron-manganese concretions throughout; 10 percent shale pebbles; few subrounded quartz pebbles; very strongly acid; clear smooth boundary.

2BC—25 to 35 inches; 50 percent yellowish brown (10YR 5/4) and 50 percent light brownish gray (2.5Y 6/2) very channery silty clay loam; massive; firm; few medium roots in cracks; few prominent yellowish brown (10YR 5/8) and reddish yellow (7.5YR 6/6) iron stains on rock fragments; 50 percent shale fragments 0.5 inch to 10 inches across; extremely acid; gradual wavy boundary.

2Cr—35 to 60 inches; 50 percent yellowish brown (10YR 5/4) and 50 percent light brownish gray (2.5Y 6/2), weathered shale; few prominent yellowish brown (10YR 5/8) and reddish yellow (7.5YR 6/6) iron stains on rock fragments.

Range in Characteristics

Depth to paralithic contact: 20 to 40 inches

A horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 4
Texture—silt loam

Content of rock fragments—0 to 10 percent
Reaction—strongly acid or moderately acid

E horizon:
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture—silt loam or loam
Content of rock fragments—0 to 10 percent
Reaction—very strongly acid to moderately acid

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Texture—silt loam, silty clay loam, or clay loam
Content of rock fragments—0 to 10 percent
Reaction—very strongly acid to moderately acid

2Bt and 2BC horizons:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 or 5
Chroma—2 to 8
Texture—clay loam or silty clay loam
Content of rock fragments—15 to 60 percent
Reaction—extremely acid to moderately acid

2Cr horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—4 to 8
Kind of bedrock—weathered, level-bedded shale, sandstone, or siltstone

908D2—Hickory-Kell complex, 10 to 18 percent slopes, eroded

Setting

Landform: Till plains
Position on the landform: Backslopes

Map Unit Composition

Hickory and similar soils: 60 percent
Kell and similar soils: 30 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have slopes of more than 18 percent
- Soils that have carbonates at a depth of less than 40 inches
- Soils that have a fragipan at a moderate depth; on summits in positions above those of the Hickory and Kell soils
- Soils that have a clayey subsoil

Dissimilar soils:
- Wakeland and Shoals soils on flood plains in positions below those of the Hickory and Kell soils
- The somewhat poorly drained Atlas and Fishhook soils and the moderately well drained Elco soils in positions above those of the Hickory and Kell soils

Properties and Qualities of the Hickory Soil

Parent material: Till
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 7.9 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Properties and Qualities of the Kell Soil

Parent material: Loamy diamicton over material weathered from sandstone, siltstone, or shale
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Very slow to moderately slow
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Available water capacity: About 5.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and high for concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: Hickory—3e; Kell—4e
Prime farmland category: Not prime farmland
Hydric soil status: Hickory—not hydric; Kell—not hydric

908F—Hickory-Kell complex, 18 to 35 percent slopes

Setting

Landform: Till plains
Position on the landform: Backslopes

Map Unit Composition

Hickory and similar soils: 55 percent
Kell and similar soils: 35 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have slopes of more than 35 percent and have escarpments
- Soils that have a fragipan at a moderate depth; on summits in positions above those of the Hickory and Kell soils
- Soils that have a clayey subsoil
- Soils that have carbonates at a depth of less than 40 inches

Dissimilar soils:
- Wakeland and Shoals soils on flood plains in positions below those of the Hickory and Kell soils

Properties and Qualities of the Hickory Soil

Parent material: Till
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 7.9 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 3.0 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and high for concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Properties and Qualities of the Kell Soil

Parent material: Diamicton over material weathered from sandstone and shale
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Very slow to moderately slow
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Available water capacity: About 4.6 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and high for concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: Hickory—6e; Kell—6e
Prime farmland category: Not prime farmland
Hydric soil status: Hickory—not hydric; Kell—not hydric

Menfro Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Typic Hapludalfs

Typical Pedon

Menfro silt loam, 2 to 5 percent slopes, on a slope of 2 percent in a cultivated field, at an elevation of 555 feet above mean sea level; Crawford County, Illinois; 1,276 feet south and 2,897 feet east of the northwest corner of sec. 12, T. 6 N., R. 11 W.; USGS Heathsville, Illinois, topographic quadrangle; lat. 38 degrees 58 minutes 56 seconds N. and long. 87 degrees 35 minutes 02 seconds W.; UTM Zone 16S 0449426E 4314758N; NAD 27:

Ap—0 to 10 inches; brown (10YR 4/3) (rubbed) silt loam; moderate medium granular structure; very friable; many very fine roots throughout; common very fine and fine moderately continuous tubular pores; slightly acid; abrupt smooth boundary.

Bt1—10 to 20 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate coarse prismatic structure parting to moderate medium prismatic parting to moderate medium angular blocky; friable; common very fine roots throughout; common very fine and fine highly continuous tubular pores; many distinct brown (10YR 4/3) clay films on faces of peds and common distinct discontinuous brown (10YR 4/3) clay films in root channels and pores; moderately acid; clear wavy boundary.

Bt2—20 to 27 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate coarse prismatic structure parting to moderate medium prismatic; friable; common very fine roots throughout; common very fine highly continuous tubular pores; many distinct brown (10YR 4/3) clay films in root channels and pores; few fine and medium irregular black (10YR 2/1) soft masses of manganese accumulation throughout; moderately acid; clear wavy boundary.

Bt3—27 to 39 inches; 80 percent dark yellowish brown (10YR 4/4) and 20 percent yellowish brown (10YR 5/4) silty clay loam; moderate coarse prismatic structure parting to moderate medium subangular blocky; friable; common very fine roots throughout; few very fine tubular pores with high vertical continuity; many distinct brown (10YR 4/3) clay films on faces of peds and in root channels and pores; moderately acid; clear wavy boundary.

Bt4—39 to 47 inches; 60 percent dark yellowish brown (10YR 4/4) and 40 percent yellowish brown (10YR 5/4) silt loam; moderate coarse prismatic structure parting to moderate medium subangular blocky; very friable; common very fine roots throughout; few very fine tubular pores with high vertical continuity; common distinct brown (10YR 4/3) clay films on vertical faces of peds, few distinct brown (10YR 4/3) clay films on horizontal faces of peds, and many distinct brown (10YR 4/3) clay films in root channels and pores; slightly acid; gradual wavy boundary.

Bt5—47 to 56 inches; 80 percent yellowish brown (10YR 5/4) (interior) and 20 percent dark yellowish brown (10YR 4/4) silt loam; weak coarse prismatic structure parting to moderate medium subangular blocky; very friable; few very fine roots throughout; few very fine moderately continuous tubular pores; few faint brown (10YR 4/3) clay films on faces of peds and common faint brown (10YR 4/3) clay films in root channels and pores; slightly acid; gradual wavy boundary.

BCt—56 to 70 inches; yellowish brown (10YR 5/4) silt loam; weak coarse subangular blocky structure; very friable; few very fine roots throughout; few very fine moderately continuous tubular pores; few faint dark yellowish brown (10YR 4/4) (moist) clay films on vertical faces of peds and common faint brown (10YR 4/3) clay films in root channels and pores; few fine irregular black (10YR 2/1) soft masses of manganese accumulation throughout; slightly acid; gradual wavy boundary.

C—70 to 80 inches; yellowish brown (10YR 5/4) silt loam; massive; very friable; slightly acid.

Range in Characteristics

Thickness of the loess: More than 60 inches
Depth to carbonates: More than 40 inches
Depth to the base of the argillic horizon: 30 to 75 inches

Ap or A horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 4
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

E horizon (if it occurs):
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

Bt horizon:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—3 to 6
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—very strongly acid to neutral

BC horizon:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—3 to 6
Texture—silt loam or silty clay loam
Content of rock fragments—none
Reaction—strongly acid to neutral

C horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—3 to 6
Texture—silt loam or silty clay loam
Content of rock fragments—none
Reaction—moderately acid to slightly alkaline

79B—Menfro silt loam, 2 to 5 percent slopes

Setting

Landform: Loess bluffs, uplands, and interfluves
Position on the landform: Summits and shoulders

Map Unit Composition

Menfro and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have more sand in the lower part of the subsoil
- Soils that are eroded
- Soils that have slopes of more than 5 percent

Dissimilar soils:
- The moderately well drained Muren soils on broad parts of interfluves

Properties and Qualities of the Menfro Soil

Parent material: Loess
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately slow or moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 10.8 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None
Potential for frost action: High
Hazard of corrosion: Moderate for steel and concrete
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

79C2—Menfro silt loam, 5 to 10 percent slopes, eroded

Setting

Landform: Loess bluffs and uplands
Position on the landform: Backslopes and shoulders

Map Unit Composition

Menfro and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have more sand in the subsoil
- Severely eroded soils that have a surface layer of silty clay loam

Dissimilar soils:
- Soils that have a fragipan at a moderate depth
- The moderately well drained Muren soils in swales

Properties and Qualities of the Menfro Soil

Parent material: Loess
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 10.4 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: High
Hazard of corrosion: Moderate for steel and concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

79D2—Menfro silt loam, 10 to 18 percent slopes, eroded

Setting

Landform: Uplands and loess bluffs
Position on the landform: Backslopes

Map Unit Composition

Menfro and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have more sand in the lower part of the subsoil
- Severely eroded soils that have a surface layer of silty clay loam

Dissimilar soils:
- Soils that have a fragipan at a moderate depth
- The moderately well drained Muren soils in landscape positions similar to those of the Menfro soil

Properties and Qualities of the Menfro Soil

Parent material: Loess
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 11.0 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Ponding: None

Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: High
Hazard of corrosion: Moderate for steel and concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

79F—Menfro silt loam, 18 to 35 percent slopes

Setting

Landform: Loess bluffs and uplands
Position on the landform: Backslopes

Map Unit Composition

Menfro and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have more sand in the subsoil
- Eroded soils that have a thinner surface layer

Dissimilar soils:
- The moderately well drained Vanmeter and well drained Kell soils, which are moderately deep to bedrock

Properties and Qualities of the Menfro Soil

Parent material: Loess
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 10.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None
Potential for frost action: High
Hazard of corrosion: Moderate for steel and concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 6e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

M-W—Miscellaneous water

- This map unit consists of sewage lagoons and other bodies of water that are not suitable for fishing or swimming.

Muren Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Aquic Hapludalfs

Typical Pedon

Muren silt loam, 0 to 2 percent slopes, in a nearly level area in a cultivated field, at an elevation of 537 feet above mean sea level; Clark County, Illinois; 45 feet south and 25 feet west of the northeast corner of sec. 16, T. 10 N., R. 11 W.; USGS Snyder, Illinois, topographic quadrangle; lat. 39 degrees 19 minutes 01.9 seconds N. and long. 87 degrees 37 minutes 44.0 seconds W.; UTM Zone 16S 0445786E 4351957N; NAD 27:

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; few fine roots throughout; slightly acid; abrupt smooth boundary.

E—9 to 12 inches; light brownish gray (10YR 6/2) silt loam; weak medium granular structure; friable; few fine roots throughout; many fine faint brown (10YR 5/3) and grayish brown (10YR 5/2) clay depletions; strongly acid; clear smooth boundary.

Bt1—12 to 16 inches; brown (10YR 5/3) silty clay loam; moderate medium subangular blocky structure parting to moderate fine subangular blocky; firm; few fine roots throughout; many distinct grayish brown (10YR 5/2) clay films on faces of peds; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation and many fine faint light brownish gray (10YR 6/2) iron depletions; very strongly acid; clear smooth boundary.

Bt2—16 to 27 inches; brown (10YR 5/3) silty clay loam; moderate medium and coarse subangular blocky structure; firm; few fine roots throughout; many distinct grayish brown (10YR 5/2) clay films on faces of peds; common fine distinct yellowish brown (10YR 5/6) masses of iron accumulation and many fine faint light brownish gray (10YR 6/2) iron depletions; very strongly acid; clear smooth boundary.

Bt3—27 to 40 inches; yellowish brown (10YR 5/6) silty clay loam; moderate coarse subangular blocky structure; firm; few fine roots throughout; many distinct grayish brown (10YR 5/2) clay films on faces of peds; many fine distinct brown (10YR 5/3) and common fine prominent gray (10YR 6/1) iron depletions; very strongly acid; gradual smooth boundary.

BC1—40 to 48 inches; yellowish brown (10YR 5/6) silty clay loam; moderate coarse subangular blocky structure; few fine roots throughout; many fine prominent grayish brown (10YR 5/2) and many fine distinct brown (10YR 5/3) iron depletions; neutral; gradual smooth boundary.

BC2—48 to 54 inches; yellowish brown (10YR 5/4) silt loam; weak coarse subangular blocky structure; firm; few fine roots throughout; many fine distinct grayish brown (10YR 5/2) iron depletions; slightly alkaline; gradual smooth boundary.

C—54 to 60 inches; 40 percent yellowish brown (10YR 5/6), 30 percent brown (10YR 5/3), and 30 percent gray (10YR 6/1) silt loam; massive; slightly alkaline.

Range in Characteristics

Thickness of the loess: More than 80 inches
Depth to carbonates: More than 80 inches
Depth to the base of the argillic horizon: 30 to 70 inches

Ap or A horizon:
Hue—10YR
Value—4 or 5

Chroma—2 or 3
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

E horizon (if it occurs):
Hue—10YR
Value—4 to 6
Chroma—2 or 3
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to slightly acid

Bt horizon:
Hue—10YR
Value—4 to 6
Chroma—3 to 6
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—very strongly acid to moderately acid

BC or C horizon:
Hue—10YR
Value—4 to 7
Chroma—3 to 6
Texture—silt loam or silty clay loam
Content of rock fragments—none
Reaction—moderately acid to slightly alkaline

453A—Muren silt loam, 0 to 2 percent slopes

Setting

Landform: Loess hills
Position on the landform: Summits

Map Unit Composition

Muren and similar soils: 95 percent
Dissimilar soils: 5 percent

Soils of Minor Extent

Similar soils:
- Soils that have more sand in the lower part of the subsoil
- Soils that have gray colors closer to the surface
- Soils that have a limy subsoil
- Soils that have a darker surface layer

Dissimilar soils:
- The poorly drained Patton soils on terrace toeslopes and in swales
- The poorly drained Virden soils in swales and depressions

Properties and Qualities of the Muren Soil

Parent material: Loess
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately slow or moderate

Depth to restrictive feature: More than 80 inches
Available water capacity: About 11.0 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Depth and months of highest apparent seasonal high water table: 1.5 feet, February to April
Ponding: None
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 1
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

Navlys Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Typic Hapludalfs

Typical Pedon

Navlys silty clay loam, 10 to 18 percent slopes, severely eroded, on a slope of 15 percent in a cultivated field, at an elevation of 465 feet above mean sea level; Crawford County, Illinois; 700 feet north and 900 feet west of the southeast corner of sec. 7, T. 5 N., R. 10 W.; USGS Heathsville, Illinois, topographic quadrangle; lat. 38 degrees 53 minutes 02.0 seconds N. and long. 87 degrees 33 minutes 37.5 seconds W.; UTM Zone 16S 0451393E 4303834N; NAD 27:

Ap—0 to 7 inches; dark yellowish brown (10YR 4/4) silty clay loam, light yellowish brown (10YR 6/4) dry; strong very fine and fine subangular blocky structure; firm; common very fine roots; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; moderately acid; clear smooth boundary.

Bt1—7 to 14 inches; yellowish brown (10YR 5/6) silty clay loam; moderate fine subangular blocky structure; firm; common very fine roots; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; few fine rounded masses of iron and manganese accumulation; moderately acid; clear smooth boundary.

Bt2—14 to 22 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; few very fine roots; few distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; few fine faint strong brown (7.5YR 5/6) masses of iron accumulation, few fine prominent light brownish gray (10YR 6/2) iron depletions, and few fine rounded masses of iron and manganese accumulation; moderately acid; clear smooth boundary.

BC—22 to 31 inches; yellowish brown (10YR 5/4) silt loam; weak medium subangular blocky structure; friable; few very fine roots; common faint dark yellowish brown (10YR 4/4) clay films on vertical faces of peds; few medium distinct strong brown (7.5YR 5/6) masses of iron accumulation, common medium distinct light brownish gray (10YR 6/2) iron depletions, and few fine rounded masses of iron and manganese accumulation; slightly alkaline; clear smooth boundary.

C1—31 to 45 inches; pale brown (10YR 6/3) silt loam; massive; friable; common medium prominent strong brown (7.5YR 5/8) masses of iron accumulation and common fine and medium rounded masses of iron and manganese accumulation; slightly effervescent; slightly alkaline; clear smooth boundary.

C2—45 to 55 inches; light brownish gray (10YR 6/2) silt loam; massive; friable; few fine prominent strong brown (7.5YR 5/8) masses of iron accumulation and few fine rounded masses of iron and manganese accumulation; slightly effervescent; moderately alkaline; clear smooth boundary.

C3—55 to 60 inches; yellowish brown (10YR 5/6) silt loam; massive; friable; common fine distinct light brownish gray (10YR 6/2) iron depletions and few fine rounded masses of iron and manganese accumulation; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the loess: More than 60 inches
Depth to carbonates: 22 to 40 inches
Depth to the base of the argillic horizon: 22 to 40 inches

Ap or A horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 4
Texture—silty clay loam
Content of rock fragments—none
Reaction—moderately acid to neutral

Bt horizon:
Hue—10YR or 7.5YR
Value—4 or 5
Chroma—3 to 6
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

BC horizon:
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to slightly alkaline

C horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—silt loam or silt
Content of rock fragments—none
Reaction—neutral to moderately alkaline

630D3—Navlys silty clay loam, 10 to 18 percent slopes, severely eroded

Setting

Landform: Loess bluffs
Position on the landform: Backslopes

Map Unit Composition

Navlys and similar soils: 94 percent
Dissimilar soils: 6 percent

Soils of Minor Extent

Similar soils:
- Hickory soils in landscape positions similar to those of the Navlys soil
- Soils that have a surface layer of silt loam
- Soils that are deeper to lime

Dissimilar soils:
- The somewhat poorly drained Atlas soils in landscape positions similar to those of the Navlys soil

Properties and Qualities of the Navlys Soil

Parent material: Calcareous loess
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 12.3 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.8 to 2.0 percent
Shrink-swell potential: Moderate
Depth and months of highest apparent seasonal high water table: 4.0 feet, February to April
Flooding: None
Accelerated erosion: The surface layer is mostly subsoil material.
Potential for frost action: High
Hazard of corrosion: Moderate for steel and concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 4e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

Newberry Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Mollic Endoaqualfs

Typical Pedon

Newberry silt loam, 0 to 2 percent slopes, in a cultivated field at an elevation of 432 feet above mean sea level; Richland County, Illinois; 173 feet south and 2,482 feet west of the northeast corner of sec. 18, T. 3 N., R. 10 E.; USGS Noble, Illinois, topographic quadrangle; lat. 38 degrees 41 minutes 59.6 seconds N. and long. 88 degrees 08 minutes 24.0 seconds W.; UTM Zone 16S 0400868E 4284091N; NAD 83:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable; few fine and very fine roots throughout; few fine and common very fine tubular pores; neutral; abrupt smooth boundary.

Eg—9 to 16 inches; light brownish gray (2.5Y 6/2) silt loam; weak medium platy structure parting to weak medium subangular blocky; friable; common very fine roots throughout; few very fine tubular pores; common fine rounded prominent yellowish brown (10YR 5/6) masses of iron accumulation throughout; moderately acid; clear smooth boundary.

BEtg—16 to 20 inches; light brownish gray (10YR 6/2) silty clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots throughout; few very fine tubular pores; few faint light brownish gray (2.5Y 6/2) clay films and common prominent white (10YR 8/1) (dry) silt coatings on faces of peds; few fine rounded prominent brownish yellow (10YR 6/6) masses of iron accumulation throughout; strongly acid; clear smooth boundary.

Btg1—20 to 30 inches; grayish brown (10YR 5/2) silty clay loam; strong medium prismatic structure; very firm; few very fine roots throughout; few very fine tubular pores; many prominent dark grayish brown (10YR 4/2) clay films and few prominent white (10YR 8/1) (dry) silt coatings on faces of peds; common medium rounded prominent yellowish brown (10YR 5/8) masses of iron accumulation and few fine and medium rounded distinct black (2.5Y 2.5/1) masses of manganese accumulation throughout; very strongly acid; clear smooth boundary.

Btg2—30 to 35 inches; grayish brown (2.5Y 5/2) silty clay loam; strong medium prismatic structure parting to moderate medium subangular blocky; very firm; few very fine roots throughout; few very fine tubular pores; common distinct dark grayish brown (10YR 4/2) and brown (10YR 4/3) clay films and very few prominent white (10YR 8/1) (dry) silt coatings on faces of peds; few fine rounded prominent strong brown (7.5YR 5/8) masses of iron accumulation and common fine and medium rounded distinct black (2.5Y 2.5/1) masses of manganese accumulation throughout; very strongly acid; clear smooth boundary.

2Btg3—35 to 48 inches; grayish brown (2.5Y 5/2) silty clay loam; moderate medium prismatic structure parting to weak medium subangular blocky; very firm; few very fine roots throughout; few very fine tubular pores; few faint dark grayish brown (10YR 4/2) clay films and very few prominent white (10YR 8/1) (dry) silt coatings on faces of peds; common fine and medium rounded prominent dark yellowish brown (10YR 4/6) masses of iron accumulation and few fine and medium rounded distinct black (2.5Y 2.5/1) masses of manganese accumulation throughout; 15 percent krotovina; very strongly acid; clear smooth boundary.

3Btgb1—48 to 63 inches; gray (2.5Y 5/1) clay loam; strong medium prismatic structure; very firm; few very fine roots throughout; few very fine and fine tubular pores; many prominent gray (2.5Y 5/1) clay films and very few prominent white (10YR 8/1) (dry) silt coatings on faces of peds; common medium and coarse irregular prominent strong brown (7.5YR 5/8) masses of iron accumulation and few medium and coarse rounded distinct black (2.5Y 2.5/1) masses of manganese accumulation throughout; about 1 percent fine gravel; neutral; abrupt smooth boundary.

3Btgb2—63 to 80 inches; gray (2.5Y 5/1) clay loam; strong medium and coarse prismatic structure; very firm; few very fine and fine tubular pores; many prominent gray (2.5Y 5/1) clay films and very few distinct brown (10YR 4/3) clay films on faces of peds; common medium and coarse irregular prominent strong brown (7.5YR 5/8) masses of iron accumulation and few coarse irregular distinct black (2.5Y 2.5/1) masses of manganese accumulation throughout; about 1 percent fine gravel; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 7 to 10 inches
Thickness of the loess: 30 to 55 inches
Depth to carbonates: More than 60 inches
Depth to the base of the argillic horizon: More than 40 inches
Content of clay in the particle-size control section: Averages 27 to 35 percent

Content of sand in the particle-size control section: Averages less than 8 percent fine sand or coarser

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

Eg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 or 2
Texture—silt loam
Content of rock fragments—none
Reaction—very strongly acid to moderately acid

Btg or BEtg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—very strongly acid to moderately acid

2Btg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—silty clay loam, clay loam, loam, or silt loam
Content of rock fragments—0 to 10 percent
Reaction—very strongly acid to neutral

3Btgb horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—3 to 6
Chroma—0 to 3
Texture—clay loam or silty clay loam
Content of rock fragments—0 to 15 percent
Reaction—moderately acid to neutral

218A—Newberry silt loam, 0 to 2 percent slopes

Setting

Landform: Depressions on till plains

Map Unit Composition

Newberry and similar soils: 95 percent
Dissimilar soils: 5 percent

Soils of Minor Extent

Similar soils:
- Soils that have a light-colored surface layer

- Soils that have a thicker dark surface layer
- Soils that have more clay in the subsoil

Dissimilar soils:
- Darmstadt soils in the slightly higher landscape positions
- The very poorly drained Shiloh soils in depressions

Properties and Qualities of the Newberry Soil

Parent material: Loess and silty pedisediment over a clayey Sangamon paleosol
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches; moderate sodium content within a depth of 30 inches
Available water capacity: About 10.6 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.5 to 3.5 percent
Shrink-swell potential: Moderate
Depth and months of highest apparent seasonal high water table: At the surface, January to May
Ponding duration: Brief, January to May
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2w
Prime farmland category: Prime farmland where drained
Hydric soil status: Hydric

7803C—Orthents, rarely flooded

Setting

Landform: Outwash terraces

Map Unit Composition

Orthents and similar soils: 85 percent
Dissimilar soils: 15 percent

Soils of Minor Extent

Similar soils:
- Soils that are loamy
- Soils that are subject to occasional flooding

Dissimilar soils:
- Soils that are poorly drained
- Soils that are subject to frequent flooding
- Soils that are ponded after periods of intense rainfall

Properties and Qualities of the Orthents

Parent material: Sandy and gravelly mine spoil or earthy fill
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderately rapid
Permeability below a depth of 60 inches: Moderately rapid

Depth to restrictive feature: More than 80 inches
Available water capacity: About 7.2 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.2 to 1.0 percent
Shrink-swell potential: Low
Ponding: None
Frequency and most likely period of flooding: Rare, November to June
Potential for frost action: Moderate
Hazard of corrosion: Low for steel and concrete
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Moderately high

Interpretive Groups

Land capability classification: 4e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

Patton Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Typic Endoaquolls

Typical Pedon

Patton silty clay loam, 0 to 2 percent slopes, in a nearly level area in a cultivated field, at an elevation of 385 feet above mean sea level; in Edwards County, Illinois; 475 feet north and 50 feet east of the southwest corner of sec. 8, T. 3 S., R. 10 E.; USGS Golden Gate, Illinois, topographic quadrangle; lat. 38 degrees 16 minutes 18.0 seconds N. and long. 88 degrees 07 minutes 51.6 seconds W.; UTM Zone 16S 0401066E 4236357N; NAD 27:

Ap—0 to 7 inches; very dark gray (10YR 3/1) silty clay loam, dark grayish brown (10YR 4/2) dry; weak medium granular structure; friable; neutral; abrupt smooth boundary.

A—7 to 15 inches; very dark gray (10YR 3/1) silty clay loam, dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure parting to moderate fine granular; friable; few fine prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; neutral; gradual smooth boundary.

Bg1—15 to 20 inches; dark gray (10YR 4/1) silty clay loam; moderate fine and medium prismatic structure parting to moderate medium subangular blocky; firm; few very dark gray (10YR 3/1) organic coatings on faces of peds; few fine faint grayish brown (2.5Y 5/2) iron depletions and few fine prominent light olive brown (2.5Y 5/6) masses of iron accumulation in the matrix; neutral; gradual smooth boundary.

Bg2—20 to 28 inches; dark gray (10YR 4/1) silty clay loam; moderate fine and medium prismatic structure parting to moderate fine and medium subangular blocky; firm; few fine prominent yellowish brown (10YR 5/6) and common fine prominent olive yellow (2.5Y 6/6) masses of iron accumulation in the matrix; neutral; gradual smooth boundary.

Bg3—28 to 35 inches; dark grayish brown (2.5Y 4/2) silty clay loam; weak fine and medium subangular blocky structure; firm; few fine prominent yellowish brown (10YR 5/6) and common fine prominent olive yellow (2.5Y 6/6) masses of iron accumulation in the matrix; slightly alkaline; gradual smooth boundary.

Cg—35 to 60 inches; grayish brown (2.5Y 5/2), stratified silty clay loam and silt loam; massive; friable; common fine prominent strong brown (7.5YR 5/8) and yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; strongly effervescent in the lower part; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 24 inches
Depth to carbonates: More than 40 inches
Depth to the base of the cambic horizon: 24 to 55 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silty clay loam
Content of rock fragments—none
Reaction—slightly acid to neutral

Bg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—3 to 5
Chroma—1 or 2
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—slightly acid to slightly alkaline

Cg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 or 5
Chroma—1 or 2
Texture—stratified silty clay loam and silt loam
Content of rock fragments—0 to 3 percent
Reaction—neutral to moderately alkaline

142A—Patton silty clay loam, 0 to 2 percent slopes

Setting

Landform: Stream terraces or lake terraces

Map Unit Composition

Patton and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a surface layer of silt loam
- Soils that have more sand and/or gravel in the subsoil
- Soils that have a dark surface layer more than 24 inches thick
- Soils that have less clay in the subsoil
- Soils that are subject to more than very rare flooding; at an elevation below 460 feet along the Embarras and Wabash Rivers

Dissimilar soils:
- The moderately well drained Muren soils on slight rises in positions above those of the Patton soil

Properties and Qualities of the Patton Soil

Parent material: Silty glaciolacustrine deposits over loamy outwash
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Moderate

Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.6 inches to a depth of 60 inches
Content of organic matter in the surface layer: 3.0 to 6.5 percent
Shrink-swell potential: Moderate
Depth and months of highest apparent seasonal high water table: At the surface, January to May
Ponding duration: Brief, January to May
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and low for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2w
Prime farmland category: Prime farmland where drained
Hydric soil status: Hydric

Petrolia Series

Taxonomic classification: Fine-silty, mixed, superactive, nonacid, mesic Fluvaquentic Endoaquepts

Typical Pedon

Petrolia silty clay loam, 0 to 2 percent slopes, frequently flooded, in a cultivated field, at an elevation of 459 feet above mean sea level; Clay County, Illinois; 500 feet south and 235 feet east of the northwest corner of sec. 17, T. 5 N., R. 6 E.; USGS Hord, Illinois, topographic quadrangle; lat. 38 degrees 53 minutes 02.4 seconds N. and long. 88 degrees 33 minutes 45.4 seconds W.; UTM Zone 16S 0364466E 4305064N; NAD 83:

Ap1—0 to 6 inches; dark grayish brown (10YR 4/2) silty clay loam, light brownish gray (10YR 6/2) dry; moderate fine granular structure; friable; common very fine roots; few fine rounded iron-manganese nodules throughout; neutral; abrupt smooth boundary.

Ap2—6 to 14 inches; dark gray (10YR 4/1) silty clay loam, light brownish gray (10YR 6/2) dry; weak fine prismatic structure parting to weak fine angular blocky; firm; common very fine roots; few fine prominent yellowish brown (10YR 5/6) masses of iron accumulation and common medium faint dark grayish brown (10YR 4/2) iron depletions in the matrix; few fine rounded iron-manganese nodules throughout; neutral; abrupt wavy boundary.

Bg1—14 to 25 inches; gray (10YR 5/1) silty clay loam; weak medium prismatic structure; firm; few very fine roots; common distinct gray (10YR 5/1) pressure faces; common fine prominent strong brown (7.5YR 4/6) masses of iron and manganese accumulation and common medium faint dark grayish brown (10YR 4/2) iron depletions in the matrix; few fine rounded iron-manganese nodules throughout; slightly acid; clear wavy boundary.

Bg2—25 to 43 inches; gray (10YR 5/1) silty clay loam; weak medium prismatic structure; firm; few very fine roots; few distinct gray (10YR 5/1) pressure faces; many medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium rounded iron-manganese nodules throughout; slightly acid; abrupt wavy boundary.

Bg3—43 to 60 inches; light brownish gray (10YR 6/2) silty clay loam; weak medium prismatic structure; firm; few very fine roots; few distinct gray (10YR 5/1) pressure faces; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium rounded iron-manganese nodules throughout; slightly acid.

Range in Characteristics

Depth to the base of the cambic horizon: 30 to 60 inches

Ap or A horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 or 2
Texture—silty clay loam
Content of rock fragments—none
Reaction—moderately acid to neutral

Bg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—4 to 6
Chroma—0 to 2
Texture—silty clay loam
Content of rock fragments—none
Reaction—moderately acid to neutral

Cg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—4 to 6
Chroma—0 to 2
Texture—silty clay loam or silt loam that has some thin strata of silty clay, loam, or fine sandy loam
Content of rock fragments—none
Reaction—slightly acid to slightly alkaline

3288A—Petrolia silty clay loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Flood plains

Map Unit Composition

Petrolia and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a darker surface layer
- Soils that have more sand or more clay in the substratum
- Soils that are subject to occasional flooding
- The poorly drained Birds soils in landscape positions similar to those of the Petrolia soil
- Soils that have bedrock at a depth of 60 to 80 inches

Dissimilar soils:
- Soils that have bedrock at a depth of less than 60 inches
- The well drained Haymond soils in the higher positions on the flood plain

Properties and Qualities of the Petrolia Soil

Parent material: Alluvium
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 11.8 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 3.0 percent
Shrink-swell potential: Moderate
Depth and months of highest apparent seasonal high water table: At the surface, January to May
Ponding duration: Brief, January to May
Frequency and most likely period of flooding: Frequent, November to June
Potential for frost action: High
Hazard of corrosion: High for steel and low for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w
Prime farmland category: Prime farmland where drained and either protected from flooding or not frequently flooded during the growing season
Hydric soil status: Hydric

Pierron Series

Taxonomic classification: Fine, smectitic, mesic Typic Albaqualfs

Typical Pedon

Pierron silt loam, 0 to 2 percent slopes, in a cultivated field, at an elevation of about 540 feet; Madison County, Illinois; about 2 miles northeast of Marine; approximately 1,730 feet east and 80 feet south of the northwest corner of sec. 14, T. 4 N., R. 6 W.; USGS Grantfork, Illinois, topographic quadrangle; lat. 38 degrees 48 minutes 02 seconds N. and long. 89 degrees 44 minutes 19 seconds W.; UTM Zone 16S, 0262130E 4297983N; NAD 27:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; very friable; many very fine and common fine roots; few fine tubular pores; many distinct light brownish gray (10YR 6/2) (dry) clay depletions throughout; few fine rounded black (5YR 2.5/1) iron-manganese nodules with sharp boundaries throughout; slightly acid; abrupt smooth boundary.
Eg1—8 to 12 inches; grayish brown (10YR 5/2) silt loam, light gray (10YR 7/2) dry; weak thin platy structure; very friable; few very fine roots; common very fine and fine tubular pores; common distinct light gray (10YR 7/1) (dry) clay depletions on faces of peds; few medium distinct yellowish brown (10YR 5/4) masses of iron and manganese accumulation in the matrix; many fine and medium rounded reddish brown (5YR 4/4) and dark reddish brown (5YR 2.5/2) iron-manganese nodules with clear boundaries throughout; moderately acid; clear smooth boundary.
Eg2—12 to 20 inches; light brownish gray (10YR 6/2) silt loam, light gray (10YR 7/1) dry; moderate thick platy structure parting to weak fine subangular blocky; very friable; few very fine roots; common very fine tubular pores; many distinct white (10YR 8/1) (dry) clay depletions on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings lining root channels; common medium

prominent light olive brown (2.5Y 5/4) and few fine distinct dark yellowish brown (10YR 4/4) masses of iron and manganese accumulation in the matrix; common medium rounded black (5YR 2.5/1) iron-manganese nodules with clear reddish brown (5YR 4/4) boundaries throughout; strongly acid; abrupt smooth boundary.

Btg1—20 to 29 inches; light brownish gray (2.5Y 6/2) silty clay; moderate medium prismatic structure parting to strong fine and medium angular blocky; very firm; few very fine roots; few prominent very dark grayish brown (10YR 3/2) organic coatings lining root channels; many prominent grayish brown (2.5Y 5/2) clay films on faces of peds; common medium prominent yellowish brown (10YR 5/4) and few fine distinct light olive brown (2.5Y 5/4) masses of iron and manganese accumulation in the matrix; common medium rounded dark reddish brown (5YR 2.5/2) iron-manganese nodules with clear strong brown (7.5YR 4/6) boundaries throughout; very strongly acid; clear smooth boundary.

Btg2—29 to 36 inches; light brownish gray (2.5Y 6/2) silty clay; strong medium prismatic structure parting to moderate medium angular blocky; very firm; common prominent very dark grayish brown (10YR 3/2) organic coatings lining root channels and pores; many prominent grayish brown (2.5Y 5/2) clay films on faces of peds; common coarse prominent yellowish brown (10YR 5/6) masses of iron and manganese accumulation in the matrix; common medium rounded dark reddish brown (5YR 2.5/2) iron-manganese nodules with clear strong brown (7.5YR 4/6) boundaries throughout; very strongly acid; clear smooth boundary.

Btg3—36 to 44 inches; light brownish gray (2.5Y 6/2) silty clay loam; moderate coarse prismatic structure parting to moderate medium angular blocky; very firm; common prominent very dark grayish brown (10YR 3/2) organic coatings lining root channels; many distinct grayish brown (2.5Y 5/2) clay films on faces of peds; many coarse prominent strong brown (7.5YR 5/6) masses of iron and manganese accumulation in the matrix; common medium rounded black (5YR 2.5/1) iron-manganese nodules with clear strong brown (7.5YR 4/6) boundaries throughout; strongly acid; clear smooth boundary.

Btg4—44 to 55 inches; light olive gray (5Y 6/2) silty clay loam; moderate coarse prismatic structure parting to moderate medium subangular blocky; firm; common distinct dark gray (10YR 4/1) organic coatings lining root channels; common distinct grayish brown (2.5Y 5/2) clay films on faces of peds; common coarse prominent strong brown (7.5YR 5/6) and common medium prominent light olive brown (2.5Y 5/6) masses of iron accumulation in the matrix; common medium rounded black (5YR 2.5/1) iron-manganese nodules with clear strong brown (7.5YR 4/6) boundaries throughout; moderately acid; gradual smooth boundary.

Btg5—55 to 66 inches; light olive gray (5Y 6/2) silty clay loam; weak coarse prismatic structure; friable; common distinct grayish brown (2.5Y 5/2) clay films on faces of peds; common medium prominent brownish yellow (10YR 6/8) and yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; few fine irregular black (5YR 2.5/1) iron-manganese nodules with clear boundaries and common fine and medium strong brown (7.5YR 5/6) masses of iron-manganese accumulation in the matrix; slightly acid; clear smooth boundary.

2Cg—66 to 80 inches; grayish brown (2.5Y 5/2) silt loam; massive; friable; common fine and medium prominent brownish yellow (10YR 6/6) masses of iron accumulation in the matrix; few fine and medium irregular black (10YR 2/1) soft masses of iron-manganese with diffuse strong brown (7.5YR 4/6) boundaries throughout; about 10 percent sand; neutral.

Range in Characteristics

Depth to the base of the argillic horizon: 50 to 80 inches
Thickness of the loess: 55 to 80 inches

Ap or A horizon:
Hue—10YR
Value—4 or 5; as low as 3 where the surface layer is less than 7 inches thick
Chroma—1 or 2
Texture—silt loam
Content of rock fragments—0 to 1 percent
Reaction—very strongly acid to neutral

Eg horizon:
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—1 or 2
Texture—silt loam or silt
Content of rock fragments—0 to 1 percent
Reaction—very strongly acid to neutral

Btg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 to 2
Texture—silty clay loam or silty clay
Content of rock fragments—none
Reaction—extremely acid to slightly acid

2Cg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—4 to 7
Chroma—0 to 2
Texture—silty clay loam, silt loam, loam, or clay loam
Content of rock fragments—none
Reaction—strongly acid to neutral

31A—Pierron silt loam, 0 to 2 percent slopes

Setting

Landform: Depressions on till plains

Map Unit Composition

Pierron and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Cisne soils in landscape positions similar to those of the Pierron soil
- Soils that have more sand in the lower part of the subsoil
- Soils that have a more gradual clay increase from the surface layer to the subsoil

Dissimilar soils:
- The somewhat poorly drained Stoy soils in the slightly higher landscape positions

Properties and Qualities of the Pierron Soil

Parent material: Loess over silty pedisediment
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Very slow

Permeability below a depth of 60 inches: Very slow to moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.6 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 3.0 percent
Shrink-swell potential: High
Depth and months of highest apparent seasonal high water table: At the surface, January to May
Frequency and duration of ponding: Frequent, brief (January, February, March, April, May)
Flooding: None
Hazard of corrosion: High for steel and concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w
Prime farmland category: Not prime farmland
Hydric soil status: Hydric

7865—Pits, gravel, rarely flooded

Setting

Landform: Outwash terraces and stream terraces
Position on the landform: Summits

Map Unit Composition

Pits and similar components: 90 percent
Dissimilar components: 10 percent

Components of Minor Extent

Similar components:
- Stockpiles of gravel
- Orthents along quarry boundaries
- Soils that are subject to occasional flooding

Dissimilar components:
- Soils that are subject to frequent flooding
- Pools of water less than $^1/_4$ acre in size

Properties and Qualities

General description: This map unit consists of open excavations from which sand, gravel, or soil material has been removed or is currently being removed.
Ponding: None
Frequency and most likely period of flooding: Rare, November to June
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Moderate

Interpretive Groups

Land capability classification: 8
Prime farmland category: Not prime farmland
Hydric soil status: Not applicable

Ridgway Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Typic Hapludalfs

Typical Pedon

Ridgway silt loam, 0 to 2 percent slopes, on a northeast-facing slope of less than 1 percent in a cultivated field, at an elevation of about 361 feet above mean sea level; White County, Illinois; about 7 miles east-northeast of New Haven; 900 feet west and 354 feet south of the northeast corner of sec. 1, T. 7 S., R. 10 E.; USGS Emma, Illinois, topographic quadrangle; lat. 37 degrees 56 minutes 59.4 seconds N. and long. 88 degrees 02 minutes 48.5 seconds W.; UTM Zone 16S 0408027E 4200560N; NAD 27:

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) silt loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable; common very fine roots; neutral; abrupt smooth boundary.

BE—10 to 14 inches; brown (10YR 4/3) silty clay loam; moderate fine subangular blocky structure; friable; few very fine roots; common distinct dark grayish brown (10YR 4/2) silt coatings on faces of peds; neutral; clear smooth boundary.

Bt1—14 to 22 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; few very fine roots; many distinct brown (10YR 4/3) clay films on faces of peds; neutral; gradual smooth boundary.

Bt2—22 to 30 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium and coarse subangular blocky structure; firm; few very fine roots; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; slightly acid; clear smooth boundary.

2Bt3—30 to 39 inches; yellowish brown (10YR 5/6) clay loam; weak coarse subangular blocky structure; friable; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; moderately acid; clear smooth boundary.

2Bt4—39 to 49 inches; strong brown (7.5YR 4/6) sandy loam; weak coarse subangular blocky structure; very friable; few distinct brown (7.5YR 4/4) clay films on faces of peds; moderately acid; gradual smooth boundary.

2E and 2Bt—49 to 80 inches; yellowish brown (10YR 5/6) loamy sand (E part); brown (7.5YR 4/4) sandy loam lamellae (Bt part); single grain and loose (E part); massive and very friable (Bt part); few distinct brown (7.5YR 4/4) clay bridges between sand grains (Bt part); moderately acid.

Range in Characteristics

Thickness of the loess: 24 to 40 inches
Depth to the base of the argillic horizon: More than 50 inches

Ap or A horizon:
Hue—10YR
Value—4 or 5; 3 where the horizon is less than 7 inches thick
Chroma—2 or 3
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid to neutral

E, BE, or EB horizon (if it occurs):
Hue—10YR
Value—4 to 6
Chroma—3 to 6
Texture—silt loam or silty clay loam
Content of rock fragments—none
Reaction—strongly acid to neutral

Bt horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—3 to 6
Texture—silty clay loam
Content of rock fragments—0 to 1 percent
Reaction—very strongly acid to neutral

2Bt horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—3 to 6
Texture—clay loam, sandy clay loam, loam, or sandy loam
Content of rock fragments—0 to 10 percent
Reaction—very strongly acid to slightly acid

2C horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—3 to 6
Texture—stratified loam, sandy loam, loamy sand, and sand
Content of rock fragments—0 to 10 percent
Reaction—strongly acid to neutral

434A—Ridgway silt loam, 0 to 2 percent slopes

Setting

Landform: Stream terraces and outwash terraces
Position on the landform: Summits

Map Unit Composition

Ridgway and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Alvin soils in landscape positions similar to those of the Ridgway soil
- Soils that have a thick and dark surface layer
- Soils that are subject to very rare flooding

Dissimilar soils:
- The somewhat poorly drained Roby soils in swales
- Soils that are subject to more than very rare flooding; at an elevation below 460 feet along the Embarras and Wabash Rivers
- The poorly drained Ruark soils on toeslopes

Properties and Qualities of the Ridgway Soil

Parent material: Loess over sandy outwash
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.2 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 3.0 percent
Shrink-swell potential: Moderate

Ponding: None
Flooding: None
Potential for frost action: High
Hazard of corrosion: Moderate for steel and concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 1
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

434B—Ridgway silt loam, 2 to 5 percent slopes

Setting

Landform: Stream terraces and outwash terraces
Position on the landform: Shoulders

Map Unit Composition

Ridgway and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Alvin soils in landscape positions similar to those of the Ridgway soil
- Soils that have a thicker and darker surface layer
- Soils that are subject to very rare flooding

Dissimilar soils:
- Soils that are subject to more than very rare flooding; at an elevation below 460 feet along the Embarras and Wabash Rivers
- The poorly drained Ruark soils on toeslopes

Properties and Qualities of the Ridgway Soil

Parent material: Loess over sandy outwash
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.2 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 3.0 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None
Potential for frost action: High
Hazard of corrosion: Moderate for steel and concrete
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

434C2—Ridgway silt loam, 5 to 10 percent slopes, eroded

Setting

Landform: Stream terraces and outwash terraces
Position on the landform: Backslopes

Map Unit Composition

Ridgway and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Alvin, Hickory, Navlys, and Stockland soils in landscape positions similar to those of the Ridgway soil
- Soils that have slopes of more than 10 percent or less than 5 percent
- Soils that are subject to very rare flooding

Dissimilar soils:
- Soils that are subject to more than very rare flooding; at an elevation below 460 feet along the Embarras and Wabash Rivers
- The poorly drained Birds soils on flood plains
- The poorly drained Ruark soils on toeslopes

Properties and Qualities of the Ridgway Soil

Parent material: Loess over sandy outwash
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.2 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 3.0 percent
Shrink-swell potential: Moderate
Ponding: None
Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: High
Hazard of corrosion: Moderate for steel and concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

Roby Series

Taxonomic classification: Coarse-loamy, mixed, superactive, mesic Aquic Hapludalfs

Typical Pedon

Roby fine sandy loam, 0 to 2 percent slopes, in a cultivated field, at an elevation of 477 feet above mean sea level; Jasper County, Illinois; 132 feet south and 66 feet east of the northwest corner of sec. 22, T. 6 N., R. 14 W.; USGS Oblong South, Illinois, topographic quadrangle; lat. 38 degrees 57 minutes 10.0 seconds N. and long. 87 degrees 57 minutes 50.9 seconds W.; UTM Zone 16S 0416457E 4311980N; NAD 83:

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) fine sandy loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; very friable; common very fine roots; common faint very dark grayish brown (10YR 3/2) organic coatings on faces of peds; slightly acid; abrupt smooth boundary.

E—9 to 15 inches; yellowish brown (10YR 5/4) loamy fine sand; weak fine granular structure; very friable; few distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; moderately acid; clear smooth boundary.

Bt—15 to 23 inches; yellowish brown (10YR 5/4) sandy loam; weak medium subangular blocky structure; very friable; few faint clay bridges between sand grains and few faint yellowish red (5YR 5/6) ferriargillans on faces of peds; few fine faint brown (10YR 5/3) and few fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; slightly acid; clear smooth boundary.

BCt—23 to 46 inches; yellowish brown (10YR 5/4) loamy sand; weak fine subangular blocky structure; very friable; few faint clay bridges between sand grains; common prominent yellowish red (5YR 5/6) ferriargillans on faces of peds; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; neutral; clear smooth boundary.

C—46 to 60 inches; light brownish gray (10YR 6/2) sand; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; single grain; loose; neutral.

Range in Characteristics

Depth to the base of the argillic horizon: 30 to 60 inches

Ap or A horizon:
Hue—10YR
Value—4 or 5
Chroma—2 or 3
Texture—fine sandy loam
Content of rock fragments—none
Reaction—very strongly acid to neutral

E horizon (if it occurs):
Hue—10YR
Value—4 to 6
Chroma—3 or 4
Texture—loamy fine sand or fine sandy loam
Content of rock fragments—none
Reaction—very strongly acid to moderately acid

Bt horizon:
Hue—10YR
Value—4 to 6
Chroma—2 to 6
Texture—fine sandy loam, sandy loam, or loam
Content of rock fragments—none
Reaction—very strongly acid to slightly acid

BCt horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—2 to 8

Texture—loamy sand, sandy loam, or loamy fine sand
Content of rock fragments—0 to 5 percent
Reaction—strongly acid to neutral

C horizon:
Hue—10YR or 7.5YR
Value—4 to 6
Chroma—2 to 8
Texture—stratified sand to loam; some pedons contain thin strata of gravel
Content of rock fragments—0 to 10 percent
Reaction—moderately acid to slightly alkaline

184A—Roby fine sandy loam, 0 to 2 percent slopes

Setting

Landform: Outwash terraces and stream terraces
Position on the landform: Footslopes and summits

Map Unit Composition

Roby and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a darker surface layer
- Soils that have more clay in the subsoil
- Soils that are subject to very rare flooding

Dissimilar soils:
- The well drained Ridgway and Alvin soils on the higher parts of terraces in positions above those of the Roby soil
- Soils that are subject to more than very rare flooding; at an elevation below 460 feet along the Embarras and Wabash Rivers
- The poorly drained Ruark soils in depressions
- The poorly drained Westland soils in swales

Properties and Qualities of the Roby Soil

Parent material: Outwash
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Moderately rapid
Permeability below a depth of 60 inches: Moderately rapid or rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 6.2 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 1.0 percent
Shrink-swell potential: Low
Depth and months of highest apparent seasonal high water table: 1 foot, January to May
Ponding: None
Flooding: None
Potential for frost action: Moderate
Hazard of corrosion: Moderate for steel and concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Moderately high

Interpretive Groups

Land capability classification: 2s
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

Ruark Series

Taxonomic classification: Fine-loamy, mixed, active, mesic Typic Endoaqualfs

Typical Pedon

Ruark fine sandy loam, 0 to 2 percent slopes, in a cultivated field, at an elevation of 538 feet above mean sea level; Crawford County, Illinois; 130 feet north and 1,190 feet east of the southwest corner of sec. 14, T. 8 N., R. 14 W.; USGS Moriah, Illinois, topographic quadrangle; lat. 39 degrees 07 minutes 48.2 seconds N. and long. 87 degrees 56 minutes 42.8 seconds W.; UTM Zone 16S 0418301E 4331635N; NAD 83:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) fine sandy loam, pale brown (10YR 6/3) dry; moderate fine and medium granular structure; friable; many very fine roots; common fine and medium rounded masses of iron and manganese accumulation; neutral; abrupt smooth boundary.

Eg—8 to 16 inches; light brownish gray (10YR 6/2) fine sandy loam; weak thin and medium platy structure; friable; few very fine roots; common fine and medium rounded masses of iron-manganese accumulation and many medium faint brown (10YR 5/3) and few fine prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine faint grayish brown (10YR 5/2) iron depletions in the matrix; neutral; clear smooth boundary.

Btg1—16 to 21 inches; light brownish gray (10YR 6/2) sandy clay loam; weak medium subangular blocky structure; friable; common very fine roots; common faint grayish brown (10YR 5/2) clay films on faces of peds; common fine and medium rounded masses of iron-manganese accumulation and common medium faint brown (10YR 5/3) and common fine prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; very strongly acid; abrupt smooth boundary.

Btg2—21 to 34 inches; gray (10YR 6/1) loam; moderate medium prismatic structure parting to moderate medium subangular blocky; friable; common very fine and few fine roots; common faint gray (10YR 5/1) clay films on faces of peds; common fine and medium rounded masses of iron-manganese accumulation and common medium prominent dark yellowish brown (10YR 4/6) and few fine prominent yellowish brown (10YR 5/8) masses of iron accumulation in the matrix; very strongly acid; gradual smooth boundary.

Cg—34 to 60 inches; gray (10YR 6/1) fine sandy loam; massive; friable; common very fine roots; common fine and medium and few coarse rounded masses of iron-manganese accumulation, common medium prominent dark yellowish brown (10YR 4/6) masses of iron and manganese accumulation, and many medium faint grayish brown (10YR 5/2) iron depletions in the matrix; slightly acid.

Range in Characteristics

Depth to the base of the argillic horizon: 30 to 50 inches

Ap or A horizon:
Hue—10YR
Value—3 to 5
Chroma—1 or 2
Texture—fine sandy loam

Content of rock fragments—none
Reaction—very strongly acid to neutral

Eg horizon (if it occurs):
Hue—10YR or 2.5Y
Value—5 to 7
Chroma—1 or 2
Texture—fine sandy loam
Content of rock fragments—none
Reaction—very strongly acid to neutral

Btg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—sandy clay loam, clay loam, or loam
Content of rock fragments—none
Reaction—very strongly acid to moderately acid

Cg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—fine sandy loam, sandy loam, or sandy clay loam with thin strata of loamy sand or sand
Content of rock fragments—0 to 5 percent
Reaction—moderately acid to slightly alkaline

178A—Ruark fine sandy loam, 0 to 2 percent slopes

Setting

Landform: Stream terraces
Position on the landform: Summits

Map Unit Composition

Ruark and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Westland soils in landscape positions similar to those of the Ruark soil
- Soils that have less sand in the subsoil
- Soils that have more gravel in the subsoil
- Soils that are subject to very rare flooding

Dissimilar soils:
- Soils that are subject to more than very rare flooding; at an elevation below 460 feet along the Embarras and Wabash Rivers
- The somewhat poorly drained Roby soils in positions on slopes above those of the Ruark soil

Properties and Qualities of the Ruark Soil

Parent material: Loamy alluvium and/or outwash
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Moderate

Permeability below a depth of 60 inches: Moderate or moderately rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 8.0 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 1.0 percent
Shrink-swell potential: Low
Depth and months of highest apparent seasonal high water table: At the surface, January to May
Frequency and duration of ponding: Frequent, brief (January, February, March, April, May)
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Moderately high

Interpretive Groups

Land capability classification: 2w
Prime farmland category: Prime farmland where drained
Hydric soil status: Hydric

Shiloh Series

Taxonomic classification: Fine, smectitic, mesic Cumulic Vertic Endoaquolls

Typical Pedon

Shiloh silty clay loam, 0 to 2 percent slopes, in a slight depression in a cultivated field, at an elevation of 619 feet above mean sea level; Effingham County, Illinois; 1,580 feet north and 50 feet east of the southwest corner of sec. 11, T. 8 N., R. 4 E.; USGS Shumway, Illinois, topographic quadrangle; lat. 39 degrees 09 minutes 06.4 seconds N. and long. 88 degrees 43 minutes 43.5 seconds W.; UTM Zone 16S 0350621E 4335042N; NAD 83:

Ap—0 to 7 inches; very dark gray (10YR 3/1) silty clay loam, gray (10YR 5/1) dry; weak medium granular and angular blocky structure; firm; common very fine and few fine roots throughout; common very fine tubular pores; slightly acid; abrupt smooth boundary.

A—7 to 19 inches; black (10YR 2/1) silty clay loam, dark gray (10YR 4/1) dry; moderate very fine angular blocky structure; firm; common very fine and few fine roots throughout; common very fine tubular pores; slightly acid; gradual smooth boundary.

BA—19 to 35 inches; black (10YR 2/1) silty clay, dark gray (10YR 4/1) dry; strong fine angular blocky structure; very firm; common very fine and few fine roots throughout; common very fine tubular pores; many distinct black (N 2.5/) pressure faces on faces of peds; slightly acid; gradual smooth boundary.

Bg1—35 to 48 inches; very dark gray (N 3/) silty clay, gray (N 5/) dry; strong fine angular blocky structure; very firm; common very fine roots throughout; common very fine tubular pores; common prominent black (10YR 2/1) pressure faces on faces of peds; few fine prominent light olive brown (2.5Y 5/6) masses of iron accumulation on faces of peds and in the matrix; slightly acid; clear smooth boundary.

Bg2—48 to 60 inches; dark gray (5Y 4/1) silty clay loam; weak and moderate medium subangular blocky structure; very firm; common very fine roots throughout; common very fine tubular pores; common fine prominent light olive brown (2.5Y 5/6) and few fine prominent yellowish brown (10YR 5/8) masses of iron accumulation on faces of peds and in the matrix; common medium prominent black (10YR 2/1) masses of manganese accumulation in the matrix; slightly acid; clear smooth boundary.

Btg—60 to 68 inches; gray (10YR 6/1) silty clay loam; weak medium subangular blocky structure; firm; common very fine roots throughout; common very fine tubular pores; few faint dark gray (2.5Y 4/1) clay films on faces of peds and common distinct dark gray (2.5Y 4/1) clay films on surfaces lining root channels and pores; few fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation on faces of peds and in the matrix; slightly acid; abrupt smooth boundary.

2Ab—68 to 79 inches; very dark gray (2.5Y 3/1) silty clay loam; weak coarse subangular blocky structure; firm; few very fine roots throughout; common very fine tubular pores; common distinct very dark gray (2.5Y 3/1) organo-clay films on surfaces lining root channels and pores; about 2 percent fine subangular rock fragments; slightly acid; clear smooth boundary.

2Btgb—79 to 86 inches; gray (10YR 6/1) clay; moderate medium prismatic structure parting to moderate medium angular blocky; very firm; common very fine tubular pores; common distinct very dark gray (2.5Y 3/1) organo-clay films on faces of peds and many distinct very dark gray (2.5Y 3/1) organo-clay films on surfaces lining root channels and pores; few fine prominent yellowish brown (10YR 5/6) masses of iron accumulation on faces of peds and in the matrix; about 2 percent fine subangular rock fragments; slightly acid.

Range in Characteristics

Thickness of the mollic epipedon: 24 to 48 inches
Depth to carbonates: More than 39 inches
Depth to the base of the cambic horizon: More than 40 inches
Content of rock fragments: Less than 2 percent in the upper 40 inches

Ap or A horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—2 or 3
Chroma—0 to 2
Texture—silty clay loam
Content of rock fragments—none
Reaction—slightly acid or neutral

Bg, Btg, and BA horizons:
Hue—10YR, 2.5Y, 5Y, or N
Value—2 to 6
Chroma—0 to 2
Texture—silty clay or silty clay loam
Content of rock fragments—none
Reaction—slightly acid or neutral

BCg or Cg horizon (if it occurs):
Hue—10YR, 2.5Y, 5Y, or N
Value—3 to 6
Chroma—0 to 2
Texture—silty clay loam, silty clay, or silt loam
Content of rock fragments—none
Reaction—slightly acid to slightly alkaline

2Ab or 2Btgb horizon (if it occurs):
Hue—10YR, 2.5Y, 5Y, or N
Value—3 to 6

Chroma—0 to 2
Texture—clay loam, clay, silty clay, or silty clay loam
Content of rock fragments—0 to 5 percent
Reaction—slightly acid to slightly alkaline

138A—Shiloh silty clay loam, 0 to 2 percent slopes

Setting

Landform: Depressions on till plains

Map Unit Composition

Shiloh and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have less clay in the subsoil and a thinner surface layer
- Soils that are subject to more than very rare flooding; at an elevation below 460 feet along the Embarras and Wabash Rivers

Dissimilar soils:
- The somewhat poorly drained Darmstadt and Hoyleton soils on slight rises

Properties and Qualities of the Shiloh Soil

Parent material: Loess or silty and clayey colluvium over accretion gley and/or loamy till
Drainage class: Very poorly drained
Slowest permeability within a depth of 40 inches: Moderately slow
Permeability below a depth of 60 inches: Slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 4.0 to 6.0 percent
Shrink-swell potential: High
Depth and months of highest apparent seasonal high water table: At the surface, January to June
Frequency and duration of ponding: Frequent, brief (January to June)
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and low for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w
Prime farmland category: Prime farmland where drained
Hydric soil status: Hydric

Shoals Series

Taxonomic classification: Fine-loamy, mixed, superactive, nonacid, mesic Fluventic Endoaquepts

Typical Pedon

Shoals silt loam, 0 to 2 percent slopes, frequently flooded, in a nearly level area in a cultivated field, at an elevation of 567 feet above mean sea level; Edgar County, Illinois; 600 feet north and 250 feet east of the southwest corner of sec. 10, T. 12 N., R. 11 W.; USGS Marshall, Illinois, topographic quadrangle; lat. 39 degrees 29 minutes 34.1 seconds N. and long. 87 degrees 37 minutes 42.0 seconds W.; UTM Zone 16S 0445971E 4371656N; NAD 83:

Ap—0 to 8 inches; brown (10YR 4/3) silt loam, light yellowish brown (10YR 6/4) dry; moderate fine granular structure; friable; many very fine roots; neutral; clear smooth boundary.

Bw—8 to 17 inches; brown (10YR 4/3) silt loam; weak coarse subangular blocky structure parting to moderate thin and medium platy; friable; common very fine roots; many medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common fine irregular and rounded black (10YR 2/1) weakly cemented manganese oxide nodules throughout; neutral; gradual wavy boundary.

Bg—17 to 37 inches; grayish brown (10YR 5/2) silt loam; weak coarse prismatic structure; friable; few very fine roots; few faint brown (10YR 4/3) organic coatings in root channels and pores; many fine prominent strong brown (7.5YR 4/6) masses of iron accumulation and few fine faint brown (10YR 5/3) masses of iron-manganese accumulation in the matrix; few fine irregular and rounded black (10YR 2/1) weakly cemented manganese oxide nodules throughout; neutral; gradual wavy boundary.

Cg—37 to 60 inches; gray (10YR 6/1) loam; massive; friable; few very fine roots; common medium distinct brown (10YR 5/3) masses of iron-manganese accumulation and few medium prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; common fine irregular and rounded black (10YR 2/1) weakly cemented manganese oxide nodules throughout; neutral.

Range in Characteristics

Depth to the base of the cambic horizon: 20 to 60 inches
Depth to carbonates: More than 20 inches

Ap or A horizon:
Hue—10YR
Value—4 or 5
Chroma—2 or 3
Texture—silt loam
Content of rock fragments—0 to 3 percent
Reaction—neutral or slightly alkaline

Bw and Bg horizons:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—loam or silt loam; less commonly fine sandy loam, sandy loam, clay loam, sandy clay loam, or silty clay loam
Content of rock fragments—0 to 3 percent
Reaction—neutral or slightly alkaline

Cg horizon:
Hue—10YR or 2.5Y
Value—5 or 6

Chroma—1 to 6
Texture—commonly stratified with loam, silt loam, sandy loam, fine sandy loam, or clay loam
Content of rock fragments—0 to 14 percent
Reaction—neutral or slightly alkaline

3424A—Shoals silt loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Flood-plain steps

Map Unit Composition

Shoals and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have less sand in the substratum
- Soils that have less clay in the substratum
- The poorly drained Birds soils in the lower positions on the flood plain
- Soils that are subject to occasional flooding
- Soils that have bedrock at a depth of 60 to 80 inches

Dissimilar soils:
- Soils that have bedrock at a depth of less than 60 inches
- The well drained Ridgway soils in the higher positions
- The poorly drained Birds soils on flood plains

Properties and Qualities of the Shoals Soil

Parent material: Loamy alluvium
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 9.4 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Low
Depth and months of highest apparent seasonal high water table: 0.5 foot, January to May
Ponding: None
Frequency and most likely period of flooding: Frequent, November to June
Potential for frost action: High
Hazard of corrosion: High for steel and low for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w
Prime farmland category: Prime farmland where drained and either protected from flooding or not frequently flooded during the growing season
Hydric soil status: Not hydric

Stockland Series

Taxonomic classification: Loamy-skeletal, mixed, superactive, mesic Pachic Hapludolls

Typical Pedon

Stockland gravelly sandy loam, 0 to 2 percent slopes, rarely flooded, on a slope of 1 percent in a cultivated field, at an elevation of 458 feet above mean sea level; Clark County, Illinois; 1,350 feet north and 560 feet east of the southwest corner of sec. 27, T. 10 N., R. 11 W.; USGS Snyder, Illinois, topographic quadrangle; lat. 39 degrees 16 minutes 39.3 seconds N. and long. 87 degrees 37 minutes 36.5 seconds W.; UTM Zone 16S 0445936E 4347559N; NAD 27:

Ap—0 to 8 inches; very dark gray (10YR 3/1) gravelly sandy loam, dark gray (10YR 4/1) dry; moderate fine granular structure; very friable; few very fine roots throughout; few very fine tubular pores; very many faint very dark gray (10YR 3/1) organic coatings on faces of peds; about 15 percent rounded rock fragments less than 3 inches in diameter; moderately acid; clear smooth boundary.

A—8 to 14 inches; very dark gray (10YR 3/1) gravelly coarse sandy loam, dark grayish brown (10YR 4/2) dry; moderate fine and very fine granular structure; very friable; few very fine roots throughout; few very fine tubular pores; very many faint very dark gray (10YR 3/1) organic coatings on faces of peds; about 20 percent rounded rock fragments less than 3 inches in diameter; moderately acid; clear smooth boundary.

BAt—14 to 24 inches; very dark gray (10YR 3/1) very gravelly coarse sandy loam, dark grayish brown (10YR 4/2) dry; moderate fine granular structure; friable; common very fine roots throughout; few very fine tubular pores; common faint very dark gray (10YR 3/1) organic coatings on faces of peds and many distinct continuous very dark gray (10YR 3/1) organo-clay bridges between sand grains; about 45 percent rounded rock fragments less than 3 inches in diameter; moderately acid; clear wavy boundary.

Bt1—24 to 32 inches; dark brown (10YR 3/3) very gravelly coarse sandy loam; weak medium subangular blocky structure parting to moderate fine granular; friable; few very fine roots throughout; few very fine tubular pores; very many distinct dark brown (10YR 3/3) organo-clay bridges between sand grains; about 50 percent rounded rock fragments less than 3 inches in diameter; moderately acid; gradual wavy boundary.

Bt2—32 to 44 inches; dark brown (7.5YR 3/3) very gravelly coarse sandy loam; weak coarse subangular blocky structure; very friable; many fine interstitial pores; very many distinct dark brown (7.5YR 3/3) organo-clay bridges between sand grains; about 50 percent rounded rock fragments less than 3 inches in diameter; slightly acid; gradual wavy boundary.

BCt—44 to 60 inches; dark brown (7.5YR 3/3) very gravelly loamy coarse sand; weak medium granular structure; very friable; many very fine and fine interstitial pores; common distinct dark brown (7.5YR 3/3) organo-clay films on top surfaces of rock fragments; common distinct dark brown (7.5YR 3/3) organo-clay bridges between sand grains; about 50 percent rounded rock fragments less than 3 inches in diameter; slightly acid; clear wavy boundary.

C—60 to 80 inches; brown (10YR 5/3) very gravelly coarse sand; single grain; loose; many very fine and fine interstitial pores; very few faint brown (7.5YR 4/3) organo-clay bridges between sand grains; about 55 percent rounded rock fragments less than 3 inches in diameter; strongly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 20 to 34 inches
Depth to carbonates: More than 30 inches

Depth to the base of the cambic horizon: More than 30 inches
Content of clay in the particle-size control section: 12 to 18 percent; ranges from 10 to 22 percent in individual subhorizons

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—gravelly sandy loam
Content of rock fragments—15 to 35 percent
Reaction—strongly acid to neutral

BA horizon:
Hue—10YR or 7.5YR
Value—2 or 3
Chroma—1 to 3
Texture of the fine-earth fraction—the gravelly or very gravelly analogs of loam, sandy loam, or coarse sandy loam
Content of rock fragments—15 to 50 percent
Reaction—strongly acid to neutral

Bt horizon:
Hue—10YR, 7.5YR, or 5YR
Value—3 to 5
Chroma—2 to 4
Texture—the gravelly or very gravelly analogs of coarse sandy loam or sandy loam
Content of rock fragments—35 to 50 percent; ranges from 15 to 60 percent in individual subhorizons
Reaction—very strongly acid to neutral

C horizon:
Hue—10YR or 7.5YR
Value—5 or 6
Chroma—3 to 6
Texture—the gravelly or very gravelly analogs of coarse sand or loamy coarse sand
Content of rock fragments—25 to 60 percent
Reaction—slightly alkaline or moderately alkaline

7155A—Stockland gravelly sandy loam, 0 to 2 percent slopes, rarely flooded

Setting

Landform: Stream terraces and outwash terraces
Position on the landform: Summits

Map Unit Composition

Stockland and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Carmi soils in landscape positions similar to those of the Stockland soil
- Soils that are subject to occasional flooding

Dissimilar soils:
- Soils that are subject to frequent flooding
- The poorly drained Westland soils in swales
- The poorly drained Darwin soils on flood plains
- The somewhat poorly drained Roby soils on terrace treads in positions above those of the Stockland soil

Properties and Qualities of the Stockland Soil

Parent material: Gravelly outwash
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderately rapid
Permeability below a depth of 60 inches: Rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 6.2 inches to a depth of 60 inches
Content of organic matter in the surface layer: 2.0 to 5.0 percent
Shrink-swell potential: Low
Ponding: None
Frequency and most likely period of flooding: Rare, November to June
Potential for frost action: Moderate
Hazard of corrosion: Low for steel and moderate for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3s
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

7155B—Stockland gravelly sandy loam, 2 to 5 percent slopes, rarely flooded

Setting

Landform: Stream terraces and outwash terraces
Position on the landform: Shoulders

Map Unit Composition

Stockland and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Carmi soils in landscape positions similar to those of the Stockland soil
- Soils that are subject to occasional flooding
- Soils that are moderately eroded and have a thinner surface layer

Dissimilar soils:
- Soils that are subject to frequent flooding
- The poorly drained Westland soils in swales
- The poorly drained Darwin soils on flood plains
- The somewhat poorly drained Roby soils on terrace treads in positions above those of the Stockland soil

Properties and Qualities of the Stockland Soil

Parent material: Gravelly outwash
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderately rapid
Permeability below a depth of 60 inches: Moderately rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 5.9 inches to a depth of 60 inches
Content of organic matter in the surface layer: 2.0 to 5.0 percent
Shrink-swell potential: Low
Ponding: None
Frequency and most likely period of flooding: Rare, November to June
Potential for frost action: Moderate
Hazard of corrosion: Low for steel and moderate for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3s
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

7155C—Stockland gravelly sandy loam, 5 to 10 percent slopes, rarely flooded

Setting

Landform: Outwash terraces and stream terraces
Position on the landform: Backslopes

Map Unit Composition

Stockland and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Carmi soils in landscape positions similar to those of the Stockland soil
- Soils that are moderately eroded and have a thinner surface layer
- Soils that are subject to occasional flooding

Dissimilar soils:
- Soils that are subject to frequent flooding
- The somewhat poorly drained Roby soils on terrace treads in positions above those of the Stockland soil
- The poorly drained Westland soils in swales
- The poorly drained Darwin soils on flood plains

Properties and Qualities of the Stockland Soil

Parent material: Gravelly outwash
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderately rapid
Permeability below a depth of 60 inches: Moderately rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 8.2 inches to a depth of 60 inches
Content of organic matter in the surface layer: 2.0 to 5.0 percent

Shrink-swell potential: Low
Ponding: None
Frequency and most likely period of flooding: Rare, November to June
Potential for frost action: Moderate
Hazard of corrosion: Low for steel and moderate for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

Stonelick Series

Taxonomic classification: Coarse-loamy, mixed, superactive, calcareous, mesic Typic Udifluvents

Typical Pedon

Stonelick loam, 0 to 2 percent slopes, frequently flooded, in a nearly level area in a cultivated field, at an elevation of 435 feet above mean sea level; Crawford County, Illinois; 255 feet south and 300 feet west of the northeast corner of sec. 13, T. 7 N., R. 11 W.; USGS Merom, Illinois, topographic quadrangle; lat. 39 degrees 03 minutes 23.3 seconds N. and long. 87 degrees 34 minutes 29.6 seconds W.; UTM Zone 16S 0450258E 4322992N; NAD 27:

Ap—0 to 14 inches; dark grayish brown (10YR 4/2) loam, pale brown (10YR 6/3) dry; weak fine granular structure; very friable; common very fine roots; slightly effervescent; slightly alkaline; clear smooth boundary.
C1—14 to 25 inches; dark grayish brown (10YR 4/2) loam; moderate fine subangular blocky structure; friable; many very fine roots; slightly effervescent; slightly alkaline; clear smooth boundary.
C2—25 to 33 inches; brown (10YR 4/3) fine sandy loam; weak fine subangular blocky structure; very friable; common very fine roots; slightly effervescent; slightly alkaline; gradual smooth boundary.
C3—33 to 47 inches; yellowish brown (10YR 5/4) loamy fine sand; single grain; loose; common very fine roots; slightly effervescent; slightly alkaline; gradual smooth boundary.
C4—47 to 55 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak fine subangular blocky structure; very friable; common very fine roots; slightly effervescent; slightly alkaline; clear smooth boundary.
C5—55 to 60 inches; brown (10YR 4/3) silt loam; moderate fine subangular blocky structure; friable; common very fine roots; slightly effervescent; slightly alkaline.

Range in Characteristics

Carbonates: Throughout the profile

Ap or A horizon:
Hue—10YR
Value—3 to 5
Chroma—1 to 4
Texture—loam
Content of rock fragments—0 to 5 percent
Reaction—slightly alkaline or moderately alkaline

C horizon:
Hue—7.5YR or 10YR
Value—4 to 6
Chroma—2 to 4
Texture—stratified silt loam, loam, sandy loam, fine sandy loam, sand, or loamy fine sand
Content of rock fragments—0 to 10 percent
Reaction—slightly alkaline or moderately alkaline

3665A—Stonelick loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Flood-plain steps

Map Unit Composition

Stonelick and similar soils: 85 percent
Dissimilar soils: 15 percent

Soils of Minor Extent

Similar soils:
- Soils that have a surface layer of fine sandy loam
- Soils that contain less sand in the substratum
- Soils that contain more clay in the substratum
- Soils that do not have carbonates in the substratum
- Soils that are subject to occasional flooding
- Soils that have bedrock at a depth of 60 to 80 inches

Dissimilar soils:
- Soils that have bedrock at a depth of less than 60 inches
- The poorly drained Beaucoup soils on toeslopes
- The somewhat poorly drained Tice soils on terrace treads in positions above those of the Stonelick soil

Properties and Qualities of the Stonelick Soil

Parent material: Calcareous loamy alluvium
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderately rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 11.9 inches to a depth of 60 inches
Content of organic matter in the surface layer: 0.5 to 2.5 percent
Shrink-swell potential: Low
Ponding: None
Frequency and most likely period of flooding: Frequent, November to June
Potential for frost action: Moderate
Hazard of corrosion: Low for steel and concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w

Prime farmland category: Prime farmland where protected from flooding or not frequently flooded during the growing season
Hydric soil status: Not hydric

Stoy Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Fragiaquic Hapludalfs

Typical Pedon

Stoy silt loam, 2 to 5 percent slopes, on a slope of 3 percent in a cultivated field, at an elevation of 389 feet above mean sea level; Gallatin County, Illinois; 1,320 feet east of the southwest corner of sec. 28, T. 7 S., R. 8 E.; USGS Norris City, Illinois, topographic quadrangle; lat. 37 degrees 52 minutes 45 seconds N. and long. 88 degrees 19 minutes 58 seconds W.; UTM Zone 16S 0382800E 4193036N; NAD 27:

Ap—0 to 6 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable; many roots; few fine iron-manganese oxide concretions throughout; very strongly acid; abrupt smooth boundary.

E1—6 to 9 inches; mixed light yellowish brown (10YR 6/4) and yellowish brown (10YR 5/4) silt loam; weak thin platy structure parting to weak fine granular; friable; common roots; common fine very dark grayish brown (10YR 3/2) manganese masses throughout; many fine iron-manganese oxide concretions throughout; few medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; very strongly acid; clear smooth boundary.

E2—9 to 13 inches; yellowish brown (10YR 5/4) silt loam; weak fine and medium granular structure; friable; common roots; many fine iron-manganese oxide concretions throughout; common medium distinct light brownish gray (10YR 6/2) iron depletions and common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; very strongly acid; clear smooth boundary.

BE—13 to 16 inches; yellowish brown (10YR 5/6) silty clay loam; weak fine and medium subangular blocky structure; friable; common roots; many fine iron-manganese oxide concretions throughout; few medium prominent light brownish gray (10YR 6/2) iron depletions in the matrix; very strongly acid; clear smooth boundary.

Bt1—16 to 24 inches; yellowish brown (10YR 5/8) silty clay loam; moderate fine subangular blocky structure; firm; common roots; many fine iron-manganese oxide concretions throughout; common prominent light brownish gray (10YR 6/2) clay depletions on faces of peds; few fine prominent light brownish gray (10YR 6/2) and brown (10YR 5/3) iron depletions in the matrix; very strongly acid; clear smooth boundary.

Bt2—24 to 27 inches; yellowish brown (10YR 5/8 and 5/4) silty clay loam; moderate coarse subangular blocky structure parting to moderate fine and very fine angular blocky; firm; common roots; many prominent light brownish gray (10YR 6/2) clay depletions on faces of the larger peds and many prominent brown (10YR 4/3) clay films on faces of the smaller angular peds; many medium concretions of iron and manganese oxides throughout; few fine prominent light gray (10YR 7/1) iron depletions in the matrix; many black (10YR 2/1) manganese specks and streaks; very strongly acid; clear smooth boundary.

Bt3—27 to 32 inches; yellowish brown (10YR 5/8 and 5/4) silty clay loam; moderate medium subangular blocky structure; very firm; common roots; continuous brown (10YR 4/3) clay films on faces of peds; many fine iron-manganese oxide concretions throughout; few fine prominent light gray (10YR 7/1) and light brownish gray (10YR 6/2) iron depletions in the matrix; some splotches of black

(10YR 2/1) manganese stains or streaks; very strongly acid; gradual smooth boundary.

Btx1—32 to 36 inches; mottled grayish brown (10YR 5/2), brown (10YR 5/3), and yellowish brown (10YR 5/8) silty clay loam; weak coarse subangular blocky structure; firm; common roots; common brown (10YR 4/3) clay films; many fine iron-manganese oxide concretions throughout; 35 percent brittle; few fine distinct light gray (10YR 7/1) iron depletions in the matrix; very strongly acid; gradual smooth boundary.

Btx2—36 to 45 inches; mottled grayish brown (10YR 5/2), brown (10YR 5/3), and yellowish brown (10YR 5/8) silty clay loam; weak coarse prismatic structure; extremely firm; few roots; few brown (10YR 4/3) clay films; many fine concretions of iron and manganese oxides throughout; 35 percent brittle; common fine and medium distinct light gray (10YR 7/1) iron depletions in the matrix; very strongly acid; gradual smooth boundary.

BCx—45 to 65 inches; mottled grayish brown (10YR 5/2), pale brown (10YR 6/3), yellowish brown (10YR 5/8), and light gray (10YR 7/1) silt loam; weak medium prismatic structure; extremely firm; many fine iron-manganese oxide concretions; 30 percent brittle; few very dark grayish brown (10YR 3/2) manganese specks and splotches; very strongly acid.

Range in Characteristics

Thickness of the loess: More than 60 inches
Depth to the base of the argillic horizon: 35 to 65 inches
Depth to the top of the fragic layer: 25 to 45 inches

Ap or A horizon:
Hue—10YR
Value—4 or 5
Chroma—2 or 3
Texture—silt loam
Content of rock fragments—none
Reaction—very strongly acid to neutral

E or BE horizon (if it occurs):
Hue—10YR
Value—5 or 6
Chroma—3 or 4
Texture—silt loam
Content of rock fragments—none
Reaction—very strongly acid to slightly acid

Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 8
Texture—silty clay loam
Content of rock fragments—none
Reaction—very strongly acid or strongly acid

Btx horizon:
Hue—10YR
Value—5 or 6
Chroma—2 to 8
Texture—silty clay loam or silt loam

Content of rock fragments—none
Reaction—very strongly acid to moderately acid

Cx horizon:
Hue—10YR
Value—5 to 7
Chroma—1 to 8
Texture—silt loam
Content of rock fragments—none
Reaction—very strongly acid to neutral

164A—Stoy silt loam, 0 to 2 percent slopes

Setting

Landform: Interfluves on till plains
Position on the landform: Summits

Map Unit Composition

Stoy and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a darker surface layer
- Soils that have more sand in the lower part of the subsoil

Dissimilar soils:
- The poorly drained Cowden and Virden soils on toeslopes and in swales
- The poorly drained Pierron soils in depressions and swales

Properties and Qualities of the Stoy Soil

Parent material: Loess
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Slow
Depth to restrictive feature: 25 to 45 inches to a fragipan
Available water capacity: About 10.6 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Depth and months of highest perched seasonal high water table: 1 foot, January to May
Ponding: None
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 1
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

164B—Stoy silt loam, 2 to 5 percent slopes

Setting

Landform: Interfluves on till plains
Position on the landform: Summits

Map Unit Composition

Stoy and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that are eroded and have a thinner surface layer

Dissimilar soils:
- The moderately well drained Hosmer soils in the more sloping areas in positions above those of the Stoy soil
- The poorly drained Cowden and Virden soils on toeslopes and in swales
- The poorly drained Pierron soils in depressions and swales

Properties and Qualities of the Stoy Soil

Parent material: Loess
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Slow
Depth to restrictive feature: 25 to 45 inches to a fragipan
Available water capacity: About 10.6 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: Moderate
Depth and months of highest perched seasonal high water table: 1 foot, January to May
Ponding: None
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and concrete
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2e
Prime farmland category: Prime farmland
Hydric soil status: Not hydric

Tice Series

Taxonomic classification: Fine-silty, mixed, superactive, mesic Fluvaquentic Hapludolls

Typical Pedon

Tice silty clay loam, 0 to 2 percent slopes, frequently flooded, in a nearly level area in a cultivated field, at an elevation of 525 feet above mean sea level; Shelby County, Illinois; 1,425 feet south and 1,200 feet west of the northeast corner of sec. 25, T. 10 N., R. 3 E.; USGS Fancher, Illinois, topographic quadrangle; lat. 39 degrees 17 minutes 06.4 seconds N. and long. 88 degrees 48 minutes 35.4 seconds W.; UTM Zone 16S 0343905E 4349769N; NAD 27:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; weak medium angular blocky structure parting to weak fine granular; firm; few very fine roots; few fine rounded iron-manganese concretions; neutral; abrupt smooth boundary.

A—8 to 19 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; weak medium prismatic structure parting to weak medium granular; firm; few very fine roots; common distinct very dark gray (10YR 3/1) organic coatings on faces of peds; common fine faint rounded manganese concretions; neutral; clear smooth boundary.

Bg1—19 to 29 inches; dark grayish brown (10YR 4/2) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine and fine roots; common distinct very dark gray (10YR 3/1) organic coatings on faces of peds; few fine prominent dark yellowish brown (10YR 3/6) and yellowish brown (10YR 5/6) masses of iron accumulation and common fine distinct rounded manganese concretions; neutral; gradual smooth boundary.

Bg2—29 to 44 inches; dark grayish brown (10YR 4/2) silty clay loam; moderate medium subangular blocky structure; firm; few very fine roots; many distinct dark gray (10YR 4/1) and few distinct very dark gray (10YR 3/1) organic coatings on faces of peds; common fine prominent dark yellowish brown (10YR 4/6) masses of iron and manganese accumulation and common medium and few fine distinct rounded manganese concretions; neutral; clear smooth boundary.

BCg—44 to 60 inches; dark grayish brown (10YR 4/2) silty clay loam; weak coarse subangular blocky structure; firm; common distinct dark gray (10YR 4/1) and few distinct very dark gray (10YR 3/1) organic coatings on faces of peds; common fine distinct dark yellowish brown (10YR 4/4) masses of iron and manganese accumulation and common medium distinct rounded manganese concretions; very dark gray (10YR 3/1) krotovina in the lower 3 inches; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 24 inches
Depth to carbonates: More than 60 inches
Depth to the base of the cambic horizon: More than 30 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silty clay loam
Content of rock fragments—none
Reaction—slightly acid or neutral

Bw or Bg horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

BC or BCg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 or 5
Chroma—1 to 4
Texture—silty clay loam or silt loam; thin strata of loam, clay loam, or sandy loam in some pedons

Content of rock fragments—none
Reaction—moderately acid to neutral

C or Cg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 to 3
Texture—stratified silty clay loam, clay loam, loam, sandy loam, or silt loam
Content of rock fragments—none
Reaction—moderately acid to slightly alkaline

3284A—Tice silty clay loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Flood-plain steps

Map Unit Composition

Tice and similar soils: 85 percent
Dissimilar soils: 15 percent

Soils of Minor Extent

Similar soils:
- Soils that have more sand and gravel in the subsoil
- Soils that have less clay in the subsoil
- Poorly drained soils in the lower positions on the flood plain
- Soils that are subject to less than frequent flooding
- Soils that have bedrock at a depth of 60 to 80 inches

Dissimilar soils:
- Soils that have bedrock at a depth of less than 60 inches
- The well drained Armiesburg and Stonelick soils in the higher positions on the flood plain
- The poorly drained Beaucoup soils in swales

Properties and Qualities of the Tice Soil

Parent material: Silty alluvium
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 10.0 inches to a depth of 60 inches
Content of organic matter in the surface layer: 3.5 to 5.0 percent
Shrink-swell potential: Moderate
Depth and months of highest apparent seasonal high water table: 1 foot, January to May
Ponding: None
Frequency and most likely period of flooding: Frequent, November to June
Potential for frost action: High
Hazard of corrosion: High for steel and low for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w
Prime farmland category: Prime farmland where protected from flooding or not frequently flooded during the growing season
Hydric soil status: Not hydric

Vanmeter Series

Taxonomic classification: Fine, illitic, mesic Oxyaquic Eutrudepts
Taxadjunct features: The Vanmeter soils in this survey area have a seasonal water table at a slightly higher depth than is defined as the range for the series. These soils are classified as fine, illitic, mesic Aquic Eutrudepts.

Typical Pedon

Vanmeter silty clay loam, 5 to 10 percent slopes, eroded, on a slope of 6 percent in a cultivated field, at an elevation of 460 feet above mean sea level; Crawford County, Illinois; 550 feet north and 1,200 feet east of the southwest corner of sec. 20, T. 5 N., R. 10 W.; USGS Russellville, Illinois, topographic quadrangle; lat. 38 degrees 51 minutes 14.1 seconds N. and long. 87 degrees 33 minutes 11.3 seconds W.; UTM Zone 16S 0452003E 4300503N; NAD 27:

Ap—0 to 9 inches; brown (10YR 5/3) silty clay loam, very pale brown (10YR 7/3) dry; weak very fine granular structure; friable; many very fine and few fine roots; common fine rounded masses of iron and manganese accumulation; about 2 percent channers; slightly acid; abrupt smooth boundary.
E—9 to 14 inches; brownish yellow (10YR 6/6) silty clay loam; weak medium platy structure; friable; common very fine roots; common fine distinct pale brown (10YR 6/3) iron depletions, common fine distinct strong brown (7.5YR 5/8) masses of iron accumulation, and common fine rounded masses of iron and manganese accumulation; about 1 percent channers; slightly acid; clear smooth boundary.
Bt—14 to 21 inches; yellowish brown (10YR 5/6) silty clay; moderate fine subangular blocky structure; firm; common very fine roots; few distinct brown (10YR 5/3) clay films on faces of peds; many fine distinct strong brown (7.5YR 5/8) masses of iron accumulation, many fine prominent light brownish gray (10YR 6/2) iron depletions, and few fine rounded masses of iron and manganese accumulation; about 1 percent channers; slightly acid; gradual smooth boundary.
Btg—21 to 27 inches; light brownish gray (10YR 6/2) silty clay; weak medium prismatic structure; firm; few very fine roots between peds and few fine roots throughout; few distinct brown (10YR 5/3) clay films on faces of peds; few fine prominent strong brown (7.5YR 5/8) masses of iron accumulation and few fine rounded masses of iron and manganese accumulation; about 1 percent channers; slightly alkaline; abrupt smooth boundary.
Crk1—27 to 41 inches; olive gray (5Y 5/2) extremely paraflaggy silty clay loam; massive; very firm; few very fine roots between fragments; few fine rounded masses of iron and manganese accumulation and common fine irregular masses of carbonate accumulation; strongly effervescent; slightly alkaline; clear smooth boundary.
Crk2—41 to 60 inches; olive gray (5Y 4/2) extremely paraflaggy silty clay loam; massive; extremely firm; many coarse horizontal masses of carbonate accumulation; violently effervescent; moderately alkaline.

Range in Characteristics

Thickness of the loess: 0 to 20 inches
Depth to bedrock: 20 to 40 inches

Depth to carbonates: Less than 40 inches
Depth to the base of the cambic horizon: 20 to 40 inches

Ap or A horizon:
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—1 to 3
Texture—silty clay loam
Content of rock fragments—0 to 15 percent
Reaction—moderately acid to neutral

E horizon (if it occurs):
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—silt loam or silty clay loam
Content of rock fragments—0 to 15 percent
Reaction—moderately acid to neutral

Bt and Btg horizons:
Hue—10YR to 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—silty clay loam or silty clay
Content of rock fragments—0 to 15 percent
Reaction—moderately acid to slightly alkaline

Cr horizon:
Hue—10YR, 2.5Y, or 5Y
Value—2 to 8
Chroma—1 to 6
Texture—silty clay loam or clay loam that is extremely flaggy or channery
Content of rock fragments—paralithic channers and flagstones
Reaction—slightly alkaline or moderately alkaline

615C2—Vanmeter silty clay loam, 5 to 10 percent slopes, eroded

Setting

Landform: Hillslopes
Position on the landform: Backslopes and shoulders

Map Unit Composition

Vanmeter and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a surface layer of silt loam or loam
- Soils that formed in residuum derived from sandstone or acid shale; in landscape positions similar to those of the Vanmeter soil

Dissimilar soils:
- Soils that are very deep and formed in calcareous lacustrine deposits; in landscape positions similar to or less sloping than those of the Vanmeter soil

Properties and Qualities of the Vanmeter Soil

Parent material: Diamicton over clayey material weathered from calcareous shale
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Very slow
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Available water capacity: About 4.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.5 to 3.5 percent
Shrink-swell potential: High
Depth and months of highest apparent seasonal high water table: 1.5 feet, February to April
Ponding: None
Flooding: None
Accelerated erosion: The surface layer has been thinned by erosion.
Potential for frost action: Moderate
Hazard of corrosion: High for steel and low for concrete
Susceptibility to water erosion: Moderate
Susceptibility to wind erosion: Moderate

Interpretive Groups

Land capability classification: 4e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

615F—Vanmeter silty clay loam, 18 to 35 percent slopes

Setting

Landform: Escarpments and hillslopes
Position on the landform: Backslopes

Map Unit Composition

Vanmeter and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a surface layer of silt loam or loam
- Soils that formed in residuum derived from sandstone or acid shale; in landscape positions similar to those of the Vanmeter soil

Dissimilar soils:
- Hickory soils in landscape positions similar to those of the Vanmeter soil

Properties and Qualities of the Vanmeter Soil

Parent material: Diamicton over clayey material weathered from calcareous shale
Drainage class: Moderately well drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Very slow
Depth to restrictive feature: 20 to 40 inches to bedrock (paralithic)
Available water capacity: About 4.7 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.5 to 3.2 percent
Shrink-swell potential: High

Depth and months of highest apparent seasonal high water table: 1.5 feet, February to April
Ponding: None
Flooding: None
Potential for frost action: Moderate
Hazard of corrosion: High for steel and low for concrete
Susceptibility to water erosion: High
Susceptibility to wind erosion: Moderate

Interpretive Groups

Land capability classification: 7e
Prime farmland category: Not prime farmland
Hydric soil status: Not hydric

Virden Series

Taxonomic classification: Fine, smectitic, mesic Vertic Argiaquolls

Typical Pedon

Virden silty clay loam, 0 to 2 percent slopes, in a nearly level area in a cultivated field, at an elevation of 652 feet above mean sea level; Shelby County, Illinois; 125 feet south and 2,100 feet west of the northeast corner of sec. 20, T. 12 N., R. 2 E.; USGS Tower Hill, Illinois, topographic quadrangle; lat. 39 degrees 28 minutes 41.9 seconds N. and long. 88 degrees 59 minutes 59.2 seconds W.; UTM Zone 16S 0327996E 4371556N; NAD 27:

Ap—0 to 7 inches; black (10YR 2/1) silty clay loam, dark gray (10YR 4/1) dry; weak fine granular structure; firm; common very fine roots; neutral; abrupt smooth boundary.

A—7 to 12 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; weak fine subangular blocky structure; firm; common very fine roots; common distinct black (10YR 2/1) organic coatings on faces of peds; few fine prominent dark yellowish brown (10YR 4/6) masses of iron and manganese accumulation and few fine rounded iron-manganese concretions; neutral; clear smooth boundary.

Bt—12 to 21 inches; very dark grayish brown (10YR 3/2) silty clay loam, dark gray (10YR 4/1) dry; moderate medium subangular blocky structure; firm; common fine roots; common distinct very dark gray (10YR 3/1) organic coatings and clay films on faces of peds; few fine prominent dark yellowish brown (10YR 4/6) masses of iron and manganese accumulation and few medium rounded iron-manganese concretions; neutral; gradual smooth boundary.

Btg1—21 to 27 inches; dark grayish brown (10YR 4/2) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; common fine roots; many distinct dark gray (10YR 4/1) clay films on faces of peds; common fine prominent dark yellowish brown (10YR 4/6) masses of iron and manganese accumulation and few fine rounded iron-manganese concretions; neutral; clear smooth boundary.

Btg2—27 to 36 inches; dark grayish brown (10YR 4/2) silty clay loam; moderate medium subangular blocky structure; firm; common distinct dark gray (10YR 4/1) clay films on faces of peds; common medium prominent yellowish brown (10YR 5/8) masses of iron accumulation and common fine rounded iron-manganese accumulations; very dark grayish brown (10YR 3/2) krotovina; neutral; clear smooth boundary.

BCg—36 to 44 inches; gray (10YR 5/1) silty clay loam; weak medium subangular blocky structure; friable; few distinct dark gray (10YR 4/1) clay films on faces of peds and lining root channels and pores; many coarse prominent yellowish brown (10YR 5/8) masses of iron accumulation and many fine rounded iron-manganese concretions; neutral; clear smooth boundary.

Cg—44 to 60 inches; gray (10YR 6/1) silt loam; massive; friable; few distinct dark gray (10YR 4/1) clay films in root channels and pores; many medium prominent yellowish brown (10YR 5/8) masses of iron accumulation and common fine rounded iron-manganese concretions; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 24 inches
Thickness of the loess: More than 60 inches
Depth to carbonates: More than 50 inches
Depth to the base of the argillic horizon: 40 to 60 inches

Ap or A horizon:
Hue—10YR or 2.5Y
Value—2 or 3
Chroma—1 or 2
Texture—silty clay loam
Content of rock fragments—none
Reaction—moderately acid to neutral

Bt and Btg horizons:
Hue—10YR, 2.5Y, 5Y, or N
Value—2 to 6
Chroma—0 to 4
Texture—silty clay loam, silty clay, or silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

BCg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—2 to 6
Chroma—0 to 4
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—slightly acid or neutral

Cg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—4 to 6
Chroma—0 to 4
Texture—silty clay loam or silt loam
Content of rock fragments—none
Reaction—slightly acid to moderately alkaline

50A—Virden silty clay loam, 0 to 2 percent slopes

Setting

Landform: Interfluves and till plains
Position on the landform: Toeslopes

Map Unit Composition

Virden and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a lighter colored surface layer
- Soils that have a surface layer of silt loam

Dissimilar soils:
- The somewhat poorly drained Hoyleton soils in the slightly higher landscape positions

Properties and Qualities of the Virden Soil

Parent material: Loess
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Slow
Permeability below a depth of 60 inches: Moderately slow
Depth to restrictive feature: More than 80 inches
Available water capacity: About 10.3 inches to a depth of 60 inches
Content of organic matter in the surface layer: 2.0 to 4.0 percent
Shrink-swell potential: High
Depth and months of highest apparent seasonal high water table: At the surface, January to May
Ponding duration: Brief, January to May
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 2w
Prime farmland category: Prime farmland where drained
Hydric soil status: Hydric

Wakeland Series

Taxonomic classification: Coarse-silty, mixed, superactive, nonacid, mesic Aeric Fluvaquents

Typical Pedon

Wakeland silt loam, 0 to 2 percent slopes, frequently flooded, in a nearly level area in a cultivated field, at an elevation of 475 feet above mean sea level; Jasper County, Illinois; 1,188 feet south and 2,500 feet west of the northeast corner of sec. 15, T. 7 N., R. 14 W.; USGS Oblong North, Illinois, topographic quadrangle; lat. 39 degrees 03 minutes 01 second N. and long. 87 degrees 57 minutes 19.7 seconds W.; UTM Zone 16S 0417321E 4322790N; NAD 83:

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate medium granular structure; very friable; common fine and very fine roots; slightly acid; abrupt smooth boundary.

Cg—9 to 22 inches; grayish brown (10YR 5/2) silt loam; weak fine granular structure; very friable; common very fine roots; few distinct dark yellowish brown (10YR 4/4) organic coatings on faces of peds; many medium faint brown (10YR 5/3) and common medium distinct yellowish brown (10YR 5/4) masses of iron and manganese accumulation and few fine prominent yellowish brown (10YR 5/6) masses of iron accumulation; slightly acid; clear smooth boundary.

C—22 to 44 inches; brown (10YR 5/3) silt loam; weak fine granular structure; very friable; common very fine roots; many coarse faint grayish brown (10YR 5/2) iron depletions and few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation; moderately acid; clear smooth boundary.

C´g—44 to 60 inches; grayish brown (10YR 5/2) silt loam; massive; friable; few very fine roots; many medium faint brown (10YR 5/3) masses of iron and manganese accumulation and common fine prominent yellowish brown (10YR 5/6) masses of iron accumulation; moderately acid.

Range in Characteristics

Ap or A horizon:
Hue—10YR
Value—4 or 5
Chroma—2 to 4
Texture—silt loam
Content of rock fragments—none
Reaction—moderately acid to neutral

C and C´g horizons:
Hue—10YR or 2.5Y
Value—4 to 7
Chroma—1 to 6
Texture—dominantly silt loam; thin strata of coarser textures in some pedons
Content of rock fragments—none
Reaction—moderately acid to slightly alkaline

3333A—Wakeland silt loam, 0 to 2 percent slopes, frequently flooded

Setting

Landform: Flood-plain steps

Map Unit Composition

Wakeland and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have more sand in the substratum
- Soils that are subject to occasional flooding
- Soils that have bedrock at a depth of 60 to 80 inches

Dissimilar soils:
- Soils that have bedrock at a depth of less than 60 inches
- The well drained Haymond soils in the higher positions on the flood plain
- The poorly drained Birds soils on toeslopes and in swales

Properties and Qualities of the Wakeland Soil

Parent material: Silty alluvium
Drainage class: Somewhat poorly drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 13.2 inches to a depth of 60 inches

Content of organic matter in the surface layer: 1.0 to 3.0 percent
Shrink-swell potential: Low
Depth and months of highest apparent seasonal high water table: 0.5 foot, January to May
Ponding: None
Frequency and most likely period of flooding: Frequent, November to June
Potential for frost action: High
Hazard of corrosion: High for steel and moderate for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w
Prime farmland category: Prime farmland where drained and either protected from flooding or not frequently flooded during the growing season
Hydric soil status: Not hydric

Westland Series

Taxonomic classification: Fine-loamy, mixed, superactive, mesic Typic Argiaquolls

Typical Pedon

Westland silty clay loam, 0 to 2 percent slopes, in a nearly level area in a cultivated field, at an elevation of 435 feet above mean sea level; Crawford County, Illinois; 1,700 feet north and 200 feet east of the southwest corner of sec. 14, T. 7 N., R. 11 W.; USGS Merom, Illinois, topographic quadrangle; lat. 39 degrees 02 minutes 52.8 seconds N. and long. 87 degrees 36 minutes 38.0 seconds W.; UTM Zone 16S 0447165E 4322072N; NAD 27:

Ap—0 to 11 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; moderate medium granular structure; firm; many very fine and few fine roots; about 1 percent pebbles; neutral; clear smooth boundary.

Btg1—11 to 20 inches; very dark gray (10YR 3/1) clay loam, very dark gray (10YR 3/1) dry; moderate fine subangular blocky structure; firm; common very fine roots; many faint black (10YR 2/1) organo-clay films on faces of peds and in pores; few fine prominent strong brown (7.5YR 4/6) and few medium irregular masses of iron and manganese accumulation; about 2 percent pebbles; neutral; clear smooth boundary.

Btg2—20 to 30 inches; very dark grayish brown (10YR 3/2) clay loam; moderate medium subangular blocky structure; firm; few very fine roots; common faint black (10YR 2/1) organo-clay films on faces of peds and in pores; common fine prominent dark yellowish brown (10YR 4/6) and common medium irregular masses of iron and manganese accumulation; about 4 percent pebbles; neutral; abrupt smooth boundary.

2Btg3—30 to 48 inches; dark grayish brown (2.5Y 4/2), stratified gravelly clay loam and loamy sand; weak medium subangular blocky structure; friable; common distinct very dark gray (10YR 3/1) organo-clay films on faces of peds and pebbles; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation and few medium irregular masses of iron and manganese accumulation; about 26 percent pebbles; neutral; abrupt smooth boundary.

2Cg—48 to 60 inches; brown (10YR 4/3), stratified very gravelly sand and sand; single grain; loose; about 45 percent medium and coarse gravel; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Depth to carbonates: More than 30 inches
Depth to the base of the argillic horizon: 30 to 55 inches

Ap or A horizon:
Hue—10YR, 2.5Y, or N
Value—2 or 3
Chroma—0 to 2
Texture—silty clay loam
Content of rock fragments—0 to 5 percent
Reaction—slightly acid or neutral

Btg horizon:
Hue—10YR, 2.5Y, or N
Value—3 to 6
Chroma—0 to 2
Texture—clay loam, loam, or silty clay loam
Content of rock fragments—1 to 15 percent
Reaction—slightly acid or neutral

2Btg or 2BCg horizon:
Hue—10YR, 2.5Y, or N
Value—3 to 6
Chroma—0 to 2
Texture—loam, clay loam, sandy loam, sandy clay loam, or loamy sand or the gravelly or very gravelly analogs of these textures
Content of rock fragments—5 to 45 percent
Reaction—slightly acid to slightly alkaline

2Cg or 2C horizon:
Hue—10YR, 2.5Y, or N
Value—3 to 7
Chroma—0 to 4
Texture—stratified coarse sand, sand, and loamy sand and the gravelly or very gravelly analogs of these textures
Content of rock fragments—20 to 60 percent
Reaction—slightly alkaline or moderately alkaline

7841A—Carmi-Westland complex, 0 to 2 percent slopes, rarely flooded

Setting

Landform: Stream terraces and outwash terraces
Position on the landform: Summits

Map Unit Composition

Carmi and similar soils: 50 percent
Westland and similar soils: 45 percent
Dissimilar soils: 5 percent

Soils of Minor Extent

Similar soils:
- Soils that have more gravel in the substratum

- Soils that have a light-colored surface layer
- Soils that have more clay and less sand in the subsoil
- Soils that are subject to occasional flooding

Dissimilar soils:
- Soils that are subject to frequent flooding

Properties and Qualities of the Carmi Soil

Parent material: Loamy alluvium over sandy outwash
Drainage class: Well drained
Slowest permeability within a depth of 40 inches: Moderately rapid
Permeability below a depth of 60 inches: Rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 6.6 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 5.0 percent
Shrink-swell potential: Low
Ponding: None
Frequency and most likely period of flooding: Rare, November to June
Potential for frost action: Moderate
Hazard of corrosion: Low for steel and moderate for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Moderately high

Properties and Qualities of the Westland Soil

Parent material: Loamy alluvium over sandy and gravelly outwash
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Moderate
Permeability below a depth of 60 inches: Very rapid
Depth to restrictive feature: More than 80 inches
Available water capacity: About 7.3 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.5 to 6.0 percent
Shrink-swell potential: Moderate
Depth and months of highest apparent seasonal high water table: At the surface, January to May
Ponding duration: Brief, January to May
Frequency and most likely period of flooding: Rare, November to June
Potential for frost action: High
Hazard of corrosion: High for steel and low for concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: Carmi—2s; Westland—2w
Prime farmland category: Prime farmland
Hydric soil status: Carmi—not hydric; Westland—hydric

W—Water

- This map unit consists of lakes, ponds, and rivers that are suitable for fishing and swimming.

Wynoose Series

Taxonomic classification: Fine, smectitic, mesic Typic Albaqualfs

Typical Pedon

Wynoose silt loam, 0 to 2 percent slopes, in a nearly level area in a cultivated field, at an elevation of 455 feet above mean sea level; Wayne County, Illinois; 967 feet west and 2,458 feet north of the southeast corner of sec. 10, T. 1 N., R. 8 E.; USGS Enterprise, Illinois, topographic quadrangle; lat. 38 degrees 31 minutes 57.4 seconds N. and long. 88 degrees 17 minutes 50.3 seconds W.; UTM Zone 16S 0386926E 4265710N; NAD 83:

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate fine granular structure; friable; common very fine roots throughout; common fine distinct brown (7.5YR 4/4) masses of iron and manganese accumulation in the matrix; few fine rounded masses of iron and manganese accumulation throughout; neutral; abrupt smooth boundary.

Eg1—7 to 14 inches; light brownish gray (10YR 6/2) silt loam, white (2.5Y 8/1) dry; moderate medium platy structure; friable; few very fine roots throughout; common distinct light gray (10YR 7/2) silt coatings on faces of peds; common fine prominent strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine rounded masses of iron and manganese accumulation throughout; strongly acid; clear smooth boundary.

Eg2—14 to 20 inches; light brownish gray (10YR 6/2) silt loam, white (2.5Y 8/1) dry; moderate medium platy structure; friable; few very fine roots throughout; common distinct light gray (10YR 7/2) silt coatings on faces of peds; many fine prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few fine rounded masses of iron and manganese accumulation throughout; few fine irregular iron-manganese concretions throughout; very strongly acid; abrupt smooth boundary.

Btg1—20 to 29 inches; light brownish gray (10YR 6/2) silty clay; strong medium prismatic structure parting to strong medium angular blocky; firm; few very fine roots along faces of peds; many distinct gray (10YR 5/1) clay films and common distinct light gray (10YR 7/2) silt coatings on faces of peds; many fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine rounded masses of iron and manganese accumulation throughout; common fine and medium irregular iron-manganese concretions throughout; very strongly acid; clear smooth boundary.

Btg2—29 to 36 inches; light brownish gray (10YR 6/2) silty clay; strong medium prismatic structure parting to strong medium angular blocky; firm; few very fine roots along faces of peds; common distinct gray (10YR 5/1) clay films and few distinct light gray (10YR 7/2) silt coatings on faces of peds; many fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few fine rounded masses of iron and manganese accumulation throughout; few fine irregular iron-manganese concretions throughout; very strongly acid; clear smooth boundary.

2Btg3—36 to 48 inches; light brownish gray (10YR 6/2) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots along faces of peds; few distinct grayish brown (10YR 5/2) clay films and few distinct light gray (10YR 7/2) silt coatings on faces of peds; common fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; few fine rounded masses of iron and manganese accumulation throughout; few fine irregular iron-manganese concretions throughout; about 2 percent angular gravel by volume; strongly acid; clear smooth boundary.

2Btg4—48 to 66 inches; gray (10YR 6/1) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots along faces of peds; few distinct gray (10YR 5/1) clay films on faces of peds and few distinct dark grayish brown (10YR 4/2) clay films in root channels and pores; common fine and medium prominent strong brown (7.5YR 5/8) masses of iron accumulation in the matrix; few fine irregular iron-manganese concretions throughout; about 2 percent angular gravel by volume; strongly acid; clear smooth boundary.

3Btgb—66 to 80 inches; gray (10YR 6/1) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; very firm; common distinct gray (10YR 5/1) clay films on faces of peds and common prominent black (N 2.5/) manganese coatings on faces of peds; common fine and medium prominent strong brown (7.5YR 5/6 and 5/8) masses of iron accumulation in the matrix; common medium irregular iron-manganese concretions throughout; about 5 percent angular gravel by volume; moderately acid.

Range in Characteristics

Thickness of the loess: 30 to 55 inches
Depth to the base of the argillic horizon: More than 40 inches
Content of clay in the particle-size control section: Averages 35 to 42 percent
Content of sand in the particle-size control section: Less than 15 percent

Ap or A horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 or 2
Texture—silt loam
Content of rock fragments—none
Reaction—strongly acid; ranges to neutral in limed areas

Eg horizon (if it occurs):
Hue—10YR or 2.5Y
Value—5 to 7
Chroma—1 or 2
Texture—silt loam
Content of rock fragments—none
Reaction—extremely acid to neutral

Btg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—silty clay loam or silty clay
Content of rock fragments—none
Reaction—extremely acid to moderately acid

2Btg or 2BCg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—silt loam, silty clay loam, or clay loam
Content of rock fragments—0 to 10 percent
Reaction—extremely acid to moderately acid

3Agb and/or 3Btgb horizon:
Hue—7.5YR, 10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—silt loam, silty clay loam, or clay loam
Content of rock fragments—0 to 10 percent
Reaction—moderately acid to slightly alkaline

12A—Wynoose silt loam, 0 to 2 percent slopes

Setting

Landform: Till plains

Map Unit Composition

Wynoose and similar soils: 90 percent
Dissimilar soils: 10 percent

Soils of Minor Extent

Similar soils:
- Soils that have a dark surface layer and/or a thicker surface layer

Dissimilar soils:
- The somewhat poorly drained Darmstadt soils that have a high content of sodium in the subsoil; in the slightly higher landscape positions
- The somewhat poorly drained Bluford soils in the slightly higher landscape positions

Properties and Qualities of the Wynoose Soil

Parent material: Loess over silty or loamy pedisediment over accretion gley
Drainage class: Poorly drained
Slowest permeability within a depth of 40 inches: Very slow
Permeability below a depth of 60 inches: Moderate
Depth to restrictive feature: More than 80 inches
Available water capacity: About 10.0 inches to a depth of 60 inches
Content of organic matter in the surface layer: 1.0 to 2.5 percent
Shrink-swell potential: High
Depth and months of highest apparent seasonal high water table: At the surface, January to May
Ponding duration: Brief, January to May
Flooding: None
Potential for frost action: High
Hazard of corrosion: High for steel and concrete
Susceptibility to water erosion: Low
Susceptibility to wind erosion: Low

Interpretive Groups

Land capability classification: 3w
Prime farmland category: Not prime farmland
Hydric soil status: Hydric

Use and Management of the Soils

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

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

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

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

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

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

Interpretive Ratings

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

Rating Class Terms

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

Numerical Ratings

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

Crops and Pasture

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

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

In 2002, approximately 183,552 acres in Crawford County was used as cropland, of which 6,594 acres was irrigated. Corn was grown on about 73,361 acres with an average yield of 103 bushels per acre. Soybeans were grown on about 90,970 acres with an average yield of 33 bushels per acre. Wheat was grown on about 5,171 acres with an average yield of 52 bushels per acre. Hay-alfalfa was grown on about 2,303 acres with an average yield of 1.95 tons per acre. About 93 percent of the planted acreage was harvested (USDA, National Agricultural Statistics Service, 2002).

The soils in Crawford County have excellent potential for continued crop production, particularly if the latest crop production technologies are applied. This soil survey can be used as a guide for applying the latest crop production technologies.

The following paragraphs describe some of the management considerations affecting the use of the soils in the survey area for crops and pasture.

Erosion control.—Generally, a combination of several practices is needed to control erosion. Conservation tillage, including chisel tillage and no-till practices, is common in Crawford County. Contour stripcropping, contour farming, conservation cropping systems, crop residue management, terraces, diversions, buffer strips, riparian areas, and grassed waterways help to prevent excessive soil loss.

The loss of the surface layer through erosion causes damage in two ways. First, productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. The subsoil generally has fewer plant nutrients, a lower content of organic matter, and a higher content of clay than the surface layer. As the content of organic matter in the tilled layer decreases and the clay content increases, soil tilth is reduced. Loss of soil tilth increases the likelihood that a crust will form on the surface and reduce water infiltration. The higher clay content increases the likelihood that the surface layer will become cloddy when tilled, especially if tilled when wet. Once this happens, preparing a seedbed becomes very difficult. Eroded soils tend to be puddled after hard rains and to form a crust on the surface as they dry, resulting in increased runoff. Loss of the surface layer is especially damaging in areas of soils that have a clayey subsoil, such as Bluford soils; in areas of soils that tend to be droughty, such as Alvin soils; and in areas of soils that are moderately eroded, such as Atlas and Fishhook soils. Second, erosion on farmland results in the sedimentation and pollution of streams. Controlling erosion minimizes this pollution and improves the quality of water for municipal and recreational uses and for fish and other wildlife.

Erosion-control measures provide a protective plant cover, increase the rate of water infiltration, and reduce the runoff rate. A cropping system that keeps plants on the surface for extended periods reduces the hazard of erosion and preserves the productive capacity of the soils. Including forage crops, such as grasses and legumes, in the cropping sequence helps to control erosion in the more sloping areas. It also provides nitrogen and improves tilth for the next crop.

Terraces reduce the hazard of erosion by shortening the slopes and by controlling runoff (fig. 8). If a tile outlet terrace is used, the water that collects behind the terrace is removed by tile at a slow, controlled rate.

Grassed waterways reduce the hazard of erosion by providing a stable channel for water runoff on sloping land.

Conservation buffer strips and riparian areas can help to maintain stream channels and inhibit runoff. A stream channel without trees will slump, but a protected riparian area will help to maintain the stream channel.

Contour farming involves conducting tillage or other fieldwork along the contour of a slope rather than perpendicular to the slope. This practice helps to control erosion because it results in the formation of small ridges perpendicular to the slope of the land. The ridges greatly reduce the velocity of the water moving downhill.

Stripcropping, although not used widely in the survey area, is an effective erosion-control measure if used in combination with other methods. It involves alternating rows or strips of one crop with rows of another crop with a different rate of maturity and a different canopy cover. The rows are planted on the contour. The resulting vegetative cover reduces the hazard of erosion by protecting the surface from the impact of raindrops.

Erosion-control management through tillage and cropping systems is effective alone or in combination on most of the farmland in the county. The combination used and its effectiveness depend on soil characteristics and topography. Information about the design of erosion-control practices for each kind of soil is provided in the Technical Guide, which is available in the local office of the Natural Resources Conservation Service.

Figure 8.—Contour parallel tile outlet terraces in an area of Iona silt loam, 2 to 5 percent slopes, eroded.

Conservation tillage.—Most of the cropland in Crawford County can be protected from erosion by using a conservation tillage system. Conservation tillage includes any noninversion tillage practice that keeps a protective cover of residue on the surface throughout the year. The crop residue increases the rate of water infiltration and improves tilth. It also protects the surface from the beating action of raindrops, prevents surface crusting, and provides a more friable seedbed for good germination (fig. 9).

Chisel tillage is a common system of conservation tillage used in Crawford County. It leaves crop residue on 20 to 60 percent of the surface. The extent of the coverage depends on the type of chisel plow used, the speed with which the equipment moves through the field, and the kind of crop planted. Chisel tillage often follows stalk chopping in the fall or is done immediately prior to planting in the spring.

In no-till systems, a grain crop is planted directly in a cover crop, sod, or the crop residue of the previous year. A special planter that disturbs only the row area is used. Herbicides are used to control competing vegetation. The nearly complete ground cover protects the soil from the impact of raindrops and helps to control erosion caused by runoff (fig. 10).

Drainage systems.—Drainage systems consist of subsurface tile drains, surface inlets, open drainage ditches, or a combination of these. They have been installed in most areas of poorly drained and somewhat poorly drained soils in the county (fig. 11). As a result, these soils are adequately drained for the crops commonly grown in the area. Some areas of poorly drained soils require surface tile inlets or shallow surface ditches to remove ponded water. Some areas of somewhat poorly drained soils are wet long enough that productivity may be reduced unless they are artificially drained. Management of drainage in conformity with wetland regulations may require special permits and extra planning.

The design of surface and subsurface drainage systems varies with the kind of soil and the availability of drainage outlets. Some areas of poorly drained soils in

Figure 9.—Corn residue left on the surface in this area of Bluford soils improves soil tilth and the nutrient-holding capacity of the soils.

Figure 10.—No-till farming provides almost complete protection from the impact of raindrops.

depressions require a combination of surface drains and tile drains. The tile should be more closely spaced in the more slowly permeable soils than in the more rapidly permeable soils. Manipulating drainage can allow the producer to conserve moisture, manage weeds and insects, and limit leaching of nutrients and chemicals.

Further information about drainage systems is provided in the Technical Guide, which is available in local offices of the Natural Resources Conservation Service.

Limitations Affecting Cropland and Pastureland

The management concerns affecting the use of the detailed soil map units in the survey area for crops and pasture are shown in table 6.

Cropland

The main concerns affecting the management of cropland in Crawford County include crusting, depth to bedrock, excess lime, excessive permeability, excess sodium, flooding, high pH, limited available water capacity, low pH, ponding, poor tilth, restricted permeability, root-restrictive layers, water erosion, and wetness.

Crusting occurs when flowing water or raindrops break down soil structural units, moving clay downward and leaving a concentration of sand and silt particles on the soil surface. Crusts can reduce water infiltration, increase runoff, inhibit seedling emergence and proper growth, and reduce oxygen diffusion to seedlings. Generally, if the structure in the surface layer is weak, a crust forms on the surface during periods of intense rainfall. Ava, Bluford, Fishhook, and Pierron soils have a low content of organic matter in the surface layer, which typically can result in the formation of a crust

Figure 11.—Eight-inch main tile outlets into a surface ditch in an area of Westland soils after draining areas of Ruark fine sandy loam, 0 to 2 percent slopes, and Carmi-Westland complex, 0 to 2 percent slopes, rarely flooded.

on the surface. Practices that help to minimize surface crusting and improve tilth are those that protect the surface from the impact of raindrops and from flowing water. Incorporating green manure crops, manure, or crop residue into the soil and using a system of conservation tillage help to prevent crusting and improve tilth.

Bedrock within a depth of 40 inches can increase the susceptibility of the soil to erosion and limit the effectiveness of subsurface drainage systems. Bedrock affects plant growth by limiting nutrients and available water. Kell and Vanmeter soils are examples of soils that are limited by the depth to bedrock.

Excess lime affects the uptake and utilization of boron by plants. The availability of phosphate may be reduced, and the absorption of phosphorus by plants may be affected. Navlys and Stonelick soils are examples of soils with excess lime. This limitation can be overcome by incorporating green manure crops, manure, or crop residue into the soil; applying a system of conservation tillage; applying nutrient management methods, including additions of trace elements; and using conservation cropping systems. Plants that are tolerant of lime, such as barley, can be grown in areas of these soils.

Excessive permeability can cause deep leaching of nutrients and pesticides. Carmi, Stockland, and Westland soils are examples of soils that have excessive permeability. Testing soils for application rates, taking into account contributions from the previous year's crops and manure applications, is essential for establishing proper nutrient management. Applying nutrients at the proper time and using the proper application method can help to prevent the contamination of ground water.

Excess sodium restricts the availability and uptake of some plant nutrients in Darmstadt soils. Excess sodium also causes clay in the soil to disperse, which in turn plugs pores and restricts permeability. Applications of gypsum may be needed to improve the fertility and permeability of these soils. Returning crop residue to the soil and regularly adding manure or other organic material improve fertility and tilth in the surface layer.

Flooding occurs in unprotected areas along the major rivers and their tributaries. Dikes or diversions reduce the extent of crop damage caused by floodwater. Flooding is a hazard on approximately 50,000 acres in Crawford County. Most of the affected soils are frequently flooded by stream overflow. In these areas, flooding is likely to occur often under normal weather conditions. Flooding typically occurs in winter and spring. Damage to crops, particularly winter small grain crops, occurs in some years (fig. 12).

Armiesburg, Beaucoup, Birds, Darwin, Haymond, Petrolia, Shoals, Stonelick, Tice, and Wakeland soils are examples of soils that are subject to frequent flooding for brief periods. Flood-prone soils are better suited to crop varieties that require a relatively short growing season. Planting crops that are adapted to a shorter growing season and wetter conditions reduces the risk of crop damage caused by floodwater. Reducing runoff from higher ground within the watershed can reduce the frequency and severity of flooding. Changing land use from cropland to pasture or forestland can also minimize economic damage.

High pH can lead to plant toxicity or decreased availability of plant nutrients, either of which can affect the health and vigor of the plants. Navlys and Stonelick soils are examples of soils that have a high pH in the upper 40 inches. This limitation can be

Figure 12.—Flooding can cause crop damage in areas of Beaucoup soils.

overcome by incorporating green manure crops, manure, or crop residue into the soil; applying a system of conservation tillage; applying nutrient management methods, including additions of trace elements; and using conservation cropping systems. Selecting crops that are tolerant of high pH, such as oats or barley, also helps to overcome this limitation.

Limited available water capacity may lead to droughtiness during periods of low rainfall. Alvin, Carmi, Kell, Stockland, and Vanmeter soils are examples of soils with a limited available water capacity. Applying supplemental irrigation or planting crops that are tolerant of droughtiness, such as wheat, rye, oats, barley, alfalfa, or pasture grasses, can help to overcome this limitation.

Low pH can lead to toxicity or decreased availability of nutrients, either of which can affect the health and vigor of the plants. Wynoose and Pierron soils are examples of soils that have a low pH. Liming can help to overcome this limitation. The timing of the applications, the form and amount of lime, and the method of application should be based on the results of soil tests and on the type of crop to be grown. The benefits of liming include nutritive calcium and magnesium; neutralization of toxic compounds; retardation of plant diseases; increased availability of plant nutrients; and encouragement of micro-organism activities favorable to plants.

Ponding hinders aeration and increases nutrient losses. Soils affected by ponding in the survey area are Cisne, Cowden, Newberry (fig. 13), Patton, Pierron, Ruark, Shiloh, Virden, and Wynoose soils. Land grading helps to control ponding. Surface ditches and surface inlet tile also help to remove excess water if suitable outlets are available. Management of drainage in conformance with wetland regulations may require special permits and extra planning.

Poor tilth can be inherent or may be caused by erosion or excessive tillage. Soils with poor tilth generally have a surface layer that is sticky when wet and hard and

Figure 13.—Ponding delays spring planting in this area of Newberry silt loam, 0 to 2 percent slopes.

cloddy when dry. Because such soils can be tilled only within a narrow range of moisture content, seedbed preparation is difficult. If the timing is not right, the resultant clods make it difficult for good seed-to-soil contact. Poor tilth inhibits seedling germination and emergence, increases runoff and erosion, and reduces the rate of water infiltration. Soils with good tilth are granular and porous and have a high content of organic matter in the surface layer. Soils with poor tilth generally have more clay, a lower content of organic matter, and weaker soil structure in the surface layer. The severely eroded Atlas and severely eroded Navlys soils have poor tilth. Armiesburg, Beaucoup, Darwin, Patton, Petrolia, Tice, Vanmeter, Virden, and Westland soils also have poor tilth. If these soils are plowed when too wet, they can become cloddy. Practices that improve soil tilth are those that protect the surface from the impact of raindrops and from flowing water. Incorporating green manure crops, manure, or crop residue into the soil and using a system of conservation tillage can improve tilth. Surface cloddiness can be controlled by avoiding tillage when the soil is too wet or by using no-till farming methods.

Restricted permeability interferes with internal soil drainage and aeration. Waterlogging, denitrification, compaction, delayed planting, and a higher surface runoff rate are some of the effects of restricted permeability on cropland. Permeability is restricted in a majority of the soils in Crawford County. In some soils, such as the moderately well drained Hosmer and Elco soils, the restricted permeability increases the potential for surface runoff. The poorly drained Cisne, Wynoose, and Pierron soils are examples of soils that have restricted permeability and that require drainage for optimum crop yields. On poorly drained soils with restricted permeability, a system of surface ditches that is composed of mains and laterals is the most common drainage method used. Tile drainage tends to perform poorly or requires closer spacing in these soils. Conservation tillage or no-till farming and crop residue management can help to minimize compaction and reduce the runoff rate.

Root-restrictive layers, such as dense material, a natric horizon, bedrock, or a fragipan, can increase the susceptibility of soil to erosion and can affect plant growth by limiting nutrients and available water. Examples of soils with root-restrictive layers are Ava, Bluford, Darmstadt, Hosmer, and Stoy soils. A combination of conservation measures, including special tillage practices, incorporation of organic matter, and proper crop selection, can help to overcome this limitation.

Water erosion reduces the stability of soil aggregates and thus reduces the rate of water infiltration and increases the rate of surface runoff (Brady, 1984). Soils with long or steep slopes are susceptible to water erosion. Sheet and rill erosion is a hazard in areas where slopes are long or are subject to concentrated flow. Excessive runoff reduces the quality of surface water through sedimentation and contamination by agricultural chemicals attached to soil particles in the sediment. Sediment then enters streams, rivers, water impoundments, and road ditches and causes pollution and a reduced capacity. Water erosion is a hazard on about 27 percent of the total land area in the county. Alvin, Atlas, Ava, Elco, Hickory, Hosmer, Kell, Menfro, Navlys, Ridgway, and Vanmeter soils are examples of soils that are susceptible to water erosion. Erosion can be controlled by a conservation tillage system that leaves crop residue on the surface after planting or by a cropping system that rotates grasses and legumes in the cropping sequence. On soils with long, uniform slopes, contour farming and/or terraces in combination with a conservation tillage system can help to control erosion (fig. 14). Sedimentation problems should be addressed for the purposes of maintaining proper drainage. The removal of sediment is expensive. Management measures that minimize water erosion also reduce sedimentation and improve water quality.

Wetness is a management concern on about 60 percent of the acreage in Crawford County. Some soils are naturally so wet that the production of crops generally is not possible unless a drainage system is installed. The poorly drained Beaucoup, Birds,

Figure 14.—A riser behind a broad-based terrace helps to control erosion in this area of Hoyleton silt loam, 2 to 5 percent slopes.

Cisne, Cowden, Darwin, Newberry, Patton, Petrolia, Pierron, Ruark, Virden, Westland, and Wynoose soils and the very poorly drained Shiloh soils are examples of soils that are subject to wetness. Seasonal wetness in areas of somewhat poorly drained soils, such as Atlas, Bluford, Hoyleton, Shoals, Stoy, Tice, and Wakeland soils, can delay planting in wet years. Most of the soils needing drainage are already drained by surface ditches or tile. Drainage systems must be maintained or replaced if maximum efficiency is to be achieved. Subsurface drains can lower the seasonal high water table if suitable outlets are available. In soils that have restricted permeability and a high content of clay, subsurface drainage is not practical. In areas of these soils, surface ditches are used to reduce the wetness. Management of drainage in conformance with regulations influencing wetlands may require special permits and extra planning.

Wind erosion is common on soils that have a surface layer of sand or loamy sand. Generally, most soils on which the surface is left exposed as a result of cultivation are subject to wind erosion. The texture of the surface layer, the soil moisture content, the content of organic matter, calcium carbonate, and rock fragments, aggregate stability, and cultivation practices can affect the susceptibility to wind erosion. Large areas without field windbreaks and cleared areas on flood plains are vulnerable. Most of the soils in Crawford County are typically not susceptible to wind erosion as a result of the texture of the surface layer. Some soils, however, such as Alvin, Carmi, Roby, and Ruark soils, have a surface layer that is susceptible to wind erosion. Conservation tillage, crop residue management, moisture management, conservation structures, and windbreaks can be used to limit the damage caused by wind erosion.

Pastureland

Growing legumes, cool-season grasses, and warm-season grasses that are suited to the soils and climate of the area helps to maintain a productive stand of pasture. Suitable pasture and hay plants include several legumes, cool-season grasses, and native warm-season grasses. Alfalfa, red clover, alsike clover, and ladino clover are legumes commonly grown in the county. Alfalfa is best suited to well drained soils, such as Alvin, Carmi, Menfro, Ridgway, and Stockland soils, and moderately well drained soils, such as Ava, Elco, Hosmer, and Iona soils. Alfalfa is also suited to some of the somewhat poorly drained soils, such as Fishhook, Muren, Roby, and Stoy soils. Other legumes, such as alsike clover, red clover, and ladino clover, are more tolerant of wetter conditions. These legumes are best suited to poorly drained soils, such as Cisne, Cowden, Newberry, Patton, and Westland soils, and some of the somewhat poorly drained soils, such as Bluford and Hoyleton soils.

Cool-season grasses commonly grown in the county include smooth bromegrass, orchardgrass, and tall fescue. These grasses can be used alone or in mixtures with legumes. Native warm-season grasses, such as indiangrass, big bluestem, and switchgrass, grow very well in the summer. They require different management techniques from those used for cool-season grasses.

Proper grazing is essential for the production of high-quality forage, stand survival, and erosion control. It helps plants maintain sufficient and generally vigorous top growth during the growing season. Brush control is essential in many areas, and weed control is generally needed. Rotational grazing, deferred grazing when the soil is wet, and applications of lime and fertilizers as needed also are important management practices.

The main management concerns affecting pastureland in Crawford County are depth to bedrock, equipment limitations, excess lime, excessive permeability, excess sodium, flooding, frost heave, high pH, limited available water capacity, low fertility, low pH, ponding, poor tilth, root-restrictive layers, water erosion, and wetness.

Bedrock within a depth of 40 inches can increase the susceptibility of the soil to erosion and limit the effectiveness of subsurface drainage systems (fig. 15). Bedrock affects plant growth by limiting nutrients and available water. Kell and Vanmeter soils are examples of soils that are limited by the depth to bedrock.

Equipment limitations make fertilization, harvesting, pasture renovation, and seedbed preparation difficult or more costly. The use of equipment is limited in moderately steep or steep areas of Alvin, Hickory, and Menfro soils.

Excess lime can cause deficiencies of available iron, manganese, copper, and zinc. Uptake and utilization of boron by plants may be hindered. The availability of phosphate may be reduced, and the absorption of phosphorus by plants may be affected. Navlys and Stonelick soils are examples of soils with excess lime. Establishing proper nutrient management, including additions of trace elements, and applying manure can help to overcome this limitation. Plants that are tolerant of lime, such as big bluestem, smooth brome, red fescue, tall fescue, and timothy, can be grown in areas of these soils.

Excessive permeability can result in deep leaching of nutrients and pesticides. Carmi, Stockland, and Westland soils are examples of soils with excessive permeability. Testing soils for application rates is essential for establishing proper nutrient management. Applying nutrients at the proper time and using the proper application method help to prevent the contamination of ground water.

Excess sodium restricts the availability and uptake of some plant nutrients in Darmstadt soils. Excess sodium also causes clay in the soil to disperse, which in turn plugs pores and restricts permeability. Applications of gypsum may be needed to improve the fertility and permeability of these soils. Regularly adding manure or other organic material can improve fertility and tilth in the surface layer.

Figure 15.—An exposure of sandstone bedrock in an area of Hickory-Kell complex, 10 to 18 percent slopes, eroded.

Flooding occurs in unprotected areas along the major rivers and their tributaries. Surface drainage ditches can remove floodwater where suitable outlets are available. Flooding may damage pasture plants in some years. Armiesburg, Beaucoup, Birds, Darwin, Haymond, Petrolia, Shoals, Stonelick, Tice, and Wakeland soils are subject to flooding. Selecting forage and hay varieties adapted to a shorter growing season and wetter conditions also reduces the extent of flood damage. Dikes and diversions can help to minimize the extent of damage caused by frequent or occasional flooding. Restricted use during wet periods helps to keep the pasture in good condition. Management of drainage in conformance with regulations may require special permits and extra planning.

Frost heave occurs in soils when ice lenses or bands develop into or push an ice wedge between layers of soil near the surface. The ice wedges heave the overlying soil layer upward, snapping the roots. Soils that have textures low in sand have small pores that hold water and enable ice lenses to form. Beaucoup, Birds, Cisne, Cowden, Darwin, Newberry, Patton, Petrolia, Pierron, Shiloh, Virden, Westland, and Wynoose soils are susceptible to frost heave. Selecting adapted forage and hay varieties helps to minimize the effects of frost heave. Timely rotation of grazing maintains a cover of vegetation on the surface that insulates the soil, thereby reducing the effects of frost heave. Leaving stubble 4 to 6 inches high in winter helps to prevent frost heave. Using grass-legume mixtures can also help to prevent frost heave.

High pH can lead to plant toxicity or decreased availability of plant nutrients, either of which can affect the health and vigor of the plants. Navlys and Stonelick soils are examples of soils that have a high pH in the upper 40 inches. This limitation can be overcome by incorporating green manure crops, manure, or crop residue into the soil; applying a system of conservation tillage; applying nutrient management methods, including additions of trace elements; and using conservation cropping systems. Selecting crops that are tolerant of high pH, such as oats or barley, can also help to overcome this limitation.

Limited available water capacity can result in droughtiness during periods of low rainfall. Alvin, Carmi, Kell, Stockland, and Vanmeter soils are examples of soils that have a limited available water capacity. Applying supplemental irrigation or planting crops that are tolerant of droughtiness, such as big bluestem, smooth brome, red fescue, alfalfa, or Kentucky bluegrass, can help to overcome this limitation.

Low fertility is associated with a low content of organic matter and a low cation-exchange capacity and may result in a limited capacity of the soil to retain nutrients for plant use. Ruark and Roby soils are examples of soils with low fertility.

Frequent applications of small amounts of fertilizer help to prevent excessive loss of plant nutrients through leaching. Legumes, when used as part of a seeding mixture, can provide nitrogen to the grass varieties. Timely deferment of grazing helps to maintain a surface cover of vegetation and helps to maintain the content of organic matter, a source of nutrients in the soil.

Low pH can result in toxicity or decreased availability of nutrients, either of which can affect the health and vigor of the plants. With few exceptions, almost all of the upland soils in Crawford County have a pH less than or equal to 5.5 within a depth of 40 inches. Selecting adapted forage and hay varieties and applying lime according to the results of soil tests help to overcome this limitation. Such species as red clover, alsike clover, redtop, big bluestem, smooth brome, orchardgrass, red fescue, tall fescue, timothy, switchgrass, Kentucky bluegrass, and crimson clover are relatively tolerant of acidic conditions and can improve the quantity and quality of livestock forage.

Ponding affects aeration and increases nutrient losses. Some soils affected by ponding in the survey area are Cisne, Cowden, and Wynoose soils. Land grading helps to control ponding. Surface ditches and surface inlet tile also help to remove excess water if suitable outlets are available. Management of drainage in conformance with wetland regulations may require special permits and extra planning. Selecting forage and hay varieties adapted to wet conditions can improve forage production. Restricted use during wet periods helps to keep the pasture in good condition.

Poor tilth in pasture or hayland can be inherent or may be caused by erosion or excessive tillage. Soils with poor tilth generally have a surface layer that is sticky when wet and hard and cloddy when dry. Because these soils can be tilled only within a narrow range of moisture content, seedbed preparation is difficult. If the timing is not right, the resultant clods make it difficult for good seed-to-soil contact. Poor tilth inhibits seedling germination and emergence, increases runoff and erosion, and reduces the rate of water infiltration. Soils with good tilth are granular and porous and have a high content of organic matter in the surface layer. Soils that have poor tilth generally have more clay, a lower content of organic matter, and weaker soil structure in the surface layer. The severely eroded Atlas and severely eroded Navlys soils have poor tilth. Armiesburg, Beaucoup, Darwin, Patton, Petrolia, Tice, Vanmeter, Virden, and Westland soils also have poor tilth. If these soils are tilled when too wet, they can become cloddy. Practices that improve soil tilth are those that protect the surface from the impact of raindrops and from flowing water. Surface cloddiness can be controlled by avoiding tillage when the soil is too wet, using no-till methods of planting, and using a planned grazing system.

Root-restrictive layers include dense material, a natric horizon, bedrock, or a fragipan. They can increase the susceptibility of soil to erosion and limit the effectiveness of drainage systems. Root-restrictive layers affect plant growth by limiting available nutrients and available water. Ava, Hosmer, and Stoy soils are examples of soils that have a fragipan within a depth of 40 inches. Darmstadt soils have a natric horizon within a depth of 40 inches. Vanmeter and Kell soils are examples of soils that have bedrock within a depth of 40 inches. A combination of conservation measures, including special tillage practices, incorporating organic material into the soil, and selecting adapted forage and hay varieties, can help to overcome limitations caused by root-restrictive layers.

Water erosion reduces the productivity of the soil. It also results in sediments, livestock manure, and added nutrients entering streams, rivers, water impoundments, and road ditches and causes pollution and a reduced capacity. Soils with long or steep slopes are susceptible to water erosion. Rotation grazing prevents overgrazing and thus helps to minimize surface compaction and excessive runoff and reduces the hazard of water erosion. Tilling on the contour, using a no-till system of seeding, and selecting adapted forage and hay varieties also help to control erosion.

Wetness is a management concern on about 60 percent the acreage in Crawford County. Some soils are naturally so wet that the production of crops generally is not possible unless a drainage system is installed. The poorly drained Beaucoup, Birds, Cisne, Cowden, Darwin, Newberry, Patton, Petrolia, Pierron, Ruark, Virden, Westland, and Wynoose soils and the very poorly drained Shiloh soils are examples of soils that are subject to wetness. Most of the soils needing drainage are already drained by surface ditches or tile. Drainage systems must be maintained or replaced if maximum efficiency is to be achieved. Subsurface drains can lower the seasonal high water table if suitable outlets are available. In soils that have restricted permeability and a high content of clay, subsurface drainage is not practical. In areas of these soils, surface ditches are used to reduce the wetness. Management of drainage in conformance with regulations influencing wetlands may require special permits and extra planning. In undrained areas, grasses and forbs, such as switchgrass, alsike clover, and redtop, should grow well.

Wind erosion is common on soils that have a surface layer of sand or loamy sand. Generally, most soils on which the surface layer is left exposed through cultivation are subject to wind erosion. The texture of the surface layer, the soil moisture content, the content of organic matter, calcium carbonate, and rock fragments, aggregate stability, and cultivation practices can affect the susceptibility to wind erosion. Large areas without field windbreaks and cleared areas on flood plains are vulnerable. Most of the soils in Crawford County are typically not susceptible to wind erosion as a result of the texture of the surface layer. Some soils, however, such as Alvin, Carmi, Roby, and Ruark soils, have a surface layer that is susceptible to wind erosion. Conservation tillage, crop residue management, moisture management, conservation structures, and windbreaks can be used to limit the damage caused by wind erosion.

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 7. 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 (Olsen, Lang, and others, 2000a and 2000b). 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.

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

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

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

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for forestland or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit (USDA, 1961).

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, rangeland, forestland, or wildlife habitat.

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

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w, s,* or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, or wildlife habitat.

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, 2e-4 and 3e-6. These units are not given in all soil surveys.

The capability classification of the soils in this survey area is given in the section “Soil Series and Detailed Soil Map Units” and in the yields table.

Prime Farmland

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

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

About 211,900 acres in the survey area, or 74 percent of the total acreage, meets the soil requirements for prime farmland. This land generally is used for cultivated crops, mainly corn and soybeans. Prime farmland is located throughout the county.

A recent trend in land use in some parts of Illinois 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 8. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 5. The location is shown on the detailed soil maps. Some of the soil qualities that affect use and management are described under the heading “Soil Series and Detailed Soil Map Units.”

Hydric Soils

In this section, hydric soils are defined and described and the hydric soils in the survey area are listed.

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 all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in “Soil Taxonomy” (Soil Survey Staff, 1999) and “Keys to Soil Taxonomy” (Soil Survey Staff, 2006) and in the “Soil Survey Manual” (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in “Field Indicators of Hydric Soils in the United States” (Hurt and Vasilas, 2006).

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.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform. Table 9 lists the map units that include hydric soils, either as major components or as inclusions. The hydric soils listed in the table meet the definition of a hydric soil and 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 Vasilas, 2006).

The criteria for hydric soils are represented by codes in the table (for example, 2B3). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels

great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:

A. are somewhat poorly drained and have a water table at the surface (0.0 feet) during the growing season, or

B. are poorly drained or very poorly drained and have either:

1) a water table at the surface (0.0 feet) during the growing season if textures are coarse sand, sand, or fine sand in all layers within a depth of 20 inches, or

2) a water table at a depth of 0.5 foot or less during the growing season if saturated hydraulic conductivity (Ksat) is equal to or greater than 6.0 in/hr in all layers within a depth of 20 inches, or

3) a water table at a depth of 1.0 foot or less during the growing season if saturated hydraulic conductivity (Ksat) is less than 6.0 in/hr in any layer within a depth of 20 inches.

3. Soils that are frequently ponded for long or very long duration during the growing season.
4. Soils that are frequently flooded for long or very long duration during the growing season.

Windbreaks and Environmental Plantings

Windbreaks protect livestock, buildings, yards, fruit trees, gardens, and cropland from wind and snow; help to keep snow on fields; and provide food and cover for wildlife. 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 10 shows the height that locally grown trees and shrubs are expected to reach in 20 years on soils in the survey area. The estimates in the table 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 or the Cooperative Extension Service or from a commercial nursery.

Forestland

When the first settlers arrived, forests covered about 55 percent of the land in Crawford County (Iverson and others, 1989). Since then, about 70 percent of the trees have been cleared from areas most suitable for cultivation.

By 1985, only 49,800 acres, or about 17.5 percent of the acreage in Crawford County, remained as forestland (Iverson and others, 1989). Most of the forestland acres are privately owned. The most common trees in the uplands are white oak, black oak, northern red oak, shagbark hickory, white ash, green ash, sugar maple, silver maple, boxelder, black walnut, black cherry, and American elm. The most common trees on flood plains are cottonwood, sycamore, willow, bur oak, pin oak, swamp white oak, hackberry, and silver maple.

The remaining forestland acres are mostly in areas that are too steep, too wet, or too isolated for cultivation. Most of these areas are along the drainageways of the

Wabash and Embarras Rivers and their tributaries. If they are properly managed, the soils in these areas are generally well suited to the growth of high-quality trees.

The productivity of many of the remaining forestland stands could be improved with proper management. Common management practices that are needed in these areas are excluding livestock from the stands; protecting the woodland from fire, insects, and diseases; using proper logging methods; and using proven silvicultural methods to enhance growth and regeneration.

Forestland Productivity

In table 11, the *potential productivity* of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forest managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual" (USDA/NRCS, National Forestry Manual), which is available in local offices of the Natural Resources Conservation Service or on the Internet (http://soils.usda.gov).

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.

Suggested trees to plant are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

Recreation

The demand for recreational facilities is increasing throughout Crawford County. Public lands available for recreation include the Crawford County State Fish and Wildlife Area, which is 2 miles west and 1 mile south of Hutsonville and 7 miles north of Robinson, Illinois. The area, which is managed by the Illinois Department of Natural Resources, includes 1,129 total acres, nearly all of which is huntable. In addition, the conservation area has many trails for hiking or horseback riding. Other small areas throughout the county offer playgrounds, athletic fields, golf courses, fishing ponds, camping and picnic areas, hunting areas, and facilities for target shooting. The potential for further recreational development is favorable throughout the county. The soils having the best potential for such development are in the uplands along the banks of the Embarras and Wabash Rivers and their tributaries. These soils are in areas where the hilly terrain, wooded slopes, and numerous streams provide a variety of locations suited to recreational uses.

In tables 12a and 12b, the soils of the survey area are rated according to limitations that affect their suitability for recreational development. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the 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 these tables can be supplemented by other information in this survey, for example, interpretations for dwellings without basements, for local roads and streets, and for septic tank absorption fields.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Off-road motorcycle trails require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, slope, depth to a water table, ponding, flooding, and texture of the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Wildlife Habitat

Much of Crawford County is in an area that transitions from a broad, tall-grass prairie that contained wet meadows, marshes, and areas of open water to an area dominated by central hardwood forest habitat. This area is near the southern limit of the Midwestern prairie pothole region that traditionally provided valuable nesting and stopover habitat for migratory waterfowl and habitat for other wetland and openland wildlife. Woodlands, especially those along creeks and on moderately steep to very steep landforms, provide habitat for turkey, songbirds, birds of prey, and many mammals, including deer, squirrel, rabbits, fox, and beaver.

As the county was settled, conversion of land for agriculture altered these natural communities and the wildlife species associated with them. Long gone are the wolf, bison, otter, badger, black bear, cougar, and elk that roamed the area as recently as 150 years ago. The landscape in Crawford County is now a mosaic of urban development, cropland, pasture, areas of forestland, wetlands, and waterways that support wildlife species that have adapted to the human-altered landscape. These species include whitetail deer, fox, coyotes, mourning doves, pheasants, squirrels, cardinals, and raccoons.

The largest area in Crawford County managed for wildlife habitat is in the Crawford County State Fish and Wildlife Area, which is managed by the Illinois Department of Natural Resources. Other areas used as wildlife habitat are not necessarily set aside for this purpose. Wildlife habitat is commonly a secondary use in areas used for other purposes, such as farming. For example, the large areas of nearly level and gently sloping soils used for cultivated crops and pasture are also generally well suited to use as habitat for openland wildlife. Most areas in the county can be improved for wildlife habitat by providing needed food, cover, and water.

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

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

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

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

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture also are considerations. Examples of grasses and legumes are lovegrass, orchardgrass, 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, ragweed, wildrye, and Illinois bundleflower.

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, hickory, sycamore, cottonwood, elm, sassafras, serviceberry, gray dogwood, flowering dogwood, hazelnut, sumac, and raspberry. On soils rated *good*, native plants, such as hazelnut, gray dogwood, silky dogwood, oak, and hickory, are the best selections for planting.

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 white pine, Norway spruce, balsam fir, red 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.

Shallow water areas can often be included in the design of ponds and lakes by utilizing the naturally shallow end of the impoundment. Wetland areas can also be created by installing water control valves on field drainage tiles, which allows flooding of fields at times not necessary for production of crops, such as after fall harvest. Valves can be opened to allow fields to drain for spring planting while allowing soil moisture to remain high enough for good productivity. Islands, wood duck boxes, and an even mix of open water and aquatic plants help to provide optimum wildlife habitat in permanent wetland areas.

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.

The habitat for openland wildlife can be improved by seeding roadsides, fence rows, and wildlife travel lanes to perennial plants and legumes, such as smooth bromegrass, timothy, redtop, bluegrass, alfalfa, red clover, ladino clover, or alsike clover. Grassy areas can be enhanced with perennial native prairie grasses, such as big bluestem, little bluestem, switchgrass, and indiangrass. Protecting nesting cover from fire, traffic, grazing, mowing, or other disturbance until after the nesting season also is important.

Warm-season grasses grow best if periodic prescribed burning is applied. Any existing woody cover should be protected from fire and grazing. Establishing hedgerows and windbreaks of trees and shrubs can provide a source of food and roosting areas. Brush piles can be built for cover along fence rows and in odd-shaped areas that are inconvenient for cultivation. Leaving crop residue on the surface after harvest and leaving waste grain in the fields can provide food and cover for wildlife throughout the winter. Also, parts of fields that are adjacent to areas of wildlife cover can be left unharvested.

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 woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

Habitat for woodland wildlife can be improved by protecting native trees, shrubs, and prairie plants from grazing by livestock. Also, protecting the areas from uncontrolled fire helps to minimize the destruction of the leaf mulch and of desirable young trees, shrubs, and sprouts that provide food and cover. Establishing hedgerows, farm windbreaks, brush piles, food plots, and strips of grass or grass-legume mixtures can provide additional food and cover. Plantings for food and cover may be difficult to establish and maintain in the more sloping areas because of the hazard of erosion. Food plots of grain or seed crops should be established in the less sloping areas and should be planted on the contour. Leaving dead trees to provide den sites for raccoons, woodpeckers, opossum, and other cavity-dwelling species also improves the habitat.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas (fig. 16). Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, frogs, snakes, and turtles.

Measures that improve the habitat for wetland wildlife include delaying or limiting the cultivation and planting of commodity crops in the shallow depressions that are subject to ponding. Areas of smartweeds, bulrushes, burreeds, and barnyard grasses should be protected. Japanese millet, milo, and short corn varieties can be planted to provide food and cover. Blocking natural channels and manmade drainage systems can create shallow ponds and marshes. Pits dug in poorly drained or very poorly drained soils should be at least 30 feet in diameter and 2 to 3 feet deep. Such pits provide open

Figure 16.—Ducks, geese, and turtles are attracted to small ponds, such as this one in an area of Menfro silt loam, 10 to 18 percent slopes, eroded.

water through the spring and early summer and thus encourage nesting by ducks. Wetland areas should be protected from grazing by livestock.

Engineering

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

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, reclamation material, roadfill, and topsoil; plan structures for water management; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

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

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

Building Site Development

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Tables 14a and 14b 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

Tables 15a and 15b 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 downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

A *trench sanitary landfill* is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

In an *area sanitary landfill*, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

Construction Materials

Tables 16a and 16b give information about the soils as potential sources of gravel, sand, reclamation material, roadfill, and topsoil. Normal compaction, minor processing, and other standard construction practices are assumed.

Gravel and *sand* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 16a, only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand or gravel, the soil is considered a likely source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

The soils are rated *good, fair,* or *poor* as potential sources of sand and gravel. A rating of *good* or *fair* means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of sand or gravel. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

In table 16b, the rating class terms are *good, fair,* and *poor*. 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, and topsoil. The lower the number, the greater the limitation.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Tables 17a, 17b, and 17c 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; constructing grassed waterways and surface drains; constructing terraces and diversions; tile drains and underground outlets; and irrigation. 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).

Table 17a

Pond reservoir areas hold water behind a dam or embankment (fig. 17). 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.

Figure 17.—More than 840 small ponds are scattered throughout the county. These ponds provide recreational opportunities and habitat for wetland wildlife.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Table 17b

Grassed waterways and surface drains 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 affect the construction of grassed waterways and surface drains. A hazard of wind erosion, a 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 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.

Tile drains and underground outlets are used in some areas to remove excess subsurface and surface water from the soil. The ratings in the table apply to undisturbed soils that commonly have a seasonal high water table within a depth of about 3.5 feet. Current land use is not considered in the ratings. Depth to bedrock, a dense layer, or a cemented pan, the content of large stones, and the content of clay influence the ease of digging, filling, and compacting. A seasonal high water table, ponding, and flooding may restrict the period when excavations can be made. The slope influences the use of machinery. Soil texture and depth to the water table influence the resistance to sloughing. Subsidence of organic layers influences grade and stability of tile drains. Limitations affecting areas where the tile line passes through soils in which the water table is generally below a depth of 3.5 feet are provided in the "shallow excavations" column in table 14b, which is described under the heading "Building Site Development."

Table 17c

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

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 reported in table 23.

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 18 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 (fig. 18). "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, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

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

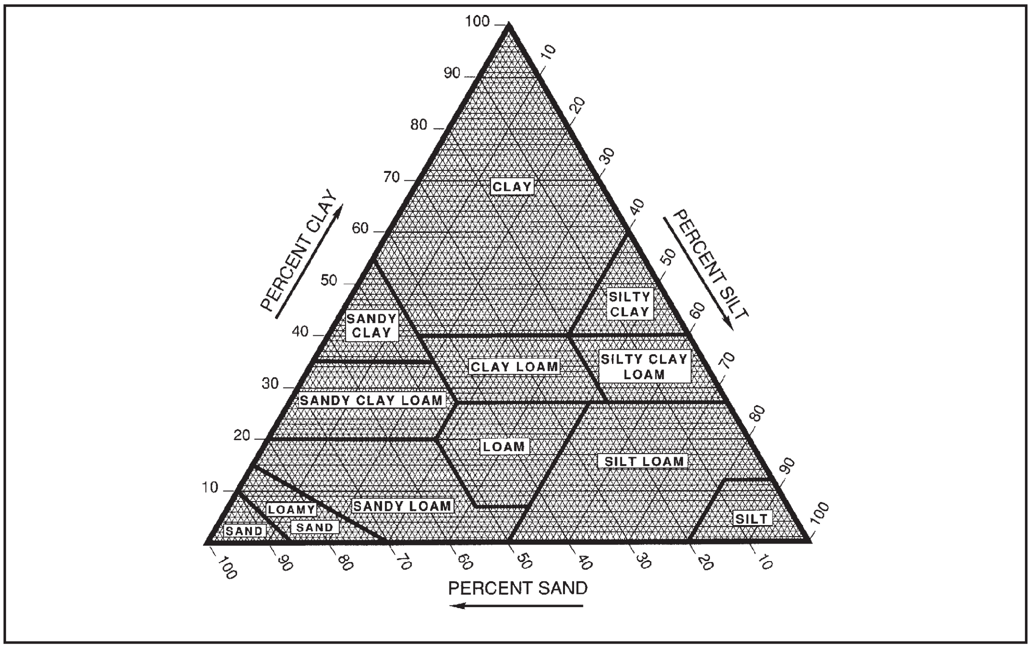


Figure 18.—Percentages of clay, silt, and sand in the basic USDA soil textural classes.

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 23.

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

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

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In the table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In the table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In the table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^{1}/_{3}$- or $^{1}/_{10}$-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute 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 (Ksat) refers to the ability of a soil to transmit water or air. The term “permeability,” as used in soil surveys, indicates saturated hydraulic conductivity (Ksat). The estimates in the table indicate the rate of water movement, in inches per hour, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at $^{1}/_{3}$- or $^{1}/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 19, 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.

Erosion factors are shown in table 19 as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the “National Soil Survey Handbook” (USDA/NRCS, National Soil Survey Handbook).

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Chemical Properties

Table 20 shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

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

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

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

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

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.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 20, 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.

Sodium adsorption ratio (SAR) is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced permeability and aeration, and a general degradation of soil structure.

Water Features

Table 21 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.

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

21 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* of flooding 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). *Common* is used when the occasional and frequent classes are grouped for certain purposes.

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.

Water table refers to a saturated zone in the soil. Table 21 indicates the depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone for the specified *months* 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.

The table also shows the *kind of water table*, that is, apparent or perched. An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Soil Features

Table 22 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, natric horizons, 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.

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.

Engineering Index Test Data

Table 23 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are representative of the series described in the section “Soil Series and Detailed Soil Map Units.” The soil samples were tested by the Illinois Department of Transportation, Springfield, Illinois.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

The tests and methods are Moisture density—T 99 (AASHTO), D698 (ASTM); Mechanical analysis—T 88 (AASHTO), D422 (ASTM), D2217 (ASTM); Liquid limit—T 89 (AASHTO), D4318 (ASTM); Plasticity index—T 90 (AASHTO), D4318 (ASTM); AASHTO classification—M 145 (AASHTO), D3282 (ASTM); and Unified classification—D2487-00 (ASTM).

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Awalt, F.L. 1996. Soil survey of Crawford County, Illinois. U.S. Department of Agriculture, Natural Resources Conservation Service. Illinois Agricultural Experiment Station Soil Report 154.

Birch, Michael. 2006. Personal communication with Michael Birch, Manager, Hardinville Water Company. May 18, 2006.

Brady, Nyle C. 1984. The nature and properties of soils. 9th edition. Cornell University and U.S. Agency for International Development.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hansel, A.K., and W.H. Johnson. 1996. Wedron and Mason Groups: Lithostratigraphic reclassification of deposits of the Wisconsin episode, Lake Michigan Lobe area. Department of Natural Resources, Illinois State Geological Survey. Bulletin 104.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Illinois Environmental Protection Agency. Accessed November 7, 2005 (http://www.epa.state.il.us).

Illinois GenWeb Project, Crawford County. Accessed November 8, 2005 (http://www.rootsweb.com/~ilcrawfo/).

Iverson, L.R., and others. 1989. The forest resources of Illinois: An atlas and analysis of spatial and temporal attributes. Illinois Natural History Survey, Special Publication 11.

Jenny, Hans. 1941. Factors of soil formation.

Leighton, M.M., G.E. Ekblaw, and L. Horberg. 1948. Physiographic divisions of Illinois. Illinois State Geological Survey, Report of Investigations 129.

Lineback, J.A., and others. 1979. Quaternary deposits of Illinois. Illinois State Geological Survey. Map 1:500,000.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Olsen, K.R., J.M. Lang, and others. 2000a. Average crop, pasture, and forestry productivity ratings for Illinois soils. University of Illinois, College of Agriculture, Consumer and Environmental Sciences. Bulletin 810.

Olsen, K.R., J.M. Lang, and others. 2000b. Optimum crop productivity ratings for Illinois soils. University of Illinois, College of Agriculture, Consumer and Environmental Sciences. Bulletin 811.

Piskin, K., and R.E. Bergstrom. 1975. Glacial drift in Illinois: Thickness and character.

Reinertsen, D.L., and others. 1993. Guide to the geology of the Lawrenceville area, Lawrence and Crawford Counties, Illinois.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2003. Keys to soil taxonomy. 9th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, National Agricultural Statistics Service. 2002. Illinois 2002 census of agriculture county data. Accessed January 1, 2006 (http://www.nass.usda.gov/index.asp).

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual, title 190. Accessed November 8, 2005 (http://soils.usda.gov/technical/).

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. Online at http://soils.usda.gov/technical/

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. Online at http://soils.usda.gov/

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210.

United States Department of Commerce, Bureau of the Census. 2003. Population estimates, county table. Accessed November 8, 2005 (http://www.census.gov/popest/estimates.php).

Wicander, R., and J.S. Monroe. 1993. Historical geology—Evolution of the earth and life through time. 2nd edition.

Willman, H.B., and J.C. Frye. 1970. Glacial map of Illinois. Illinois State Geological Survey Bulletin 94.

Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the "National Soil Survey Handbook" (available in local offices of the Natural Resources Conservation Service or on the Internet).

ABC soil. A soil having an A, a B, and a C horizon.

Ablation till. Loose, relatively permeable earthy material deposited during the downwasting of nearly static glacial ice, either contained within or accumulated on the surface of the glacier.

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. A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.

Alluvium. Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Alpha,alpha-dipyridyl. A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction toward which a slope faces. Also called slope aspect.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

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 (geomorphology). A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Batavia facies (geology). An informal separation of the Henry Formation. The Batavia facies occurs on outwash plains and consists of stratified silt loam to gravelly sandy loam with thin bands of finer or coarser material.

Bedding plane. A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology) from the preceding or following layer; a plane of deposition. It commonly marks a change in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.

Bedding system. A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Blowout. A saucer-, cup-, or trough-shaped depression formed by wind erosion on a preexisting dune or other sand deposit, especially in an area of shifting sand or loose soil or where protective vegetation is disturbed or destroyed; the adjoining accumulation of sand derived from the depression, where recognizable, is commonly included. Blowouts are commonly small.

Bottom land. An informal term loosely applied to various portions of a flood plain.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks. A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Cahokia Formation (geology). Deposits in flood plains and channels in modern rivers and streams. Mostly poorly sorted sand, silt, or clay containing local deposits of sandy gravel. See Quaternary.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Calcium carbonate. A common mineral in sediments and soils.

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.

Carmi facies (geology). Largely quiet-water lake sediments dominated by well bedded silt and some clay. See Equality Formation.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Catsteps. See Terracettes.

Channery soil material. Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. See Redoximorphic features.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A dense, compact, slowly permeable subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. A claypan is commonly hard when dry and plastic and sticky when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility). See Linear extensibility.

Colluvium. Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. See Redoximorphic features.

Conglomerate. A coarse grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat). A type of limnic layer composed predominantly of fecal material derived from aquatic animals.

Corrosion (geomorphology). A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations). Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

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 fan shaped and nearly flat; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depression. Any relatively sunken part of the earth's surface; especially a low-lying area surrounded by higher ground. A closed depression has no natural outlet for surface drainage. An open depression has a natural outlet for surface drainage.

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.

Diamicton (geology). A general term for a till-like mixture of unsorted, unstratified rock debris composed of a wide range of particle sizes; use of this term carries no suggestion about how such debris was formed or deposited.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming. A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

Drainage, surface. Runoff, or surface flow of water, from an area.

Drainageway. A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Drift. A general term applied to all mineral material (clay, silt, sand, gravel, and boulders) transported by a glacier and deposited directly by or from the ice or transported by running water emanating from a glacier. Drift includes unstratified material (till) that forms moraines and stratified deposits that form outwash plains, eskers, kames, varves, and glaciofluvial sediments. The term is generally applied to Pleistocene glacial deposits in areas that no longer contain glaciers.

Drumlin. A low, smooth, elongated oval hill, mound, or ridge of compact till that has a core of bedrock or drift. It commonly has a blunt nose facing the direction from which the ice approached and a gentler slope tapering in the other direction. The longer axis is parallel to the general direction of glacier flow. Drumlins are products of streamline (laminar) flow of glaciers, which molded the subglacial floor through a combination of erosion and deposition.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.
Dune. A low mound, ridge, bank, or hill of loose, windblown granular material (generally sand), either barren and capable of movement from place to place or covered and stabilized with vegetation but retaining its characteristic shape.
Earthy fill. See Mine spoil.
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 ridgelike accumulation that is being or was produced at the outer margin 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 deposit. Sand-, silt-, or clay-sized clastic material transported and deposited primarily by wind, commonly in the form of a dune or a sheet of sand or loess.
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.
Equality Formation (geology). Consists of gray to red silt and clay; generally shows evidence of bedding structures and occurs above the Sangamon geosol. Predominantly occurs as a fine grained lacustrine sediment. Ranges in age from 26,000 radiocarbon years to present.
Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion surface. A land surface shaped by the action of erosion, especially by running water.
Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.
Esker. A long, narrow, sinuous, steep-sided ridge of stratified sand and gravel deposited as the bed of a stream flowing in an ice tunnel within or below the ice (subglacial) or between ice walls on top of the ice of a wasting glacier and left behind as high ground when the ice melted. Eskers range in length from less than a kilometer to more than 160 kilometers and in height from 3 to 30 meters.
Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.
Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom. An obsolete, informal term loosely applied to the lowest flood-plain steps that are subject to regular flooding.

Flaggy soil material. Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Flood-plain landforms. A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

Flood-plain splay. A fan-shaped deposit or other outspread deposit formed where an overloaded stream breaks through a levee (natural or artificial) and deposits its material (commonly coarse grained) on the flood plain.

Flood-plain step. An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.

Fluvial. Of or pertaining to rivers or streams; produced by stream or river action.

Footslope. The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Geosol. A buried soil that formed on a landscape in the past with distinctive morphological features resulting from a soil-forming environment that no longer exists at the site. The former pedogenic process was interrupted by burial. A geosol is a laterally traceable, mappable, geologic weathering profile that has a consistent stratigraphic position. See Paleosol.

Gilgai. Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.

Glaciofluvial deposits. Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur in the form of outwash plains, valley trains, deltas, kames, eskers, and kame terraces.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are bedded or laminated.

Glasford Formation (geology). Encompasses all till members of Illinoian age in Illinois.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground moraine. An extensive, fairly even layer of till having an uneven or undulating surface.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A small channel with steep sides caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim (in tables). Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head slope (geomorphology). A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

Henry Formation (geology). Consists of stratified sand and gravel that occur above the Sangamon Geosol.

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 generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

Hillslope. A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

Holocene (geology). Postglacial age or time period (interglacial). About 0 to 12,600 years before present. See Quaternary.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

L horizon.—A layer of organic and mineral limnic materials, including coprogenous earth (sedimentary peat), diatomaceous earth, and marl.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

Illinoian (geology). In Illinois, represents the glacial age of ice advance preceding the Sangamonian and Wisconsinan and following the Yarmouthian and pre-Illinoian during the Pleistocene. This glaciation covered practically the entire State of Illinois with the exception of small portions in northwestern, western, and southern Illinois. See Pleistocene.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Interfluve. A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology). A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream. A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. See Redoximorphic features.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

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.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Kame. A low mound, knob, hummock, or short irregular ridge composed of stratified sand and gravel deposited by a subglacial stream as a fan or delta at the margin of a melting glacier; by a supraglacial stream in a low place or hole on the surface of the glacier; or as a ponded deposit on the surface or at the margin of stagnant ice.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Ksat. Saturated hydraulic conductivity. (See Permeability.)

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain. A nearly level surface marking the floor of an extinct lake filled by well sorted, generally fine textured, stratified deposits, commonly containing varves.

Lake terrace. A narrow shelf, partly cut and partly built, produced along a lakeshore in front of a scarp line of low cliffs and later exposed when the water level falls.

Landscape. A collection of related natural landforms; usually the land surface which the eye can comprehend in a single view.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^{1}/_{3}$- or $^{1}/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Material transported and deposited by wind and consisting dominantly of silt-sized particles.

Low strength. The soil is not strong enough to support loads.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Mackinaw facies (geology). An informal separation of the Henry Formation. The Mackinaw facies consists of well sorted sand and gravel outwash deposits in valleys leading outward from glacier fronts. Preserved today as terraces beneath Holocene deposits in major stream and river valleys.

Mason Group (geology). The Mason Group comprises three proglacial and one postglacial sorted sediment formations that represent distinct stratigraphic layers based on grain size and bedding characteristics. The proglacial units are Roxana Silt, Peoria Silt, and the Henry Formation. The postglacial unit is the Equality Formation.

Masses. See Redoximorphic features.

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 at depth in the earth's crust. Nearly all such rocks are crystalline.

Mine spoil. An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. A kind of map unit that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Moraine. In terms of glacial geology, a mound, ridge, or other topographically distinct accumulation of unsorted, unstratified drift, predominantly till, deposited primarily by the direct action of glacial ice in a variety of landforms. Also, a general term for a landform composed mainly of till (except for kame moraines, which are composed mainly of stratified outwash) that has been deposited by a glacier. Some types of moraines are disintegration, end, ground, kame, lateral, recessional, and terminal.

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.)

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon. A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. See Redoximorphic features.

Nose slope (geomorphology). A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Outwash. Stratified and sorted sediments (chiefly sand and gravel) removed or “washed out” from a glacier by meltwater streams and deposited in front of or beyond the end moraine or the margin of a glacier. The coarser material is deposited nearer to the ice.

Outwash plain. An extensive lowland area of coarse textured glaciofluvial material. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Paleosol. A general term used to describe a soil that formed on a landscape of the past; it may be a buried soil, a relict soil, or an exhumed soil. See Geosol.

Paleoterrace. An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Parkland facies (geology). An informal separation of the Henry Formation where it occurs as dunes in outwash areas; an informal separation of Peoria Silt where it occurs interfingered with silt in bluff areas. It consists of well sorted eolian sand deposits in the form of dunes or sheetlike deposits.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment (regional geology). A thin layer of alluvial material that mantles an erosion surface and has been transported to its present position from higher lying areas of the erosion surface.

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.

Peoria Silt (geology). Light yellow tan to gray, calcareous silt that grades from a sandy silt in the bluffs to a clayey silt away from the bluffs. Also known as Peoria Loess. Covers most of Illinois and ranges in thickness from 80 feet in bluff areas along the Mississippi River to 1 or 2 feet in areas away from the bluffs. Deposition occurred 25,000 to 12,500 radiocarbon years ago.

Percolation. The movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permafrost. Ground, soil, or rock that remains at or below 0 degrees C for at least 2 years. It is defined on the basis of temperature and is not necessarily frozen.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Impermeable	less than 0.0015 inch
Very slow	0.0015 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting (in tables). Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Pleistocene (geology). The period in a geologic time series that encompasses all glacial and interglacial stages. Includes the Wisconsinan, Sangamonian, Illinoian, Yarmouthian, and pre-Illinoian. The period covered is about 12,600 to 2 million years before present.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Pore linings. See Redoximorphic features.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Quaternary (geology). The latest period of time in the stratigraphic column, about 0 to 2 million years before present, represented by local accumulations of glacial (Pleistocene) and postglacial (Holocene) deposits. An artificial division of time used to separate pre-human from post-human sedimentation.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. See Redoximorphic features.

Redoximorphic depletions. See Redoximorphic features.

Redoximorphic features. Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:
   A. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; *and*
   B. Masses, which are noncemented concentrations of substances within the soil matrix; *and*
   C. Pore linings, i.e., zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.
2. Redoximorphic depletions.—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:
   A. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix; *and*
   B. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).
3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix. See Redoximorphic features.

Regolith. All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief. The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Rill. A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riser. The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Root zone. The part of the soil that can be penetrated by plant roots.

Roxana Silt (geology). Brownish red and gray silt loam. Typically leached of carbonates. It overlies the Sangamon Geosol and is typically bounded above by Peoria Silts. It can be distinguished from Peoria Silts by being darker brown and more clayey. Deposition occurred 75,000 to 27,000 radiocarbon years ago.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Sand. As a soil separate, individual rock or mineral fragments 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.

Sangamonian (geology). In Illinois, represents an interglacial age between the Illinoian and Wisconsinan glacial stages during the Pleistocene. See Pleistocene; Geosol.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturated hydraulic conductivity (Ksat). See Permeability.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Second bottom. The first terrace above the normal flood plain (or first bottom) of a river.

Sedimentary rock. A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

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 that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shoulder. The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Side slope (geomorphology). A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides (pedogenic). Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope alluvium. Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

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.

Sodium adsorption ratio (SAR). A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil 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. In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Strath terrace. A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).

Stream terrace. One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit. The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

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. An end moraine that marks the farthest advance of a glacier. It typically has the form of a massive arcuate or concentric ridge, or complex of ridges, and is underlain by till and other types of drift.

Terrace (conservation). An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geomorphology). A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.

Terracettes. Small, irregular steplike forms on steep hillslopes, especially in pasture, formed by creep or erosion of surficial materials that may be induced or enhanced by trampling of livestock, such as sheep or cattle.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Till. Dominantly unsorted and nonstratified drift, generally unconsolidated and deposited directly by a glacier without subsequent reworking by meltwater, and consisting of a heterogeneous mixture of clay, silt, sand, gravel, stones, and boulders; rock fragments of various lithologies are embedded within a finer matrix that can range from clay to sandy loam.

Till plain. An extensive area of level to gently undulating soils underlain predominantly by till and bounded at the distal end by subordinate recessional or end moraines.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread. The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Tuff. A generic term for any consolidated or cemented deposit that is 50 percent or more volcanic ash.

Upland. An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.

Valley fill. In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.

Vandalia Till Member (geology). The Vandalia Till Member of the Glasford Formation consists of clay loam diamicton. It is generally gray and calcareous, except where weathered. It is commonly 25 to 30 feet thick and is bounded at the top by the Sangamon Geosol.

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.

Wasco facies (geology). An informal separation of the Henry Formation. The Wasco facies consists of poorly sorted sand and gravel outwash deposits on kames, eskers, and deltas.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering. All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Wedron Group (geology). Mostly diamicton of the Wisconsinan Age.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Wisconsinan (geology). In Illinois, represents the last glacial stage of ice advance during the Pleistocene. Follows the Sangamonian interglacial stage. See Pleistocene.

Yarmouthian (geology). In Illinois, represents an interglacial stage between the pre-Illinoian and Illinoian glacial stages during the Pleistocene. See Pleistocene.

Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1971-2000 at Palestine, Illinois)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January----	37.2	20.7	28.9	65	-11	4	2.57	1.02	3.87	5	6.2
February---	43.0	25.5	34.3	71	-6	9	2.68	1.50	3.72	5	4.3
March------	54.5	35.1	44.8	81	10	71	3.80	2.08	5.32	7	2.7
April------	65.9	44.2	55.1	87	24	204	3.98	2.30	5.47	8	.2
May--------	76.2	54.0	65.1	93	34	464	4.67	2.45	6.62	7	.0
June-------	84.9	62.6	73.7	98	44	711	3.81	2.20	5.24	6	.0
July-------	88.1	66.3	77.2	100	51	843	4.16	2.19	5.89	6	.0
August-----	86.3	64.9	75.6	98	50	793	3.80	2.00	5.38	5	.0
September--	80.0	55.2	67.6	95	35	528	3.49	1.21	5.38	5	.0
October----	68.5	45.2	56.9	88	25	243	2.94	1.78	3.98	4	.1
November---	54.1	36.1	45.1	77	14	65	3.90	1.98	5.58	6	1.0
December---	41.8	26.0	33.9	67	-6	11	3.15	1.41	4.63	6	4.1
Yearly:											
Average---	65.0	44.6	54.8	---	---	---	---	---	---	---	---
Extreme---	107	-23	---	101	-15	---	---	---	---	---	---
Total-----	---	---	---	---	---	3,946	42.95	34.28	49.22	70	18.6

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

Table 2.--Freeze Dates in Spring and Fall

(Recorded in the period 1971-2000 at Palestine, Illinois)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 7	Apr. 16	Apr. 27
2 years in 10 later than--	Apr. 2	Apr. 11	Apr. 23
5 years in 10 later than--	Mar. 22	Apr. 1	Apr. 14
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 24	Oct. 12	Sept. 23
2 years in 10 earlier than--	Oct. 30	Oct. 18	Oct. 2
5 years in 10 earlier than--	Nov. 11	Oct. 30	Oct. 17

Table 3.--Growing Season

(Recorded in the period 1971-2000 at Palestine, Illinois)

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	212	187	159
8 years in 10	220	196	168
5 years in 10	234	212	186
2 years in 10	249	228	203
1 year in 10	257	237	213

Table 4.--Classification of the Soils

(An asterisk in the first column indicates a taxadjunct to the series. See text for a description of those characteristics that are outside the range of the series)

Soil name	Family or higher taxonomic class
Alvin	Coarse-loamy, mixed, superactive, mesic Typic Hapludalfs
Armiesburg	Fine-silty, mixed, superactive, mesic Fluventic Hapludolls
*Atlas	Fine, smectitic, mesic Aeric Endoaqualfs
*Atlas	Fine, smectitic, mesic Aquic Hapludalfs
Ava	Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs
Beaucoup	Fine-silty, mixed, superactive, mesic Fluvaquentic Endoaquolls
*Birds	Fine-silty, mixed, superactive, nonacid, mesic Fluvaquentic Endoaquepts
Bluford	Fine, smectitic, mesic Aeric Fragic Epiaqualfs
Carmi	Coarse-loamy, mixed, superactive, mesic Pachic Hapludolls
Cisne	Fine, smectitic, mesic Mollic Albaqualfs
Cowden	Fine, smectitic, mesic Mollic Albaqualfs
Darmstadt	Fine-silty, mixed, superactive, mesic Aquic Natrudalfs
Darwin	Fine, smectitic, mesic Fluvaquentic Vertic Endoaquolls
Elco	Fine-silty, mixed, superactive, mesic Oxyaquic Hapludalfs
Fishhook	Fine-silty, mixed, superactive, mesic Aquic Hapludalfs
Haymond	Coarse-silty, mixed, superactive, mesic Dystric Fluventic Eutrudepts
Hickory	Fine-loamy, mixed, active, mesic Typic Hapludalfs
Hosmer	Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs
Hoyleton	Fine, smectitic, mesic Aquollic Hapludalfs
Iona	Fine-silty, mixed, superactive, mesic Oxyaquic Hapludalfs
Kell	Fine-loamy, mixed, active, mesic Ultic Hapludalfs
Menfro	Fine-silty, mixed, superactive, mesic Typic Hapludalfs
Muren	Fine-silty, mixed, superactive, mesic Aquic Hapludalfs
Navlys	Fine-silty, mixed, superactive, mesic Typic Hapludalfs
Newberry	Fine-silty, mixed, superactive, mesic Mollic Endoaqualfs
Patton	Fine-silty, mixed, superactive, mesic Typic Endoaquolls
Petrolia	Fine-silty, mixed, superactive, nonacid, mesic Fluvaquentic Endoaquepts
Pierron	Fine, smectitic, mesic Typic Albaqualfs
Ridgway	Fine-silty, mixed, superactive, mesic Typic Hapludalfs
Roby	Coarse-loamy, mixed, superactive, mesic Aquic Hapludalfs
Ruark	Fine-loamy, mixed, active, mesic Typic Endoaqualfs
Shiloh	Fine, smectitic, mesic Cumulic Vertic Endoaquolls
Shoals	Fine-loamy, mixed, superactive, nonacid, mesic Fluventic Endoaquepts
Stockland	Loamy-skeletal, mixed, superactive, mesic Pachic Hapludolls
Stonelick	Coarse-loamy, mixed, superactive, calcareous, mesic Typic Udifluvents
Stoy	Fine-silty, mixed, superactive, mesic Fragiaquic Hapludalfs
Tice	Fine-silty, mixed, superactive, mesic Fluvaquentic Hapludolls
*Vanmeter	Fine, illitic, mesic Aquic Eutrudepts
Virden	Fine, smectitic, mesic Vertic Argiaquolls
Wakeland	Coarse-silty, mixed, superactive, nonacid, mesic Aeric Fluvaquents
Westland	Fine-loamy, mixed, superactive, mesic Typic Argiaquolls
Wynoose	Fine, smectitic, mesic Typic Albaqualfs

Table 5.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
2A	Cisne silt loam, 0 to 2 percent slopes	31,684	11.1
3A	Hoyleton silt loam, 0 to 2 percent slopes	8,261	2.9
3B	Hoyleton silt loam, 2 to 5 percent slopes	1,233	0.4
6B2	Fishhook silt loam, 2 to 5 percent slopes, eroded	2,286	0.8
7C2	Atlas silt loam, 5 to 10 percent slopes, eroded	5,374	1.9
7C3	Atlas silty clay loam, 5 to 10 percent slopes, severely eroded	719	0.3
7D2	Atlas silt loam, 10 to 18 percent slopes, eroded	1,952	0.7
8F	Hickory silt loam, 18 to 35 percent slopes	5,040	1.8
12A	Wynoose silt loam, 0 to 2 percent slopes	20,351	7.1
13A	Bluford silt loam, 0 to 2 percent slopes	29,267	10.3
13B2	Bluford silt loam, 2 to 5 percent slopes, eroded	6,329	2.2
14B	Ava silt loam, 2 to 5 percent slopes	15,605	5.5
14C2	Ava silt loam, 5 to 10 percent slopes, eroded	4,254	1.5
31A	Pierron silt loam, 0 to 2 percent slopes	3,301	1.2
50A	Virden silty clay loam, 0 to 2 percent slopes	3,405	1.2
79B	Menfro silt loam, 2 to 5 percent slopes	4,997	1.8
79C2	Menfro silt loam, 5 to 10 percent slopes, eroded	3,243	1.1
79D2	Menfro silt loam, 10 to 18 percent slopes, eroded	786	0.3
79F	Menfro silt loam, 18 to 35 percent slopes	647	0.2
112A	Cowden silt loam, 0 to 2 percent slopes	2,486	0.9
119C2	Elco silt loam, 5 to 10 percent slopes, eroded	3,853	1.4
119D	Elco silt loam, 10 to 18 percent slopes	1,211	0.4
131A	Alvin fine sandy loam, 0 to 2 percent slopes	1,711	0.6
131B	Alvin fine sandy loam, 2 to 5 percent slopes	1,639	0.6
131C2	Alvin fine sandy loam, 5 to 10 percent slopes, eroded	878	0.3
131D2	Alvin fine sandy loam, 10 to 18 percent slopes, eroded	313	0.1
131F	Alvin fine sandy loam, 18 to 35 percent slopes	325	0.1
138A	Shiloh silty clay loam, 0 to 2 percent slopes	432	0.2
142A	Patton silty clay loam, 0 to 2 percent slopes	1,564	0.5
164A	Stoy silt loam, 0 to 2 percent slopes	8,992	3.2
164B	Stoy silt loam, 2 to 5 percent slopes	1,432	0.5
178A	Ruark fine sandy loam, 0 to 2 percent slopes	2,490	0.9
184A	Roby fine sandy loam, 0 to 2 percent slopes	1,365	0.5
214B	Hosmer silt loam, 2 to 5 percent slopes	7,543	2.6
214C2	Hosmer silt loam, 5 to 10 percent slopes, eroded	2,117	0.7
218A	Newberry silt loam, 0 to 2 percent slopes	829	0.3
307B2	Iona silt loam, 2 to 5 percent slopes, eroded	3,213	1.1
434A	Ridgway silt loam, 0 to 2 percent slopes	1,437	0.5
434B	Ridgway silt loam, 2 to 5 percent slopes	514	0.2
434C2	Ridgway silt loam, 5 to 10 percent slopes, eroded	475	0.2
453A	Muren silt loam, 0 to 2 percent slopes	11,917	4.2
615C2	Vanmeter silty clay loam, 5 to 10 percent slopes, eroded	238	*
615F	Vanmeter silty clay loam, 18 to 35 percent slopes	503	0.2
630D3	Navlys silty clay loam, 10 to 18 percent slopes, severely eroded	197	*
908D2	Hickory-Kell complex, 10 to 18 percent slopes, eroded	1,838	0.6
908F	Hickory-Kell complex, 18 to 35 percent slopes	1,252	0.4
912A	Hoyleton-Darmstadt silt loams, 0 to 2 percent slopes	954	0.3
946D2	Hickory-Atlas complex, 10 to 18 percent slopes, eroded	7,779	2.7
3070A	Beaucoup silty clay loam, 0 to 2 percent slopes, frequently flooded	1,080	0.4
3071A	Darwin silty clay, 0 to 2 percent slopes, frequently flooded	6,119	2.1
3284A	Tice silty clay loam, 0 to 2 percent slopes, frequently flooded	475	0.2
3288A	Petrolia silty clay loam, 0 to 2 percent slopes, frequently flooded	4,472	1.6
3331A	Haymond silt loam, 0 to 2 percent slopes, frequently flooded	5,372	1.9
3333A	Wakeland silt loam, 0 to 2 percent slopes, frequently flooded	17,435	6.1
3334A	Birds silt loam, 0 to 2 percent slopes, frequently flooded	5,151	1.8
3424A	Shoals silt loam, 0 to 2 percent slopes, frequently flooded	2,882	1.0
3597A	Armiesburg silty clay loam, 0 to 2 percent slopes, frequently flooded	2,435	0.9
3665A	Stonelick loam, 0 to 2 percent slopes, frequently flooded	2,021	0.7
7155A	Stockland gravelly sandy loam, 0 to 2 percent slopes, rarely flooded	888	0.3
7155B	Stockland gravelly sandy loam, 2 to 5 percent slopes, rarely flooded	936	0.3
7155C	Stockland gravelly sandy loam, 5 to 10 percent slopes, rarely flooded	626	0.2
7286A	Carmi sandy loam, 0 to 2 percent slopes, rarely flooded	8,869	3.1

See footnote at end of table.

Table 5.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
7286B	Carmi sandy loam, 2 to 5 percent slopes, rarely flooded	1,129	0.4
7803C	Orthents, rarely flooded	78	*
7841A	Carmi-Westland complex, 0 to 2 percent slopes, rarely flooded	3,875	1.4
7865	Pits, gravel, rarely flooded	463	0.2
M-W	Miscellaneous water	89	*
W	Water	2,694	0.9
	Total	285,320	100.0

* Less than 0.1 percent.

Table 6.--Limitations and Hazards Affecting Cropland and Pastureland

(See text for a description of the limitations and hazards listed in this table. Only the soils that are generally available for use as cropland or pastureland are listed. Absence of an entry indicates that the soil is generally not suited to use as cropland or pastureland)

Map symbol and soil name	Limitations and hazards affecting cropland	Limitations and hazards affecting pastureland
2A:		
Cisne	Ponding, restricted permeability, wetness.	Ponding, low pH, frost heave, wetness.
3A:		
Hoyleton	Wetness, crusting	Wetness, low pH.
3B:		
Hoyleton	Wetness, crusting, water erosion.	Wetness, low pH, water erosion.
6B2:		
Fishhook	Wetness, water erosion, restricted permeability.	Wetness, low pH, water erosion.
7C2:		
Atlas	Wetness, crusting, water erosion, restricted permeability.	Wetness, low pH, water erosion.
7C3:		
Atlas	Wetness, poor tilth, crusting, water erosion, restricted permeability.	Wetness, poor tilth, low pH, water erosion.
7D2:		
Atlas	Wetness, crusting, water erosion, restricted permeability.	Wetness, low pH, water erosion.
8F:		
Hickory	---	Equipment limitation, low pH, water erosion.
12A:		
Wynoose	Ponding, low pH, restricted permeability, wetness.	Ponding, low pH, frost heave, wetness.
13A:		
Bluford	Wetness, root-restrictive layer, restricted permeability.	Wetness, root-restrictive layer, low pH.
13B2:		
Bluford	Wetness, root-restrictive layer, water erosion, restricted permeability.	Wetness, root-restrictive layer, low pH, water erosion.
14B:		
Ava	Wetness, root-restrictive layer, water erosion, restricted permeability.	Wetness, root-restrictive layer, low pH, water erosion.
14C2:		
Ava	Wetness, root-restrictive layer, water erosion, restricted permeability.	Wetness, root-restrictive layer, low pH, water erosion.

Table 6.--Limitations and Hazards Affecting Cropland and Pastureland--Continued

Map symbol and soil name	Limitations and hazards affecting cropland	Limitations and hazards affecting pastureland
31A:		
Pierron	Ponding, low pH, crusting, restricted permeability, wetness.	Ponding, low pH, frost heave, wetness.
50A:		
Virden	Ponding, poor tilth, restricted permeability, wetness.	Ponding, poor tilth, frost heave, wetness.
79B:		
Menfro	Crusting, water erosion	Low pH, water erosion.
79C2:		
Menfro	Crusting, water erosion	Low pH, water erosion.
79D2:		
Menfro	Crusting, water erosion	Low pH, water erosion.
79F:		
Menfro	---	Equipment limitation, low pH, water erosion.
112A:		
Cowden	Ponding, crusting, restricted permeability, wetness.	Ponding, low pH, frost heave, wetness.
119C2:		
Elco	Wetness, water erosion	Wetness, low pH, water erosion.
119D:		
Elco	Wetness, water erosion	Wetness, low pH, water erosion.
131A:		
Alvin	None*	Low pH, low fertility.
131B:		
Alvin	Limited available water capacity.	Low pH, limited available water capacity, low fertility.
131C2:		
Alvin	Water erosion, limited available water capacity.	Low pH, water erosion, limited available water capacity, low fertility.
131D2:		
Alvin	Water erosion	Low pH, water erosion, low fertility.
131F:		
Alvin	---	Equipment limitation, low pH, water erosion, low fertility.
138A:		
Shiloh	Ponding, poor tilth, restricted permeability.	Ponding, frost heave.
142A:		
Patton	Ponding, poor tilth, wetness	Ponding, frost heave, wetness.

See footnote at end of table.

Table 6.--Limitations and Hazards Affecting Cropland and Pastureland--Continued

Map symbol and soil name	Limitations and hazards affecting cropland	Limitations and hazards affecting pastureland
164A:		
Stoy	Wetness, root-restrictive layer, crusting, restricted permeability.	Wetness, root-restrictive layer, low pH.
164B:		
Stoy	Wetness, root-restrictive layer, crusting, water erosion, restricted permeability.	Wetness, root-restrictive layer, low pH, water erosion.
178A:		
Ruark	Ponding, wetness	Ponding, low pH, low fertility, frost heave, wetness.
184A:		
Roby	Wetness	Wetness, low pH, low fertility.
214B:		
Hosmer	Wetness, root-restrictive layer, crusting, water erosion, restricted permeability.	Wetness, root-restrictive layer, low pH, water erosion.
214C2:		
Hosmer	Wetness, root-restrictive layer, crusting, water erosion, restricted permeability.	Wetness, root-restrictive layer, low pH, water erosion.
218A:		
Newberry	Ponding	Ponding, low pH, frost heave.
307B2:		
Iona	Water erosion	Low pH, water erosion.
434A:		
Ridgway	None*	Low pH.
434B:		
Ridgway	Water erosion	Low pH, water erosion.
434C2:		
Ridgway	Water erosion	Low pH, water erosion.
453A:		
Muren	Wetness	Wetness, low pH.
615C2:		
Vanmeter	Wetness, depth to bedrock, poor tilth, high pH, water erosion, limited available water capacity, restricted permeability.	Wetness, depth to bedrock, poor tilth, high pH, water erosion, limited available water capacity.
615F:		
Vanmeter	---	---

See footnote at end of table.

Table 6.--Limitations and Hazards Affecting Cropland and Pastureland--Continued

Map symbol and soil name	Limitations and hazards affecting cropland	Limitations and hazards affecting pastureland
630D3:		
Navlys	Poor tilth, high pH, excess lime, crusting, water erosion.	Poor tilth, high pH, water erosion, excess lime.
908D2:		
Hickory	Water erosion	Low pH, water erosion.
Kell	Depth to bedrock, low pH, water erosion, limited available water capacity, restricted permeability.	Depth to bedrock, low pH, water erosion, limited available water capacity.
908F:		
Hickory	---	Equipment limitation, low pH, water erosion, low fertility.
Kell	---	Equipment limitation, depth to bedrock, low pH, water erosion.
912A:		
Hoyleton	Wetness, crusting	Wetness, low pH.
Darmstadt	Wetness, root-restrictive layer, crusting, excess sodium, restricted permeability.	Wetness, root-restrictive layer, low pH, excess sodium.
946D2:		
Hickory	Water erosion	Low pH, water erosion.
Atlas	Wetness, crusting, water erosion, restricted permeability.	Wetness, low pH, water erosion.
3070A:		
Beaucoup	Flooding, ponding, poor tilth, wetness.	Flooding, ponding, poor tilth, frost heave, wetness.
3071A:		
Darwin	Flooding, ponding, poor tilth, restricted permeability, wetness.	Flooding, ponding, poor tilth, frost heave, wetness.
3284A:		
Tice	Flooding, wetness, poor tilth	Flooding, wetness.
3288A:		
Petrolia	Flooding, ponding, poor tilth, crusting, wetness.	Flooding, ponding, poor tilth, frost heave, wetness.
3331A:		
Haymond	Flooding	Flooding.
3333A:		
Wakeland	Flooding, wetness	Flooding, wetness.

See footnote at end of table.

Table 6.--Limitations and Hazards Affecting Cropland and Pastureland--Continued

Map symbol and soil name	Limitations and hazards affecting cropland	Limitations and hazards affecting pastureland
3334A:		
Birds	Flooding, ponding, crusting, wetness.	Flooding, ponding, frost heave, wetness.
3424A:		
Shoals	Flooding, wetness, crusting	Flooding, wetness.
3597A:		
Armiesburg	Flooding, poor tilth	Flooding, poor tilth.
3665A:		
Stonelick	Flooding, high pH, excess lime.	Flooding, high pH, excess lime.
7155A:		
Stockland	Excessive permeability	Low pH, excessive permeability.
7155B:		
Stockland	Limited available water capacity.	Limited available water capacity.
7155C:		
Stockland	None*	Low pH.
7286A:		
Carmi	Excessive permeability	Low pH, excessive permeability.
7286B:		
Carmi	Limited available water capacity, excessive permeability.	Low pH, limited available water capacity, excessive permeability.
7803C:		
Orthents	Water erosion	Low fertility.
7841A:		
Carmi	Excessive permeability	Low pH, excessive permeability.
Westland	Ponding, poor tilth, excessive permeability, wetness.	Ponding, poor tilth, frost heave, excessive permeability, wetness.

* Well suited to crops.

Table 7.--Land Capability and Yields per Acre of Crops and Pasture

(Yields are those that can be expected under a high level of management. They are for nonirrigated areas. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Oats	Grass-legume hay	Grass-legume pasture
		Bu	Bu	Bu	Bu	Tons	AUM*
2A------------------- Cisne	3w	135	41.0	53.0	---	4.18	6.16
3A------------------- Hoyleton	2w	132	42.0	52.0	---	4.18	6.17
3B------------------- Hoyleton	2e	131	42.0	51.0	---	4.14	6.10
6B2------------------ Fishhook	3e	111	35.0	43.0	53.0	3.26	4.81
7C2------------------ Atlas	3e	95	33.0	38.0	44.0	2.84	4.11
7C3------------------ Atlas	4e	78	27.0	31.0	36.0	2.34	3.36
7D2------------------ Atlas	4e	86	30.0	34.0	40.0	2.65	3.78
8F------------------- Hickory	6e	---	---	---	---	2.79	4.00
12A------------------ Wynoose	3w	115	38.0	46.0	---	3.84	5.66
13A------------------ Bluford	2w	122	40.0	50.0	---	3.05	4.50
13B2----------------- Bluford	2e	113	37.0	47.0	---	2.84	4.10
14B------------------ Ava	2e	119	38.6	49.5	---	2.91	4.29
14C2----------------- Ava	3e	108	35.1	45.0	---	2.65	3.90
31A------------------ Pierron	3w	122	39.0	50.0	---	4.07	6.00
50A------------------ Virden	2w	164	53.0	64.0	84.0	4.75	7.00
79B------------------ Menfro	2e	148	46.0	56.0	---	4.37	6.44
79C2----------------- Menfro	3e	139	43.0	53.0	---	4.10	6.05
79D2----------------- Menfro	3e	133	41.0	51.0	---	3.92	5.66

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Oats	Grass-legume hay	Grass-legume pasture
		Bu	Bu	Bu	Bu	Tons	AUM*
79F----------------- Menfro	6e	106	33.0	40.0	---	3.13	4.10
112A---------------- Cowden	2w	143	45.0	57.0	---	4.41	6.50
119C2--------------- Elco	3e	126	42.0	49.0	63.0	3.57	5.27
119D---------------- Elco	3e	126	42.0	49.0	63.0	3.57	5.27
131A---------------- Alvin	2s	135	44.0	53.0	67.0	3.39	5.00
131B---------------- Alvin	2e	134	44.0	52.0	66.0	3.40	4.97
131C2--------------- Alvin	3e	126	41.0	49.0	62.0	3.15	4.60
131D2--------------- Alvin	4e	120	39.0	47.0	60.0	2.97	4.20
131F---------------- Alvin	6e	---	---	---	---	2.47	3.62
138A---------------- Shiloh	3w	158	52.0	31.0	79.0	4.86	7.16
142A---------------- Patton	2w	160	52.0	61.0	77.0	4.86	7.17
164A---------------- Stoy	2w	131	42.0	52.0	---	4.18	6.20
164B---------------- Stoy	2e	129	42.0	51.0	---	4.18	6.10
178A---------------- Ruark	2w	118	40.0	50.0	58.0	3.96	5.83
184A---------------- Roby	2s	131	45.0	52.0	63.0	4.18	6.17
214B---------------- Hosmer	2e	125	41.0	51.0	---	3.25	4.74
214C2--------------- Hosmer	3e	113	37.0	47.0	---	2.95	4.25
218A---------------- Newberry	2w	139	44.0	54.0	---	4.29	6.33
307B2--------------- Iona	2e	138	44.0	55.0	68.0	4.08	6.02
434A---------------- Ridgway	1	148	45.0	55.0	---	4.07	6.00

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Oats	Grass-legume hay	Grass-legume pasture
		Bu	Bu	Bu	Bu	Tons	AUM*
434B----------------- Ridgway	2e	146	45.0	54.0	---	4.00	6.00
434C2---------------- Ridgway	3e	138	42.0	51.0	---	3.80	5.60
453A----------------- Muren	1	147	45.0	55.0	---	4.63	6.83
615C2---------------- Vanmeter	4e	86	29.0	33.5	---	2.90	4.34
615F----------------- Vanmeter	7e	---	---	---	---	2.24	3.31
630D3---------------- Navlys	4e	95	31.0	38.0	43.0	3.14	4.63
908D2----------------		89	30.0	35.0	---	2.89	4.18
Hickory-------------	3e						
Kell----------------	4e						
908F-----------------		---	---	---	---	2.53	3.67
Hickory-------------	6e						
Kell----------------	6e						
912A-----------------		121	41.0	47.0	---	3.82	5.67
Hoyleton------------	2w						
Darmstadt-----------	3s						
946D2----------------		91	31.0	36.0	42.0	2.89	4.20
Hickory-------------	3e						
Atlas---------------	4e						
3070A---------------- Beaucoup	3w	143	48.0	56.0	73.0	4.37	6.50
3071A---------------- Darwin	3w	121	41.0	49.0	58.0	3.56	5.25
3284A---------------- Tice	3w	149	45.9	56.7	77.4	4.58	6.75
3288A---------------- Petrolia	3w	131	40.0	49.0	64.0	3.97	5.85
3331A---------------- Haymond	3w	147	46.0	57.0	74.0	4.68	6.90
3333A---------------- Wakeland	3w	141	46.0	55.0	69.0	4.17	6.15
3334A---------------- Birds	3w	127	41.0	50.0	61.0	3.97	5.90
3424A---------------- Shoals	3w	141	44.0	---	---	4.28	6.30

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Oats	Grass-legume hay	Grass-legume pasture
		Bu	Bu	Bu	Bu	Tons	AUM*
3597A----------------Armiesburg	3w	144	46.0	56.0	70.0	5.40	8.00
3665A----------------Stonelick	3w	116	35.1	44.1	52.2	2.95	4.35
7155A----------------Stockland	3s	108	38.0	45.0	51.0	3.73	5.50
7155B----------------Stockland	3s	107	38.0	45.0	50.0	3.69	5.40
7155C----------------Stockland	3e	100	35.0	42.0	47.0	3.47	5.10
7286A----------------Carmi	2s	131	40.0	54.0	69.0	3.40	5.70
7286B----------------Carmi	2e	124	38.0	51.0	66.0	3.20	5.40
7803C----------------Orthents	4e	---	---	---	---	---	---
7841A----------------		139	44.0	55.0	72.0	4.00	6.00
Carmi---------------	2s						
Westland------------	2w						
7865-----------------Pits, gravel	8	---	---	---	---	---	---

* Animal unit month: The amount of forage required to feed one mature cow of approximately 1,000 pounds weight, with or without a calf, for 30 days.

Table 8.--Prime Farmland

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
2A	Cisne silt loam, 0 to 2 percent slopes (where drained)
3A	Hoyleton silt loam, 0 to 2 percent slopes
3B	Hoyleton silt loam, 2 to 5 percent slopes
6B2	Fishhook silt loam, 2 to 5 percent slopes, eroded
13A	Bluford silt loam, 0 to 2 percent slopes (where drained)
13B2	Bluford silt loam, 2 to 5 percent slopes, eroded
14B	Ava silt loam, 2 to 5 percent slopes
50A	Virden silty clay loam, 0 to 2 percent slopes (where drained)
79B	Menfro silt loam, 2 to 5 percent slopes
112A	Cowden silt loam, 0 to 2 percent slopes (where drained)
131A	Alvin fine sandy loam, 0 to 2 percent slopes
131B	Alvin fine sandy loam, 2 to 5 percent slopes
131C2	Alvin fine sandy loam, 5 to 10 percent slopes, eroded
138A	Shiloh silty clay loam, 0 to 2 percent slopes (where drained)
142A	Patton silty clay loam, 0 to 2 percent slopes (where drained)
164A	Stoy silt loam, 0 to 2 percent slopes
164B	Stoy silt loam, 2 to 5 percent slopes
178A	Ruark fine sandy loam, 0 to 2 percent slopes (where drained)
184A	Roby fine sandy loam, 0 to 2 percent slopes
214B	Hosmer silt loam, 2 to 5 percent slopes
218A	Newberry silt loam, 0 to 2 percent slopes (where drained)
307B2	Iona silt loam, 2 to 5 percent slopes, eroded
434A	Ridgway silt loam, 0 to 2 percent slopes
434B	Ridgway silt loam, 2 to 5 percent slopes
453A	Muren silt loam, 0 to 2 percent slopes
3070A	Beaucoup silty clay loam, 0 to 2 percent slopes, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
3071A	Darwin silty clay, 0 to 2 percent slopes, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
3284A	Tice silty clay loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
3288A	Petrolia silty clay loam, 0 to 2 percent slopes, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
3331A	Haymond silt loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
3333A	Wakeland silt loam, 0 to 2 percent slopes, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
3334A	Birds silt loam, 0 to 2 percent slopes, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
3424A	Shoals silt loam, 0 to 2 percent slopes, frequently flooded (where drained and either protected from flooding or not frequently flooded during the growing season)
3597A	Armiesburg silty clay loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
3665A	Stonelick loam, 0 to 2 percent slopes, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
7155A	Stockland gravelly sandy loam, 0 to 2 percent slopes, rarely flooded
7155B	Stockland gravelly sandy loam, 2 to 5 percent slopes, rarely flooded
7155C	Stockland gravelly sandy loam, 5 to 10 percent slopes, rarely flooded
7286A	Carmi sandy loam, 0 to 2 percent slopes, rarely flooded
7286B	Carmi sandy loam, 2 to 5 percent slopes, rarely flooded
7841A	Carmi-Westland complex, 0 to 2 percent slopes, rarely flooded

Table 9.--Hydric Soils

(Only map units that have hydric components are listed. See text for a description of hydric qualities and definitions of the hydric criteria codes)

Map symbol and map unit name	Component	Hydric status	Local landform	Hydric criteria code
2A:				
Cisne silt loam, 0 to 2 percent slopes	Cisne	Hydric	flat, till plain	2B3
3A:				
Hoyleton silt loam, 0 to 2 percent slopes	Hoyleton	Not hydric	till plain	---
	Virden	Hydric	swale	2B3
	Cisne	Hydric	depression	2B3
	Cowden	Hydric	swale	2B3
	Newberry	Hydric	swale	2B3
3B:				
Hoyleton silt loam, 2 to 5 percent slopes	Hoyleton	Not hydric	till plain	---
	Cisne	Hydric	depression	2B3
	Cowden	Hydric	swale	2B3
	Newberry	Hydric	swale	2B3
7C2:				
Atlas silt loam, 5 to 10 percent slopes, eroded	Atlas	Not hydric	draw, till plain	---
	Wynoose	Hydric	swale	2B3
7C3:				
Atlas silty clay loam, 5 to 10 percent slopes, severely eroded	Atlas	Not hydric	draw, till plain	---
	Wynoose	Hydric	swale	2B3
12A:				
Wynoose silt loam, 0 to 2 percent slopes	Wynoose	Hydric	flat, till	2B3
13A:				
Bluford silt loam, 0 to 2 percent slopes	Bluford	Not hydric	till plain	---
	Wynoose	Hydric	flat	2B3
	Cisne	Hydric	depression	2B3
13B2:				
Bluford silt loam, 2 to 5 percent slopes, eroded	Bluford	Not hydric	draw, till plain	---
	Wynoose	Hydric	drainageway	2B3
	Cisne	Hydric	depression	2B3
14B:				
Ava silt loam, 2 to 5 percent slopes	Ava	Not hydric	till plain	---
	Wynoose	Hydric	swale	2B3
14C2:				
Ava silt loam, 5 to 10 percent slopes, eroded	Ava	Not hydric	ridge, till plain	---
	Wynoose	Hydric	drainageway	2B3
31A:				
Pierron silt loam, 0 to 2 percent slopes	Pierron	Hydric	till plain, depression	2B3
50A:				
Virden silty clay loam, 0 to 2 percent slopes	Virden	Hydric	till plain	2B3

Table 9.--Hydric Soils--Continued

Map symbol and map unit name	Component	Hydric status	Local landform	Hydric criteria code
112A:				
Cowden silt loam, 0 to 2 percent slopes	Cowden	Hydric	till plain	2B3
131A:				
Alvin fine sandy loam, 0 to 2 percent slopes	Alvin	Not hydric	outwash terrace, stream terrace	---
	Patton	Hydric	swale	2B3
	Ruark	Hydric	swale	2B3
	Westland	Hydric	swale	2B3
131B:				
Alvin fine sandy loam, 2 to 5 percent slopes	Alvin	Not hydric	outwash terrace, stream terrace	---
	Westland	Hydric	swale	2B3
	Patton	Hydric	swale	2B3
	Ruark	Hydric	swale	2B3
131C2:				
Alvin fine sandy loam, 5 to 10 percent slopes, eroded	Alvin	Not hydric	outwash terrace, stream terrace	---
	Ruark	Hydric	swale	2B3
138A:				
Shiloh silty clay loam, 0 to 2 percent slopes	Shiloh	Hydric	depression, till plain	2B3
142A:				
Patton silty clay loam, 0 to 2 percent slopes	Patton	Hydric	stream terrace or lake terrace	2B3
164A:				
Stoy silt loam, 0 to 2 percent slopes	Stoy	Not hydric	till plain, interfluve, flat, plateau	---
	Pierron	Hydric	till plain, depression	2B3
	Virden	Hydric	swale	2B3
	Cowden	Hydric	depression, ground moraine	2B3
164B:				
Stoy silt loam, 2 to 5 percent slopes	Stoy	Not hydric	till plain, rise, interfluve, plateau	---
	Pierron	Hydric	till plain, depression	2B3
178A:				
Ruark fine sandy loam, 0 to 2 percent slopes	Ruark	Hydric	stream terrace	2B3
184A:				
Roby fine sandy loam, 0 to 2 percent slopes	Roby	Not hydric	stream terrace, outwash terrace	---
	Westland	Hydric	swale	2B3

Table 9.--Hydric Soils--Continued

Map symbol and map unit name	Component	Hydric status	Local landform	Hydric criteria code
218A:				
Newberry silt loam, 0 to 2 percent slopes	Newberry	Hydric	flat, till plain	2B3
307B2:				
Iona silt loam, 2 to 5 percent slopes, eroded	Iona	Not hydric	loess bluff	---
	Pierron	Hydric	till plain, depression	2B3
434A:				
Ridgway silt loam, 0 to 2 percent slopes	Ridgway	Not hydric	outwash terrace, stream terrace	---
	Ruark	Hydric	swale	2B3
434B:				
Ridgway silt loam, 2 to 5 percent slopes	Ridgway	Not hydric	outwash terrace, stream terrace	---
	Ruark	Hydric	swale	2B3
434C2:				
Ridgway silt loam, 5 to 10 percent slopes, eroded	Ridgway	Not hydric	outwash terrace, stream terrace	---
	Birds	Hydric	flood plain	4,2B3
453A:				
Muren silt loam, 0 to 2 percent slopes	Muren	Not hydric	loess hill	---
	Patton	Hydric	swale	2B3
	Virden	Hydric	swale	2B3
912A:				
Hoyleton-Darmstadt silt loams, 0 to 2 percent slopes	Hoyleton	Not hydric	till plain	---
	Darmstadt	Not hydric	till plain	---
	Cisne	Hydric	depression	2B3
	Cowden	Hydric	swale	2B3
	Newberry	Hydric	swale	2B3
3070A:				
Beaucoup silty clay loam, 0 to 2 percent slopes frequently flooded	Beaucoup	Hydric	flood plain	2B3
3071A:				
Darwin silty clay, 0 to 2 percent slopes, frequently flooded	Darwin	Hydric	depression, flood plain	2B3
3284A:				
Tice silty clay loam, 0 to 2 percent slopes, frequently flooded	Tice	Not hydric	flood-plain step	---
	Beaucoup	Hydric	flood plain	2B3
3288A:				
Petrolia silty clay loam, 0 to 2 percent slopes frequently flooded	Petrolia	Hydric	flood plain	2B3
3331A:				
Haymond silt loam, 0 to 2 percent slopes, frequently flooded	Haymond	Not hydric	flood-plain step	---
	Petrolia	Hydric	flood plain	2B3
	Birds	Hydric	flood plain	2B3,4

Table 9.--Hydric Soils--Continued

Map symbol and map unit name	Component	Hydric status	Local landform	Hydric criteria code
3333A:				
Wakeland silt loam, 0 to 2 percent slopes, frequently flooded	Wakeland	Not hydric	flood-plain step	---
	Birds	Hydric	flood plain	4,2B3
3334A:				
Birds silt loam, 0 to 2 percent slopes, frequently flooded	Birds	Hydric	flood plain	4,2B3
3424A:				
Shoals silt loam, 0 to 2 percent slopes, frequently flooded	Shoals	Not hydric	flood plain	---
	Birds	Hydric	flood plain	2B3,4
3597A:				
Armiesburg silty clay loam, 0 to 2 percent slopes, frequently flooded	Armiesburg	Not hydric	flood-plain step	---
	Beaucoup	Hydric	flood plain	2B3
3665A:				
Stonelick loam, 0 to 2 percent slopes, frequently flooded	Stonelick	Not hydric	flood-plain step	---
	Beaucoup	Hydric	flood plain	2B3
7155A:				
Stockland gravelly sandy loam, 0 to 2 percent slopes, rarely flooded	Stockland	Not hydric	outwash terrace, stream terrace	---
	Westland	Hydric	swale	2B3
	Darwin	Hydric	flood plain	2B3
7155B:				
Stockland gravelly sandy loam, 2 to 5 percent slopes, rarely flooded	Stockland	Not hydric	outwash terrace, stream terrace	---
	Westland	Hydric	swale	2B3
	Darwin	Hydric	flood plain	2B3
7155C:				
Stockland gravelly sandy loam, 5 to 10 percent slopes, rarely flooded	Stockland	Not hydric	outwash terrace, stream terrace	---
	Darwin	Hydric	flood plain	2B3
7286A:				
Carmi sandy loam, 0 to 2 percent slopes, rarely flooded	Carmi	Not hydric	outwash terrace, stream terrace	---
	Westland	Hydric	swale	2B3
7286B:				
Carmi sandy loam, 2 to 5 percent slopes, rarely flooded	Carmi	Not hydric	outwash terrace, stream terrace	---
	Westland	Hydric	swale	2B3
7841A:				
Carmi-Westland complex, 0 to 2 percent slopes, rarely flooded	Carmi	Not hydric	outwash terrace, stream terrace	---
	Westland	Hydric	outwash terrace, stream terrace	2B3

Table 10.--Windbreaks and Environmental Plantings

(Absence of an entry indicates that trees generally do not grow to the given height)

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
2A:					
Cisne	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
3A:					
Hoyleton	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas-fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
3B:					
Hoyleton	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas-fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 10.--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
6B2:					
Fishhook	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas-fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
7C2:					
Atlas	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas-fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
7C3:					
Atlas	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas-fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 10.--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
7D2:					
Atlas	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas-fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
8F:					
Hickory	American hazelnut, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, coralberry, mapleleaf viburnum, redosier dogwood, silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas-fir, Norway spruce, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
12A:					
Wynoose	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 10.--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
13A:					
Bluford	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas-fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
13B2:					
Bluford	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas-fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
14B:					
Ava	American cranberrybush, American hazelnut, black chokeberry, common chokecherry, common elderberry, common juniper, coralberry, mapleleaf viburnum, silky dogwood	American plum, bur oak, chinkapin oak, common serviceberry, eastern redcedar, nannyberry, prairie crabapple, roughleaf dogwood, smooth sumac	Black oak, common hackberry, eastern white pine	Carolina poplar	---
14C2:					
Ava	American cranberrybush, American hazelnut, black chokeberry, common chokecherry, common elderberry, common juniper, coralberry, mapleleaf viburnum, silky dogwood	American plum, bur oak, chinkapin oak, common serviceberry, eastern redcedar, nannyberry, prairie crabapple, roughleaf dogwood, smooth sumac	Black oak, common hackberry, eastern white pine	Carolina poplar	---

Table 10.--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
31A:					
Pierron	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
50A:					
Virden	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
79B:					
Menfro	American hazelnut, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, coralberry, mapleleaf viburnum, redosier dogwood, silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas-fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine

Table 10.--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
79C2:					
Menfro	American hazelnut, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, coralberry, mapleleaf viburnum, redosier dogwood, silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas-fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
79D2:					
Menfro	American hazelnut, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, coralberry, mapleleaf viburnum, redosier dogwood, silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas-fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
79F:					
Menfro	American hazelnut, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, coralberry, mapleleaf viburnum, redosier dogwood, silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas-fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
112A:					
Cowden	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 10.--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
119C2:					
Elco	American hazelnut, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf viburnum	American plum, American witchhazel, Arnold hawthorn, blackhaw, common chokecherry, common serviceberry, prairie crabapple	Douglas-fir, arborvitae, black walnut, blackgum, blue spruce, bur oak, eastern redcedar, pecan	Norway spruce, common hackberry, pin oak, tuliptree	Carolina poplar, eastern white pine
119D:					
Elco	American hazelnut, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf viburnum	American plum, American witchhazel, Arnold hawthorn, blackhaw, common chokecherry, common serviceberry, prairie crabapple	Douglas-fir, arborvitae, black walnut, blackgum, blue spruce, bur oak, eastern redcedar, pecan	Norway spruce, common hackberry, pin oak, tuliptree	Carolina poplar, eastern white pine
131A:					
Alvin	American hazelnut, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf viburnum	American plum, American witchhazel, Arnold hawthorn, blackhaw, common chokecherry, common serviceberry, prairie crabapple	Douglas-fir, arborvitae, black walnut, blackgum, blue spruce, bur oak, eastern redcedar, pecan	Norway spruce, common hackberry, pin oak, tuliptree	Carolina poplar, eastern white pine
131B:					
Alvin	American hazelnut, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf viburnum	American plum, American witchhazel, Arnold hawthorn, blackhaw, common chokecherry, common serviceberry, prairie crabapple	Douglas-fir, arborvitae, black walnut, blackgum, blue spruce, bur oak, eastern redcedar, pecan	Norway spruce, common hackberry, pin oak, tuliptree	Carolina poplar, eastern white pine
131C2:					
Alvin	American hazelnut, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf viburnum	American plum, American witchhazel, Arnold hawthorn, blackhaw, common chokecherry, common serviceberry, prairie crabapple	Douglas-fir, arborvitae, black walnut, blackgum, blue spruce, bur oak, eastern redcedar, pecan	Norway spruce, common hackberry, pin oak, tuliptree	Carolina poplar, eastern white pine

Table 10.--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
131D2:					
Alvin	American hazelnut, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf viburnum	American plum, American witchhazel, Arnold hawthorn, blackhaw, common chokecherry, common serviceberry, prairie crabapple	Douglas-fir, arborvitae, black walnut, blackgum, blue spruce, bur oak, eastern redcedar, pecan	Norway spruce, common hackberry, pin oak, tuliptree	Carolina poplar, eastern white pine
131F:					
Alvin	American hazelnut, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf viburnum	American plum, American witchhazel, Arnold hawthorn, blackhaw, common chokecherry, common serviceberry, prairie crabapple	Douglas-fir, arborvitae, black walnut, blackgum, blue spruce, bur oak, eastern redcedar, pecan	Norway spruce, common hackberry, pin oak, tuliptree	Carolina poplar, eastern white pine
138A:					
Shiloh	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
142A:					
Patton	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 10.--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
164A: Stoy	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas-fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
164B: Stoy	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas-fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
178A: Ruark	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 10.--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
184A:					
Roby	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas-fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
214B:					
Hosmer	American cranberrybush, American hazelnut, black chokeberry, common chokecherry, common elderberry, common juniper, coralberry, mapleleaf viburnum, silky dogwood	American plum, bur oak, chinkapin oak, common serviceberry, eastern redcedar, nannyberry, prairie crabapple, roughleaf dogwood, smooth sumac	Black oak, common hackberry, eastern white pine	Carolina poplar	---
214C2:					
Hosmer	American cranberrybush, American hazelnut, black chokeberry, common chokecherry, common elderberry, common juniper, coralberry, mapleleaf viburnum, silky dogwood	American plum, bur oak, chinkapin oak, common serviceberry, eastern redcedar, nannyberry, prairie crabapple, roughleaf dogwood, smooth sumac	Black oak, common hackberry, eastern white pine	Carolina poplar	---

Table 10.--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
218A:					
Newberry	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
307B2:					
Iona	American hazelnut, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, coralberry, mapleleaf viburnum, redosier dogwood, silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas-fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
434A:					
Ridgway	American hazelnut, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, coralberry, mapleleaf viburnum, redosier dogwood, silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas-fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
434B:					
Ridgway	American hazelnut, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, coralberry, mapleleaf viburnum, redosier dogwood, silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas-fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine

Table 10.--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
434C2:					
Ridgway	American hazelnut, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, coralberry, mapleleaf viburnum, redosier dogwood, silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas-fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
453A:					
Muren	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas-fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
615C2:					
Vanmeter	American cranberrybush, American hazelnut, black chokeberry, common chokecherry, common elderberry, common juniper, coralberry, mapleleaf viburnum, silky dogwood	American plum, bur oak, chinkapin oak, common serviceberry, eastern redcedar, nannyberry, prairie crabapple, roughleaf dogwood, smooth sumac	Black oak, common hackberry, eastern white pine	Carolina poplar	---
615F:					
Vanmeter	American cranberrybush, American hazelnut, black chokeberry, common chokecherry, common elderberry, common juniper, coralberry, mapleleaf viburnum, silky dogwood	American plum, bur oak, chinkapin oak, common serviceberry, eastern redcedar, nannyberry, prairie crabapple, roughleaf dogwood, smooth sumac	Black oak, common hackberry, eastern white pine	Carolina poplar	---

Table 10.--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
630D3:					
Navlys	American hazelnut, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, coralberry, mapleleaf viburnum, redosier dogwood, silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas-fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
908D2:					
Hickory	American hazelnut, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf viburnum	American plum, American witchhazel, Arnold hawthorn, blackhaw, common chokecherry, common serviceberry, prairie crabapple	Douglas-fir, arborvitae, black walnut, blackgum, blue spruce, bur oak, eastern redcedar, pecan	Norway spruce, common hackberry, pin oak, tuliptree	Carolina poplar, eastern white pine
Kell	American cranberrybush, American hazelnut, black chokeberry, common chokecherry, common elderberry, common juniper, coralberry, mapleleaf viburnum, silky dogwood	American plum, bur oak, chinkapin oak, common serviceberry, eastern redcedar, nannyberry, prairie crabapple, roughleaf dogwood, smooth sumac	Black oak, common hackberry, eastern white pine	Carolina poplar	---
908F:					
Hickory	American hazelnut, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf viburnum	American plum, American witchhazel, Arnold hawthorn, blackhaw, common chokecherry, common serviceberry, prairie crabapple	Douglas-fir, arborvitae, black walnut, blackgum, blue spruce, bur oak, eastern redcedar, pecan	Norway spruce, common hackberry, pin oak, tuliptree	Carolina poplar, eastern white pine

Table 10.--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
908F:					
Kell	American cranberrybush, American hazelnut, black chokeberry, common chokecherry, common elderberry, common juniper, coralberry, mapleleaf viburnum, silky dogwood	American plum, bur oak, chinkapin oak, common serviceberry, eastern redcedar, nannyberry, prairie crabapple, roughleaf dogwood, smooth sumac	Black oak, common hackberry, eastern white pine	Carolina poplar	---
912A:					
Hoyleton	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas-fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
Darmstadt	Common juniper	American hazelnut, common serviceberry, common winterberry, eastern redcedar, prairie crabapple	Douglas-fir, blue spruce, eastern white pine	---	---
946D2:					
Hickory	American hazelnut, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, coralberry, mapleleaf viburnum, redosier dogwood, silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas-fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine

Table 10.--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
946D2:					
Atlas	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas-fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
3070A:					
Beaucoup	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
3071A:					
Darwin	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 10.--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
3284A:					
Tice	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas-fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
3288A:					
Petrolia	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
3331A:					
Haymond	American hazelnut, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, coralberry, mapleleaf viburnum, redosier dogwood, silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas-fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine

Table 10.--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
3333A:					
Wakeland	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas-fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
3334A:					
Birds	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
3424A:					
Shoals	American cranberrybush, Canada yew, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, northern spicebush, redosier dogwood, silky dogwood	Blackhaw, cockspur hawthorn, common pawpaw, common serviceberry, prairie crabapple, roughleaf dogwood, rusty blackhaw, southern arrowwood, witchhazel	Austrian pine, Douglas-fir, arborvitae, blue spruce, common persimmon, eastern redcedar, green hawthorn, nannyberry, pecan, shingle oak	Norway spruce, blackgum, common hackberry, red maple, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak

Table 10.--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
3597A: Armiesburg	American hazelnut, black chokeberry, common elderberry, common juniper, common ninebark, common winterberry, coralberry, mapleleaf viburnum, redosier dogwood, silky dogwood	American plum, American witchhazel, blackhaw, common chokecherry, common serviceberry, prairie crabapple, roughleaf dogwood, smooth sumac, southern arrowwood	Washington hawthorn, arborvitae, blue spruce, common persimmon, eastern redcedar, nannyberry, pecan, white oak	Douglas-fir, Norway spruce, black walnut, blackgum, common hackberry, northern red oak, pin oak, tuliptree	Carolina poplar, eastern cottonwood, eastern white pine
3665A: Stonelick	American hazelnut, common winterberry, gray dogwood, redosier dogwood	Blackhaw, common chokecherry, common pawpaw, nannyberry, roughleaf dogwood, silky dogwood	American sycamore, arborvitae, blue spruce, bur oak, chinkapin oak, common hackberry, eastern redcedar	Carolina poplar, eastern cottonwood	---
7155A: Stockland	American cranberrybush, American hazelnut, black chokeberry, common chokecherry, common elderberry, common juniper, coralberry, mapleleaf viburnum, silky dogwood	American plum, bur oak, chinkapin oak, common serviceberry, eastern redcedar, nannyberry, prairie crabapple, roughleaf dogwood, smooth sumac	Black oak, common hackberry, eastern white pine	Carolina poplar	---
7155B: Stockland	American cranberrybush, American hazelnut, black chokeberry, common chokecherry, common elderberry, common juniper, coralberry, mapleleaf viburnum, silky dogwood	American plum, bur oak, chinkapin oak, common serviceberry, eastern redcedar, nannyberry, prairie crabapple, roughleaf dogwood, smooth sumac	Black oak, common hackberry, eastern white pine	Carolina poplar	---

Table 10.--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
7155C: Stockland	American cranberrybush, American hazelnut, black chokeberry, common chokecherry, common elderberry, common juniper, coralberry, mapleleaf viburnum, silky dogwood	American plum, bur oak, chinkapin oak, common serviceberry, eastern redcedar, nannyberry, prairie crabapple, roughleaf dogwood, smooth sumac	Black oak, common hackberry, eastern white pine	Carolina poplar	---
7286A: Carmi	American hazelnut, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf viburnum	American plum, American witchhazel, Arnold hawthorn, blackhaw, common chokecherry, common serviceberry, prairie crabapple	Douglas-fir, arborvitae, black walnut, blackgum, blue spruce, bur oak, eastern redcedar, pecan	Norway spruce, common hackberry, pin oak, tuliptree	Carolina poplar, eastern white pine
7286B: Carmi	American cranberrybush, American hazelnut, black chokeberry, common chokecherry, common elderberry, common juniper, coralberry, mapleleaf viburnum, silky dogwood	American plum, bur oak, chinkapin oak, common serviceberry, eastern redcedar, nannyberry, prairie crabapple, roughleaf dogwood, smooth sumac	Black oak, common hackberry, eastern white pine	Carolina poplar	---
7803C: Orthents	American hazelnut, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf viburnum	American plum, American witchhazel, Arnold hawthorn, blackhaw, common chokecherry, common serviceberry, prairie crabapple	Douglas-fir, arborvitae, black walnut, blackgum, blue spruce, bur oak, eastern redcedar, pecan	Norway spruce, common hackberry, pin oak, tuliptree	Carolina poplar, eastern white pine

Table 10.--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
7841A:					
Carmi	American hazelnut, black chokeberry, common winterberry, coralberry, gray dogwood, mapleleaf viburnum	American plum, American witchhazel, Arnold hawthorn, blackhaw, common chokecherry, common serviceberry, prairie crabapple	Douglas-fir, arborvitae, black walnut, blackgum, blue spruce, bur oak, eastern redcedar, pecan	Norway spruce, common hackberry, pin oak, tuliptree	Carolina poplar, eastern white pine
Westland	American cranberrybush, black chokeberry, buttonbush, common elderberry, common ninebark, common winterberry, gray dogwood, highbush blueberry, northern spicebush, redosier dogwood, silky dogwood	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood	Arborvitae, blackgum, common hackberry, green hawthorn, northern white-cedar, shingle oak	Red maple, river birch, swamp white oak, sweetgum	Carolina poplar, eastern cottonwood, pin oak
7865. Pits, gravel					

Table 11.--Forestland Productivity

(Only the soils commonly used for production of commercial trees are listed)

Map symbol and soil name	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber	Suggested trees to plant
			cu ft/acre	
2A:				
Cisne	Bitternut hickory	---	---	Common hackberry, eastern cottonwood, pin oak, river birch, swamp white oak, sweetgum.
	Black oak	---	---	
	Pin oak	70	57	
	White oak	---	---	
3A:				
Hoyleton	Bur oak	---	---	Common hackberry, common persimmon, eastern cottonwood, pecan, pin oak, swamp white oak.
	Northern red oak	70	57	
	White oak	70	57	
3B:				
Hoyleton	Bur oak	---	---	Common hackberry, common persimmon, eastern cottonwood, pecan, pin oak, swamp white oak.
	Northern red oak	70	57	
	White oak	70	57	
6B2:				
Fishhook	White oak	70	57	Common hackberry, common persimmon, eastern cottonwood, pecan, pin oak, swamp white oak.
	Northern red oak	70	57	
	Bur oak	---	---	
7C2:				
Atlas	Bur oak	70	57	Common hackberry, common persimmon, eastern cottonwood, pecan, pin oak, swamp white oak.
	Northern red oak	70	57	
	White oak	70	57	
7C3:				
Atlas	Bur oak	70	57	Common hackberry, common persimmon, eastern cottonwood, pecan, pin oak, swamp white oak.
	Northern red oak	70	57	
	White oak	70	57	
7D2:				
Atlas	Northern red oak	70	57	Common hackberry, common persimmon, eastern cottonwood, pecan, pin oak, swamp white oak.
	White oak	70	57	
	Bur oak	70	57	
8F:				
Hickory	Bitternut hickory	---	---	Eastern cottonwood, eastern white pine, northern red oak, pecan, pin oak, tuliptree, white oak.
	Black oak	---	---	
	Northern red oak	85	72	
	Tuliptree	95	100	
	White oak	55	72	

Table 11.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Suggested trees to plant
			cu ft/acre	
12A:				
Wynoose	Black oak	---	---	Common hackberry, eastern cottonwood, pin oak, river birch, swamp white oak, sweetgum.
	Pin oak	70	57	
	White oak	---	---	
13A:				
Bluford	Bur oak	---	---	Common hackberry, common persimmon, eastern cottonwood, pecan, pin oak, swamp white oak.
	Northern red oak	70	57	
	Southern red oak	70	57	
	White oak	70	57	
13B2:				
Bluford	Bur oak	---	---	Common hackberry, common persimmon, eastern cottonwood, pecan, pin oak, swamp white oak.
	Northern red oak	70	57	
	Southern red oak	70	57	
	White oak	70	57	
14B:				
Ava	Black walnut	---	---	Black oak, common hackberry, eastern white pine.
	Northern red oak	80	57	
	Tuliptree	90	86	
	White oak	75	57	
14C2:				
Ava	Black walnut	---	---	Black oak, common hackberry, eastern white pine.
	Northern red oak	80	57	
	Tuliptree	90	86	
	White oak	75	57	
31A:				
Pierron	Eastern cottonwood	93	---	Baldcypress, eastern cottonwood, overcup oak, pin oak, red maple, swamp chestnut oak, swamp white oak, sweetgum.
	Pin oak	84	---	
79B:				
Menfro	White oak	82	57	Black walnut, eastern cottonwood, eastern white pine, northern red oak, pecan, pin oak, tuliptree, white oak.
	Northern red oak	84	---	
	Eastern cottonwood	---	---	
	Pin oak	---	---	
79C2:				
Menfro	White oak	82	57	Black walnut, eastern cottonwood, eastern white pine, northern red oak, pecan, pin oak, tuliptree, white oak.
	Northern red oak	84	---	
	Eastern cottonwood	---	---	
	Pin oak	---	---	
79D2:				
Menfro	White oak	82	57	Black walnut, eastern cottonwood, eastern white pine, northern red oak, pecan, pin oak, tuliptree, white oak.
	Northern red oak	84	---	
	Eastern cottonwood	---	---	
	Pin oak	---	---	

Table 11.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Suggested trees to plant
			cu ft/acre	
79F:				
Menfro	White oak	82	57	Black walnut, eastern cottonwood, eastern white pine, northern red oak, pecan, pin oak, tuliptree, white oak.
	Northern red oak	84	---	
	Eastern cottonwood	---	---	
	Pin oak	---	---	
119C2:				
Elco	Black walnut	---	---	Black walnut, bur oak, eastern white pine, pecan, pin oak, tuliptree.
	Northern red oak	85	72	
	White oak	85	72	
119D:				
Elco	Black walnut	---	---	Black walnut, bur oak, eastern white pine, pecan, pin oak, tuliptree.
	Northern red oak	---	---	
	White oak	80	57	
131A:				
Alvin	White oak	80	57	Black walnut, bur oak, eastern white pine, pecan, pin oak, tuliptree.
	Northern red oak	82	---	
	Eastern cottonwood	102	---	
	Pin oak	92	---	
131B:				
Alvin	White oak	80	57	Black walnut, bur oak, eastern white pine, pecan, pin oak, tuliptree.
	Black walnut	---	---	
	Northern red oak	80	57	
	Tuliptree	90	86	
131C2:				
Alvin	Black walnut	---	---	Black walnut, bur oak, eastern white pine, pecan, pin oak, tuliptree.
	Northern red oak	80	57	
	Tuliptree	90	86	
	White oak	80	57	
131D2:				
Alvin	Black walnut	---	---	Black walnut, bur oak, eastern white pine, pecan, pin oak, tuliptree.
	Northern red oak	80	57	
	Tuliptree	90	86	
	White oak	80	57	
131F:				
Alvin	White oak	51	---	Black walnut, bur oak, eastern white pine, pecan, pin oak, tuliptree.
	Northern red oak	52	---	
	Eastern cottonwood	65	---	
	Pin oak	59	---	
142A:				
Patton	Northern red oak	75	57	Common hackberry, eastern cottonwood, pin oak, river birch, swamp white oak, sweetgum.
	Pin oak	85	72	
	Sweetgum	80	86	
	White oak	75	57	
164A:				
Stoy	Bur oak	---	---	Common hackberry, common persimmon, eastern cottonwood, pecan, pin oak, swamp white oak.
	Southern red oak	70	57	
	White oak	70	57	

Table 11.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Suggested trees to plant
			cu ft/acre	
164B:				
Stoy	Bur oak	---	---	Common hackberry, common persimmon, eastern cottonwood, pecan, pin oak, swamp white oak.
	Southern red oak	70	57	
	White oak	70	57	
178A:				
Ruark	Pin oak	80	57	Common hackberry, eastern cottonwood, pin oak, river birch, swamp white oak, sweetgum.
	Tuliptree	80	72	
	White oak	---	---	
184A:				
Roby	Black walnut	---	---	Common hackberry, common persimmon, eastern cottonwood, pecan, pin oak, swamp white oak.
	Northern red oak	80	57	
	White oak	80	57	
214B:				
Hosmer	White oak	72	57	Black oak, common hackberry, eastern white pine.
	Northern red oak	75	---	
	Eastern cottonwood	---	---	
	Pin oak	---	---	
214C2:				
Hosmer	White oak	72	57	Black oak, common hackberry, eastern white pine.
	Northern red oak	75	---	
	Eastern cottonwood	---	---	
	Pin oak	---	---	
307B2:				
Iona	Tuliptree	98	100	Black walnut, eastern cottonwood, eastern white pine, northern red oak, pecan, pin oak, tuliptree, white oak.
	White oak	90	72	
434A:				
Ridgway	Sweetgum	80	86	Black walnut, eastern cottonwood, eastern white pine, northern red oak, pecan, pin oak, tuliptree, white oak.
	Tuliptree	95	100	
	White oak	85	72	
434B:				
Ridgway	Sweetgum	80	86	Black walnut, eastern cottonwood, eastern white pine, northern red oak, pecan, pin oak, tuliptree, white oak.
	Tuliptree	95	100	
	White oak	85	72	
434C2:				
Ridgway	Sweetgum	80	86	Black walnut, eastern cottonwood, eastern white pine, northern red oak, pecan, pin oak, tuliptree, white oak.
	Tuliptree	95	100	
	White oak	85	72	

Table 11.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Suggested trees to plant
			cu ft/acre	
453A:				
Muren	Pin oak	85	72	Common hackberry, common persimmon, eastern cottonwood, pecan, pin oak, swamp white oak.
	Sweetgum	80	86	
	Tuliptree	85	86	
	White oak	75	57	
615F:				
Vanmeter	White oak	45	29	Black oak, common hackberry, eastern white pine.
630D3:				
Navlys	Black walnut	---	---	Black walnut, eastern cottonwood, eastern white pine, northern red oak, pecan, pin oak, tuliptree, white oak.
	Northern red oak	80	57	
	Tuliptree	90	86	
	White oak	80	57	
908D2:				
Hickory	Northern red oak	85	72	Black walnut, bur oak, eastern white pine, pecan, pin oak, tuliptree.
	White oak	85	72	
	Black oak	---	---	
	Bitternut hickory	---	---	
	Tuliptree	---	---	
Kell	Black cherry	---	---	Black oak, common hackberry, eastern white pine.
	Black walnut	---	---	
	Shagbark hickory	---	---	
	Tuliptree	---	---	
	White oak	80	57	
908F:				
Hickory	Bitternut hickory	---	---	Black walnut, bur oak, eastern white pine, pecan, pin oak, tuliptree.
	Black oak	---	---	
	Northern red oak	85	72	
	Tuliptree	95	100	
	White oak	85	72	
Kell	Black cherry	---	---	Black oak, common hackberry, eastern white pine.
	Black walnut	---	---	
	Shagbark hickory	---	---	
	Tuliptree	---	---	
	White oak	80	57	
912A:				
Hoyleton	Bur oak	---	---	Common hackberry, common persimmon, eastern cottonwood, pecan, pin oak, swamp white oak.
	Northern red oak	70	57	
	White oak	70	57	
Darmstadt	Black oak	70	57	Rocky Mountain Douglas-fir, blue spruce, eastern redcedar, eastern white pine.
	Pignut hickory	---	---	
	White oak	70	57	

Table 11.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Suggested trees to plant
			cu ft/acre	
946D2:				
Hickory------------	Northern red oak--------------	85	72	Black walnut, eastern cottonwood, eastern white pine, northern red oak, pecan, pin oak, tuliptree, white oak.
	White oak---------------------	85	72	
	Black oak---------------------	---	---	
	Bitternut hickory-------------	---	---	
	Tuliptree---------------------	---	---	
Atlas--------------	Northern red oak--------------	70	57	Common hackberry, common persimmon, eastern cottonwood, pecan, pin oak, swamp white oak.
	White oak---------------------	70	57	
	Bur oak-----------------------	70	57	
3070A:				
Beaucoup-----------	American sycamore-------------	---	---	Common hackberry, eastern cottonwood, pin oak, river birch, swamp white oak, sweetgum.
	Cherrybark oak----------------	---	---	
	Eastern cottonwood------------	100	129	
	Pin oak-----------------------	90	72	
	Sweetgum----------------------	---	---	
3071A:				
Darwin-------------	White oak---------------------	---	---	Common hackberry, eastern cottonwood, pin oak, river birch, swamp white oak, sweetgum.
	Northern red oak--------------	---	---	
	Eastern cottonwood------------	88	---	
	Pin oak-----------------------	80	---	
3284A:				
Tice---------------	White oak---------------------	---	57	Common hackberry, common persimmon, eastern cottonwood, pecan, pin oak, swamp white oak.
	Northern red oak--------------	---	---	
	Eastern cottonwood------------	97	---	
	Pin oak-----------------------	87	---	
3288A:				
Petrolia-----------	White oak---------------------	---	57	Common hackberry, eastern cottonwood, pin oak, river birch, swamp white oak, sweetgum.
	Northern red oak--------------	---	---	
	Eastern cottonwood------------	97	---	
	Pin oak-----------------------	87	---	
3331A:				
Haymond------------	White oak---------------------	---	57	Black walnut, eastern cottonwood, eastern white pine, northern red oak, pecan, pin oak, tuliptree, white oak.
	Northern red oak--------------	---	---	
	Eastern cottonwood------------	110	---	
	Pin oak-----------------------	99	---	
3333A:				
Wakeland-----------	White oak---------------------	---	57	Common hackberry, common persimmon, eastern cottonwood, pecan, pin oak, swamp white oak.
	Northern red oak--------------	---	---	
	Eastern cottonwood------------	99	---	
	Pin oak-----------------------	90	---	
3334A:				
Birds--------------	White oak---------------------	---	57	Common hackberry, eastern cottonwood, pin oak, river birch, swamp white oak, sweetgum.
	Northern red oak--------------	---	---	
	Eastern cottonwood------------	99	---	
	Pin oak-----------------------	90	---	

Table 11.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber	Suggested trees to plant
			cu ft/acre	
3424A:				
Shoals	Pin oak	90	72	Common hackberry, common persimmon, eastern cottonwood, pecan, pin oak, swamp white oak.
	Tuliptree	90	86	
	Eastern cottonwood	---	---	
3597A:				
Armiesburg	White oak	---	57	Black walnut, eastern cottonwood, eastern white pine, northern red oak, pecan, pin oak, tuliptree, white oak.
	Northern red oak	---	---	
	Eastern cottonwood	109	---	
	Pin oak	97	---	
3665A:				
Stonelick	Black cherry	---	---	Bur oak, chinkapin oak, common hackberry, eastern cottonwood, eastern redcedar.
	Black walnut	---	---	
	Northern red oak	80	57	
	Sugar maple	---	---	
	Tuliptree	95	100	
	White oak	---	---	

Table 12a.--Recreational Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2A:						
Cisne	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
3A:						
Hoyleton	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.88	Depth to saturated zone	0.56	Depth to saturated zone	0.88
	Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
3B:						
Hoyleton	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.39	Slow water movement	0.21	Depth to saturated zone	0.39
	Slow water movement	0.21	Depth to saturated zone	0.19	Slow water movement	0.21
					Slope	0.12
6B2:						
Fishhook	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.98	Slow water movement	0.98	Slow water movement	0.98
	Depth to saturated zone	0.98	Depth to saturated zone	0.75	Depth to saturated zone	0.98
					Slope	0.12
7C2:						
Atlas	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	0.96	Slow water movement	0.96	Slope	1.00
					Slow water movement	0.96
7C3:						
Atlas	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	0.96	Slow water movement	0.96	Slope	1.00
	Slope	0.04	Slope	0.04	Slow water movement	0.96
7D2:						
Atlas	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	0.96	Slow water movement	0.96	Slope	1.00
	Slope	0.63	Slope	0.63	Slow water movement	0.96

Table 12a.--Recreational Development--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
8F:						
Hickory	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
12A:						
Wynoose	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
13A:						
Bluford	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Slow water movement	0.96	Depth to saturated zone	1.00
	Slow water movement	0.96	Depth to saturated zone	0.94	Slow water movement	0.96
13B2:						
Bluford	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
	Depth to saturated zone	0.95	Depth to saturated zone	0.68	Depth to saturated zone	0.95
					Slope	0.12
14B:						
Ava	Very limited		Very limited		Very limited	
	Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
	Depth to saturated zone	0.07	Depth to saturated zone	0.03	Slope	0.12
					Depth to saturated zone	0.07
14C2:						
Ava	Very limited		Very limited		Very limited	
	Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
	Depth to saturated zone	0.07	Depth to saturated zone	0.03	Slope	1.00
	Slope	0.01	Slope	0.01	Depth to saturated zone	0.07
31A:						
Pierron	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
50A:						
Virden	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
	Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96

Table 12a.--Recreational Development--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
79B:						
Menfro	Not limited		Not limited		Somewhat limited	
					Slope	0.12
79C2:						
Menfro	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.01	Slope	0.01	Slope	1.00
79D2:						
Menfro	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.37	Slope	0.37	Slope	1.00
79F:						
Menfro	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
112A:						
Cowden	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
	Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
119C2:						
Elco	Somewhat limited		Somewhat limited		Very limited	
	Depth to saturated zone	0.56	Depth to saturated zone	0.28	Slope	1.00
	Slow water movement	0.21	Slow water movement	0.21	Depth to saturated zone	0.56
					Slow water movement	0.21
119D:						
Elco	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.37	Slope	0.37	Slope	1.00
	Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
131A:						
Alvin	Not limited		Not limited		Not limited	
131B:						
Alvin	Not limited		Not limited		Somewhat limited	
					Slope	0.12
131C2:						
Alvin	Not limited		Not limited		Very limited	
					Slope	1.00
131D2:						
Alvin	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.96	Slope	0.96	Slope	1.00
131F:						
Alvin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00

Table 12a.--Recreational Development--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
138A:						
Shiloh	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
	Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
142A:						
Patton	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
164A:						
Stoy	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
	Depth to saturated zone	0.88	Depth to saturated zone	0.56	Depth to saturated zone	0.88
164B:						
Stoy	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
	Depth to saturated zone	0.56	Depth to saturated zone	0.22	Depth to saturated zone	0.56
					Slope	0.12
178A:						
Ruark	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
184A:						
Roby	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Too sandy	0.01	Too sandy	0.01	Too sandy	0.01
214B:						
Hosmer	Somewhat limited		Somewhat limited		Somewhat limited	
	Slow water movement	0.98	Slow water movement	0.98	Slow water movement	0.98
	Depth to saturated zone	0.44	Depth to saturated zone	0.28	Depth to saturated zone	0.44
					Slope	0.50
214C2:						
Hosmer	Somewhat limited		Somewhat limited		Very limited	
	Slow water movement	0.98	Slow water movement	0.98	Slope	1.00
	Depth to saturated zone	0.44	Depth to saturated zone	0.28	Slow water movement	0.98
	Slope	0.01	Slope	0.01	Depth to saturated zone	0.44

Table 12a.--Recreational Development--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
218A:						
Newberry------------	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
	Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
307B2:						
Iona----------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.33	Slow water movement	0.21	Slope	0.50
	Slow water movement	0.21	Depth to saturated zone	0.17	Depth to saturated zone	0.33
					Slow water movement	0.21
434A:						
Ridgway-------------	Not limited		Not limited		Not limited	
434B:						
Ridgway-------------	Not limited		Not limited		Somewhat limited	
					Slope	0.28
434C2:						
Ridgway-------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.01	Slope	0.01	Slope	1.00
453A:						
Muren---------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.98	Depth to saturated zone	0.75	Depth to saturated zone	0.98
615C2:						
Vanmeter------------	Somewhat limited		Somewhat limited		Very limited	
	Slow water movement	0.96	Slow water movement	0.96	Slope	1.00
	Depth to saturated zone	0.81	Depth to saturated zone	0.48	Slow water movement	0.96
					Depth to saturated zone	0.81
					Depth to bedrock	0.71
615F:						
Vanmeter------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
	Depth to saturated zone	0.81	Depth to saturated zone	0.48	Depth to saturated zone	0.81
					Depth to bedrock	0.42
630D3:						
Navlys--------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
908D2:						
Hickory-------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.96	Slope	0.96	Slope	1.00
Kell----------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Depth to bedrock	0.01

Table 12a.--Recreational Development--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
908F:						
Hickory	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Kell	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Depth to bedrock	0.10
912A:						
Hoyleton	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.88	Depth to saturated zone	0.56	Depth to saturated zone	0.88
	Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
Darmstadt	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Sodium content	1.00	Depth to saturated zone	1.00
	Sodium content	1.00	Slow water movement	1.00	Sodium content	1.00
	Slow water movement	1.00	Depth to saturated zone	0.88	Slow water movement	1.00
946D2:						
Hickory	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.96	Slope	0.96	Slope	1.00
Atlas	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	0.85	Slow water movement	0.85	Slope	1.00
	Slope	0.63	Slope	0.63	Slow water movement	0.85
3070A:						
Beaucoup	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Ponding	1.00	Flooding	1.00
	Ponding	1.00	Flooding	0.40	Ponding	1.00
	Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
3071A:						
Darwin	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	Too clayey	1.00	Flooding	1.00
	Too clayey	1.00	Ponding	1.00	Too clayey	1.00
	Ponding	1.00	Slow water movement	0.96	Ponding	1.00
	Slow water movement	0.96	Flooding	0.40	Slow water movement	0.96
3284A:						
Tice	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Depth to saturated zone	0.68	Flooding	1.00
	Depth to saturated zone	0.95	Flooding	0.40	Depth to saturated zone	0.95

Table 12a.--Recreational Development--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
3288A:						
Petrolia	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Ponding	1.00	Flooding	1.00
	Ponding	1.00	Flooding	0.40	Ponding	1.00
	Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
3331A:						
Haymond	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.40	Flooding	1.00
3333A:						
Wakeland	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
3334A:						
Birds	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Ponding	1.00	Flooding	1.00
	Ponding	1.00	Flooding	0.40	Ponding	1.00
	Slow water movement	0.21	Slow water movement	0.21	Slow water movement	0.21
3424A:						
Shoals	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.94	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.40	Flooding	1.00
3597A:						
Armiesburg	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.40	Flooding	1.00
3665A:						
Stonelick	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.40	Flooding	1.00
7155A:						
Stockland	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Gravel content	0.54	Gravel content	1.00
	Gravel content	0.54				
7155B:						
Stockland	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Gravel content	0.54	Gravel content	1.00
	Gravel content	0.54			Slope	0.50
7155C:						
Stockland	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Gravel content	0.54	Gravel content	1.00
	Gravel content	0.54			Slope	1.00
7286A:						
Carmi	Very limited		Not limited		Not limited	
	Flooding	1.00				

Table 12a.--Recreational Development--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
7286B:						
Carmi	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Slope	0.12
7803C:						
Orthents	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Slope	0.16	Slope	1.00
	Slope	0.16			Gravel content	0.44
7841A:						
Carmi	Very limited		Not limited		Not limited	
	Flooding	1.00				
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
	Flooding	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00				
7865:						
Pits, gravel	Not rated		Not rated		Not rated	

Table 12b.--Recreational Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	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
2A:						
Cisne	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
3A:						
Hoyleton	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.18	Depth to saturated zone	0.18	Depth to saturated zone	0.56
3B:						
Hoyleton	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.19
6B2:						
Fishhook	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
7C2:						
Atlas	Somewhat limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
7C3:						
Atlas	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	0.04
7D2:						
Atlas	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Slope	0.63
8F:						
Hickory	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Slope	0.02	Slope	1.00
12A:						
Wynoose	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
13A:						
Bluford	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 12b.--Recreational Development--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
13B2:						
Bluford-------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.32	Depth to saturated zone	0.32	Depth to saturated zone	0.68
14B:						
Ava-----------------	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
14C2:						
Ava-----------------	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.03
					Slope	0.01
31A:						
Pierron-------------	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
50A:						
Virden--------------	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
79B:						
Menfro--------------	Not limited		Not limited		Not limited	
79C2:						
Menfro--------------	Not limited		Not limited		Somewhat limited	
					Slope	0.01
79D2:						
Menfro--------------	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.37
79F:						
Menfro--------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	1.00	Slope	0.22		
112A:						
Cowden--------------	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
119C2:						
Elco----------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.01	Depth to saturated zone	0.01	Depth to saturated zone	0.28
119D:						
Elco----------------	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.37

Table 12b.--Recreational Development--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
131A:						
Alvin	Not limited		Not limited		Not limited	
131B:						
Alvin	Not limited		Not limited		Not limited	
131C2:						
Alvin	Not limited		Not limited		Not limited	
131D2:						
Alvin	Not limited		Not limited		Somewhat limited	
					Slope	0.96
131F:						
Alvin	Very limited		Not limited		Very limited	
	Slope	1.00			Slope	1.00
138A:						
Shiloh	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
142A:						
Patton	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
164A:						
Stoy	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.18	Depth to saturated zone	0.18	Depth to saturated zone	0.56
164B:						
Stoy	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.01	Depth to saturated zone	0.01	Depth to saturated zone	0.28
178A:						
Ruark	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
184A:						
Roby	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.94
	Too sandy	0.01	Too sandy	0.01		
214B:						
Hosmer	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.22
214C2:						
Hosmer	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.22
					Slope	0.01

Table 12b.--Recreational Development--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
218A:						
Newberry	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
307B2:						
Iona	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.17
434A:						
Ridgway	Not limited		Not limited		Not limited	
434B:						
Ridgway	Not limited		Not limited		Not limited	
434C2:						
Ridgway	Not limited		Not limited		Somewhat limited	
					Slope	0.01
453A:						
Muren	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.44	Depth to saturated zone	0.75
615C2:						
Vanmeter	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.11	Depth to saturated zone	0.11	Depth to bedrock	0.71
					Depth to saturated zone	0.48
615F:						
Vanmeter	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Depth to saturated zone	0.11	Slope	1.00
	Depth to saturated zone	0.11	Slope	0.01	Depth to saturated zone	0.48
					Depth to bedrock	0.42
630D3:						
Navlys	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
908D2:						
Hickory	Not limited		Not limited		Somewhat limited	
					Slope	0.96
Kell	Somewhat limited		Not limited		Very limited	
	Slope	0.02			Slope	1.00
					Depth to bedrock	0.01
908F:						
Hickory	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Slope	0.02	Slope	1.00
Kell	Somewhat limited		Not limited		Very limited	
	Slope	0.50			Slope	1.00
					Depth to bedrock	0.10

Table 12b.--Recreational Development--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
912A:						
Hoyleton------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.18	Depth to saturated zone	0.18	Depth to saturated zone	0.56
Darmstadt-----------	Somewhat limited		Somewhat limited		Very limited	
	Depth to saturated zone	0.73	Depth to saturated zone	0.73	Sodium content	1.00
					Depth to saturated zone	0.88
946D2:						
Hickory-------------	Not limited		Not limited		Somewhat limited	
					Slope	0.96
Atlas---------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Slope	0.63
3070A:						
Beaucoup------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Flooding	0.40	Flooding	0.40	Ponding	1.00
3071A:						
Darwin--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Too clayey	1.00	Too clayey	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Too clayey	1.00
	Flooding	0.40	Flooding	0.40	Ponding	1.00
3284A:						
Tice----------------	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00
	Depth to saturated zone	0.32	Depth to saturated zone	0.32	Depth to saturated zone	0.68
3288A:						
Petrolia------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Flooding	0.40	Flooding	0.40	Ponding	1.00
3331A:						
Haymond-------------	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00
3333A:						
Wakeland------------	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

Table 12b.--Recreational Development--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
3334A:						
Birds	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Ponding	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Flooding	0.40	Flooding	0.40	Ponding	1.00
3424A:						
Shoals	Somewhat limited		Somewhat limited		Very limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Flooding	1.00
	Flooding	0.40	Flooding	0.40	Depth to saturated zone	0.94
3597A:						
Armiesburg	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00
3665A:						
Stonelick	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00
7155A:						
Stockland	Not limited		Not limited		Somewhat limited	
					Gravel content	0.54
7155B:						
Stockland	Not limited		Not limited		Somewhat limited	
					Gravel content	0.54
7155C:						
Stockland	Not limited		Not limited		Somewhat limited	
					Gravel content	0.54
7286A:						
Carmi	Not limited		Not limited		Not limited	
7286B:						
Carmi	Not limited		Not limited		Somewhat limited	
					Droughty	0.01
7803C:						
Orthents	Not limited		Not limited		Somewhat limited	
					Slope	0.16
7841A:						
Carmi	Not limited		Not limited		Not limited	
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
7865:						
Pits, gravel	Not rated		Not rated		Not rated	

Table 13.--Wildlife Habitat

(See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable)

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
2A:										
Cisne	Fair	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
3A:										
Hoyleton	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
3B:										
Hoyleton	Fair	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor.
6B2:										
Fishhook	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
7C2:										
Atlas	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
7C3:										
Atlas	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
7D2:										
Atlas	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
8F:										
Hickory	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
12A:										
Wynoose	Fair	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
13A:										
Bluford	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
13B2:										
Bluford	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
14B:										
Ava	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
14C2:										
Ava	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
31A:										
Pierron	Fair	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
50A:										
Virden	Fair	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
79B:										
Menfro	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

Table 13.--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
79C2:										
Menfro	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
79D2:										
Menfro	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
79F:										
Menfro	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
112A:										
Cowden	Poor	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
119C2:										
Elco	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
119D:										
Elco	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
131A:										
Alvin	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
131B:										
Alvin	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
131C2:										
Alvin	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
131D2:										
Alvin	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
131F:										
Alvin	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
138A:										
Shiloh	Fair	Poor	Poor	Poor	Very poor.	Good	Good	Poor	Poor	Good.
142A:										
Patton	Good	Good	Good	Fair	Poor	Good	Good	Good	Fair	Good.
164A:										
Stoy	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
164B:										
Stoy	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
178A:										
Ruark	Fair	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
184A:										
Roby	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.

Table 13.--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
214B:										
Hosmer	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
214C2:										
Hosmer	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
218A:										
Newberry	Fair	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
307B2:										
Iona	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
434A:										
Ridgway	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
434B:										
Ridgway	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
434C2:										
Ridgway	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
453A:										
Muren	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
615C2:										
Vanmeter	Very poor.	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
615F:										
Vanmeter	Very poor.	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
630D3:										
Navlys	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
908D2:										
Hickory	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Kell	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
908F:										
Hickory	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Kell	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
912A:										
Hoyleton	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Darmstadt	Fair	Good	Very poor.	Good	Good	Fair	Fair	Fair	Fair	Fair.

Table 13.--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 wildlife	Woodland wildlife	Wetland wildlife
946D2:										
Hickory	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Atlas	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
3070A:										
Beaucoup	Poor	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
3071A:										
Darwin	Poor	Fair	Fair	Fair	Poor	Fair	Good	Fair	Fair	Fair.
3284A:										
Tice	Poor	Fair	Fair	Good	Fair	Fair	Fair	Fair	Good	Fair.
3288A:										
Petrolia	Poor	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
3331A:										
Haymond	Poor	Fair	Fair	Good	Fair	Fair	Very poor.	Fair	Good	Poor.
3333A:										
Wakeland	Poor	Fair	Fair	Good	Fair	Good	Fair	Fair	Good	Fair.
3334A:										
Birds	Good	Fair	Good	Good	Fair	Good	Good	Good	Good	Good.
3424A:										
Shoals	Poor	Fair	Fair	Good	Fair	Good	Fair	Fair	Good	Fair.
3597A:										
Armiesburg	Poor	Fair	Good	Good	Fair	Poor	Poor	Fair	Good	Poor.
3665A:										
Stonelick	Poor	Fair	Fair	Good	Fair	Poor	Very poor.	Fair	Good	Very poor.
7155A:										
Stockland	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
7155B:										
Stockland	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
7155C:										
Stockland	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
7286A:										
Carmi	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
7286B:										
Carmi	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

Table 13.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hardwood trees	Conif-erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
7803C:										
Orthents----------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
7841A:										
Carmi-------------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Westland----------	Fair	Poor	Poor	Fair	Poor	Good	Good	Poor	Poor	Good.
7865.										
Pits, gravel										

Table 14a.--Building Site Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	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
2A:						
Cisne	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	0.99	Shrink-swell	0.01	Shrink-swell	0.99
3A:						
Hoyleton	Very limited		Very limited		Very limited	
	Shrink-swell	1.00	Depth to saturated zone	1.00	Shrink-swell	1.00
	Depth to saturated zone	0.88			Depth to saturated zone	0.88
3B:						
Hoyleton	Very limited		Very limited		Very limited	
	Shrink-swell	1.00	Depth to saturated zone	1.00	Shrink-swell	1.00
	Depth to saturated zone	0.39			Depth to saturated zone	0.39
6B2:						
Fishhook	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.98	Depth to saturated zone	1.00	Depth to saturated zone	0.98
	Shrink-swell	0.44	Shrink-swell	0.44	Shrink-swell	0.44
7C2:						
Atlas	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	0.98			Shrink-swell	0.98
					Slope	0.88
7C3:						
Atlas	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	0.98	Shrink-swell	0.98	Slope	1.00
	Slope	0.04	Slope	0.04	Shrink-swell	0.98
7D2:						
Atlas	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Slope	1.00
	Shrink-swell	0.98	Shrink-swell	0.98	Depth to saturated zone	1.00
	Slope	0.63	Slope	0.63	Shrink-swell	0.98
8F:						
Hickory	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

Table 14a.--Building Site Development--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
12A:						
Wynoose-------------	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	Ponding	1.00	Shrink-swell	1.00
	Ponding	1.00	Shrink-swell	0.06	Ponding	1.00
13A:						
Bluford-------------	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
13B2:						
Bluford-------------	Very limited		Very limited		Very limited	
	Shrink-swell	1.00	Depth to saturated zone	1.00	Shrink-swell	1.00
	Depth to saturated zone	0.95	Shrink-swell	1.00	Depth to saturated zone	0.95
14B:						
Ava-----------------	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.14	Depth to saturated zone	1.00	Shrink-swell	0.14
	Depth to saturated zone	0.07	Shrink-swell	0.14	Depth to saturated zone	0.07
14C2:						
Ava-----------------	Somewhat limited		Very limited		Very limited	
	Shrink-swell	0.14	Depth to saturated zone	1.00	Slope	1.00
	Depth to saturated zone	0.07	Shrink-swell	0.14	Shrink-swell	0.14
	Slope	0.01	Slope	0.01	Depth to saturated zone	0.07
31A:						
Pierron-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
50A:						
Virden--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
79B:						
Menfro--------------	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.68			Shrink-swell	0.68
79C2:						
Menfro--------------	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.68	Shrink-swell	0.68	Slope	1.00
	Slope	0.01	Slope	0.01	Shrink-swell	0.68
79D2:						
Menfro--------------	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.68	Shrink-swell	0.68	Slope	1.00
	Slope	0.37	Slope	0.37	Shrink-swell	0.68

Table 14a.--Building Site Development--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
79F:						
Menfro	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.68	Shrink-swell	0.68	Shrink-swell	0.68
112A:						
Cowden	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
119C2:						
Elco	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.56	Depth to saturated zone	1.00	Slope	0.88
	Shrink-swell	0.44			Depth to saturated zone	0.56
					Shrink-swell	0.44
119D:						
Elco	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.44	Depth to saturated zone	0.94	Slope	1.00
	Slope	0.37	Shrink-swell	0.44	Shrink-swell	0.44
			Slope	0.37		
131A:						
Alvin	Not limited		Not limited		Not limited	
131B:						
Alvin	Not limited		Not limited		Not limited	
131C2:						
Alvin	Not limited		Not limited		Somewhat limited	
					Slope	0.50
131D2:						
Alvin	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.96	Slope	0.96	Slope	1.00
131F:						
Alvin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
138A:						
Shiloh	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
142A:						
Patton	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 14a.--Building Site Development--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
164A:						
Stoy	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.88	Depth to saturated zone	1.00	Depth to saturated zone	0.88
	Shrink-swell	0.22	Shrink-swell	0.22	Shrink-swell	0.22
164B:						
Stoy	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.56	Depth to saturated zone	1.00	Depth to saturated zone	0.56
	Shrink-swell	0.22	Shrink-swell	0.22	Shrink-swell	0.22
178A:						
Ruark	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
184A:						
Roby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
214B:						
Hosmer	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	1.00	Depth to saturated zone	0.44
	Shrink-swell	0.01			Shrink-swell	0.01
214C2:						
Hosmer	Somewhat limited		Very limited		Very limited	
	Depth to saturated zone	0.44	Depth to saturated zone	1.00	Slope	1.00
	Shrink-swell	0.01	Slope	0.01	Depth to saturated zone	0.44
	Slope	0.01			Shrink-swell	0.01
218A:						
Newberry	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	0.62	Shrink-swell	0.11	Shrink-swell	0.62
307B2:						
Iona	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.33	Depth to saturated zone	1.00	Depth to saturated zone	0.33
	Shrink-swell	0.02	Shrink-swell	0.02	Shrink-swell	0.02
434A:						
Ridgway	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.73			Shrink-swell	0.73
434B:						
Ridgway	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.73			Shrink-swell	0.73
434C2:						
Ridgway	Somewhat limited		Somewhat limited		Very limited	
	Shrink-swell	0.73	Slope	0.01	Slope	1.00
	Slope	0.01			Shrink-swell	0.73

Table 14a.--Building Site Development--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
453A:						
Muren	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.98	Depth to saturated zone	1.00	Depth to saturated zone	0.98
	Shrink-swell	0.68	Shrink-swell	0.68	Shrink-swell	0.68
615C2:						
Vanmeter	Very limited		Very limited		Very limited	
	Shrink-swell	1.00	Depth to saturated zone	1.00	Shrink-swell	1.00
	Depth to saturated zone	0.81	Shrink-swell	1.00	Depth to saturated zone	0.81
			Depth to soft bedrock	0.71	Slope	0.50
615F:						
Vanmeter	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	1.00	Depth to saturated zone	1.00	Shrink-swell	1.00
	Depth to saturated zone	0.81	Shrink-swell	1.00	Depth to saturated zone	0.81
			Depth to soft bedrock	0.42		
630D3:						
Navlys	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.38	Depth to saturated zone	0.60	Shrink-swell	0.38
908D2:						
Hickory	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.96	Slope	0.96	Slope	1.00
	Shrink-swell	0.04	Shrink-swell	0.04	Shrink-swell	0.04
Kell	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.06	Shrink-swell	0.06	Shrink-swell	0.06
			Depth to soft bedrock	0.01		
908F:						
Hickory	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.04	Shrink-swell	0.04	Shrink-swell	0.04
Kell	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.06	Depth to soft bedrock	0.10	Shrink-swell	0.06
			Shrink-swell	0.06		
912A:						
Hoyleton	Very limited		Very limited		Very limited	
	Shrink-swell	1.00	Depth to saturated zone	1.00	Shrink-swell	1.00
	Depth to saturated zone	0.88			Depth to saturated zone	0.88
Darmstadt	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	0.82	Shrink-swell	0.82	Shrink-swell	0.82

Table 14a.--Building Site Development--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
946D2:						
Hickory	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.96	Slope	0.96	Slope	1.00
	Shrink-swell	0.04	Shrink-swell	0.04	Shrink-swell	0.04
Atlas	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Slope	1.00
	Shrink-swell	0.98	Shrink-swell	0.98	Depth to saturated zone	1.00
	Slope	0.63	Slope	0.63	Shrink-swell	0.98
3070A:						
Beaucoup	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.73	Shrink-swell	0.73	Shrink-swell	0.73
3071A:						
Darwin	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	1.00	Shrink-swell	1.00	Shrink-swell	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
3284A:						
Tice	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
	Shrink-swell	0.27	Shrink-swell	0.27	Shrink-swell	0.27
3288A:						
Petrolia	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
3331A:						
Haymond	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	0.76		
3333A:						
Wakeland	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
3334A:						
Birds	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00

Table 14a.--Building Site Development--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
3424A:						
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
3597A:						
Armiesburg	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Shrink-swell	0.73	Shrink-swell	0.73	Shrink-swell	0.73
3665A:						
Stonelick	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
7155A:						
Stockland	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
7155B:						
Stockland	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
7155C:						
Stockland	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
					Slope	0.88
7286A:						
Carmi	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
7286B:						
Carmi	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
7803C:						
Orthents	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Slope	0.16	Slope	0.16	Slope	1.00
7841A:						
Carmi	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
Westland	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Shrink-swell	0.22	Shrink-swell	0.22	Shrink-swell	0.22
7865:						
Pits, gravel	Not rated		Not rated		Not rated	

Table 14b.--Building Site Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2A:						
Cisne---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Ponding	1.00	Ponding	1.00
	Low strength	1.00	Cutbanks cave	0.10		
	Ponding	1.00				
	Shrink-swell	0.99				
3A:						
Hoyleton------------	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.56
	Shrink-swell	1.00	Cutbanks cave	0.10		
	Depth to saturated zone	0.56				
	Frost action	0.50				
3B:						
Hoyleton------------	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.19
	Shrink-swell	1.00	Cutbanks cave	0.10		
	Frost action	0.50				
	Depth to saturated zone	0.19				
6B2:						
Fishhook------------	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	Cutbanks cave	0.10		
	Depth to saturated zone	0.75				
	Shrink-swell	0.44				
7C2:						
Atlas---------------	Very limited		Very limited		Very limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
	Depth to saturated zone	0.99	Cutbanks cave	0.10		
	Shrink-swell	0.98				
	Frost action	0.50				
7C3:						
Atlas---------------	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	Cutbanks cave	0.10	Slope	0.04
	Low strength	1.00	Slope	0.04		
	Shrink-swell	0.98				
	Slope	0.04				

Table 14b.--Building Site Development--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
7D2:						
Atlas----------------	Very limited		Very limited		Very limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
	Depth to saturated zone	0.99	Slope	0.63	Slope	0.63
	Shrink-swell	0.98	Cutbanks cave	0.10		
	Slope	0.63				
	Frost action	0.50				
8F:						
Hickory-------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
	Frost action	0.50				
12A:						
Wynoose-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Ponding	1.00	Ponding	1.00
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	1.00	Too clayey	0.01		
	Ponding	1.00				
13A:						
Bluford-------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.94
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	1.00	Too clayey	0.01		
	Depth to saturated zone	0.94				
13B2:						
Bluford-------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.68
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	1.00				
	Depth to saturated zone	0.68				
14B:						
Ava-----------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.14				
	Depth to saturated zone	0.03				
14C2:						
Ava-----------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.03
	Low strength	1.00	Cutbanks cave	0.10	Slope	0.01
	Shrink-swell	0.14	Slope	0.01		
	Depth to saturated zone	0.03				
	Slope	0.01				

Table 14b.--Building Site Development--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
31A:						
Pierron-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Ponding	1.00	Ponding	1.00
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	1.00	Too clayey	0.01		
	Ponding	1.00				
50A:						
Virden--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Ponding	1.00	Ponding	1.00
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	1.00				
	Ponding	1.00				
79B:						
Menfro--------------	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Low strength	1.00				
	Shrink-swell	0.68				
79C2:						
Menfro--------------	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Cutbanks cave	0.10	Slope	0.01
	Low strength	1.00	Slope	0.01		
	Shrink-swell	0.68				
	Slope	0.01				
79D2:						
Menfro--------------	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Slope	0.37	Slope	0.37
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.68				
	Slope	0.37				
79F:						
Menfro--------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	1.00	Cutbanks cave	0.10		
	Low strength	1.00				
	Shrink-swell	0.68				
112A:						
Cowden--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Ponding	1.00	Ponding	1.00
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	1.00				
	Ponding	1.00				
119C2:						
Elco----------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.28
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.44				
	Depth to saturated zone	0.28				

Table 14b.--Building Site Development--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
119D:						
Elco----------------	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	0.94	Slope	0.37
	Low strength	1.00	Slope	0.37		
	Shrink-swell	0.44	Cutbanks cave	0.10		
	Slope	0.37				
131A:						
Alvin---------------	Somewhat limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
131B:						
Alvin---------------	Somewhat limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
131C2:						
Alvin---------------	Somewhat limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
131D2:						
Alvin---------------	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.96	Cutbanks cave	1.00	Slope	0.96
	Frost action	0.50	Slope	0.96		
131F:						
Alvin---------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Cutbanks cave	1.00		
138A:						
Shiloh--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Ponding	1.00	Ponding	1.00
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	1.00	Too clayey	0.02		
	Ponding	1.00				
142A:						
Patton--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Ponding	1.00	Ponding	1.00
	Low strength	1.00	Cutbanks cave	0.10		
	Ponding	1.00				
	Shrink-swell	0.50				
164A:						
Stoy----------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.56
	Low strength	1.00	Cutbanks cave	0.10		
	Depth to saturated zone	0.56				
	Shrink-swell	0.22				

Table 14b.--Building Site Development--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
164B:						
Stoy	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.28
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.22				
	Depth to saturated zone	0.28				
178A:						
Ruark	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	Cutbanks cave	0.10		
184A:						
Roby	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.94	Depth to saturated zone	1.00	Depth to saturated zone	0.94
	Frost action	0.50	Cutbanks cave	1.00		
214B:						
Hosmer	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.22
	Low strength	1.00	Cutbanks cave	0.10		
	Depth to saturated zone	0.22				
	Shrink-swell	0.01				
214C2:						
Hosmer	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.22
	Low strength	1.00	Cutbanks cave	0.10	Slope	0.01
	Depth to saturated zone	0.22	Slope	0.01		
	Shrink-swell	0.01				
	Slope	0.01				
218A:						
Newberry	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Ponding	1.00	Ponding	1.00
	Low strength	1.00	Cutbanks cave	0.10		
	Ponding	1.00				
	Shrink-swell	0.62				
307B2:						
Iona	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.17
	Low strength	1.00	Cutbanks cave	0.10		
	Depth to saturated zone	0.17				
	Shrink-swell	0.02				
434A:						
Ridgway	Very limited		Very limited		Not limited	
	Frost action	1.00	Cutbanks cave	1.00		
	Low strength	1.00				
	Shrink-swell	0.73				

Table 14b.--Building Site Development--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
434B:						
Ridgway-------------	Very limited		Very limited		Not limited	
	Frost action	1.00	Cutbanks cave	1.00		
	Low strength	1.00				
	Shrink-swell	0.73				
434C2:						
Ridgway-------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Cutbanks cave	1.00	Slope	0.01
	Low strength	1.00	Slope	0.01		
	Shrink-swell	0.73				
	Slope	0.01				
453A:						
Muren---------------	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	Cutbanks cave	0.10		
	Depth to saturated zone	0.75				
	Shrink-swell	0.68				
615C2:						
Vanmeter------------	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.71
	Shrink-swell	1.00	Depth to soft bedrock	0.71	Depth to saturated zone	0.48
	Frost action	0.50	Dense layer	0.50		
	Depth to saturated zone	0.48	Cutbanks cave	0.10		
			Too clayey	0.02		
615F:						
Vanmeter------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.48
	Shrink-swell	1.00	Dense layer	0.50	Depth to bedrock	0.42
	Frost action	0.50	Depth to soft bedrock	0.42		
	Depth to saturated zone	0.48	Cutbanks cave	0.10		
630D3:						
Navlys--------------	Very limited		Very limited		Very limited	
	Frost action	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00	Depth to saturated zone	0.60		
	Slope	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.38				
908D2:						
Hickory-------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.96	Slope	0.96	Slope	0.96
	Frost action	0.50	Cutbanks cave	0.10		
	Low strength	0.22				
	Shrink-swell	0.04				
Kell----------------	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
	Low strength	1.00	Slope	1.00	Depth to bedrock	0.01
	Frost action	0.50	Dense layer	0.50		
	Shrink-swell	0.06	Depth to soft bedrock	0.01		

Table 14b.--Building Site Development--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
908F:						
Hickory	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	0.50	Cutbanks cave	0.10		
	Low strength	0.22				
	Shrink-swell	0.04				
Kell	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00	Dense layer	0.50	Depth to bedrock	0.10
	Frost action	0.50	Cutbanks cave	0.10		
	Shrink-swell	0.06	Depth to soft bedrock	0.10		
912A:						
Hoyleton	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.56
	Shrink-swell	1.00	Cutbanks cave	0.10		
	Depth to saturated zone	0.56				
	Frost action	0.50				
Darmstadt	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Sodium content	1.00
	Low strength	1.00	Cutbanks cave	0.10	Depth to saturated zone	0.88
	Depth to saturated zone	0.88				
	Shrink-swell	0.82				
946D2:						
Hickory	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.96	Slope	0.96	Slope	0.96
	Frost action	0.50	Cutbanks cave	0.10		
	Low strength	0.22				
	Shrink-swell	0.04				
Atlas	Very limited		Very limited		Very limited	
	Low strength	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.99
	Depth to saturated zone	0.99	Slope	0.63	Slope	0.63
	Shrink-swell	0.98	Cutbanks cave	0.10		
	Slope	0.63				
	Frost action	0.50				
3070A:						
Beaucoup	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Frost action	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.80	Ponding	1.00
	Low strength	1.00	Cutbanks cave	0.10		
	Ponding	1.00				
3071A:						
Darwin	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Frost action	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.80	Too clayey	1.00
	Low strength	1.00	Too clayey	0.32	Ponding	1.00
	Shrink-swell	1.00	Cutbanks cave	0.10		

Table 14b.--Building Site Development--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
3284A:						
Tice----------------	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Flooding	1.00	Flooding	0.80	Depth to saturated zone	0.68
	Low strength	1.00	Cutbanks cave	0.10		
	Depth to saturated zone	0.68				
	Shrink-swell	0.27				
3288A:						
Petrolia------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Frost action	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.80	Ponding	1.00
	Low strength	1.00	Cutbanks cave	0.10		
	Ponding	1.00				
3331A:						
Haymond-------------	Very limited		Somewhat limited		Very limited	
	Frost action	1.00	Flooding	0.80	Flooding	1.00
	Flooding	1.00	Depth to saturated zone	0.76		
			Cutbanks cave	0.10		
3333A:						
Wakeland------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Frost action	1.00	Flooding	0.80	Depth to saturated zone	1.00
	Flooding	1.00	Cutbanks cave	0.10		
3334A:						
Birds---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Frost action	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.80	Ponding	1.00
	Low strength	1.00	Cutbanks cave	0.10		
	Ponding	1.00				
3424A:						
Shoals--------------	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Flooding	1.00	Flooding	0.80	Depth to saturated zone	0.94
	Depth to saturated zone	0.94	Cutbanks cave	0.10		
	Low strength	0.78				
3597A:						
Armiesburg----------	Very limited		Somewhat limited		Very limited	
	Frost action	1.00	Flooding	0.80	Flooding	1.00
	Flooding	1.00	Cutbanks cave	0.10		
	Low strength	1.00				
	Shrink-swell	0.73				
3665A:						
Stonelick-----------	Very limited		Very limited		Very limited	
	Flooding	1.00	Cutbanks cave	1.00	Flooding	1.00
	Frost action	0.50	Flooding	0.80		

Table 14b.--Building Site Development--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
7155A:						
Stockland-----------	Somewhat limited		Very limited		Somewhat limited	
	Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.54
	Flooding	0.40				
7155B:						
Stockland-----------	Somewhat limited		Very limited		Somewhat limited	
	Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.54
	Flooding	0.40				
7155C:						
Stockland-----------	Somewhat limited		Very limited		Somewhat limited	
	Frost action	0.50	Cutbanks cave	1.00	Gravel content	0.54
	Flooding	0.40				
7286A:						
Carmi---------------	Somewhat limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
	Flooding	0.40				
7286B:						
Carmi---------------	Somewhat limited		Very limited		Somewhat limited	
	Frost action	0.50	Cutbanks cave	1.00	Droughty	0.01
	Flooding	0.40				
7803C:						
Orthents------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Frost action	0.50	Slope	0.16	Slope	0.16
	Flooding	0.40	Cutbanks cave	0.10		
	Slope	0.16				
7841A:						
Carmi---------------	Somewhat limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
	Flooding	0.40				
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
	Frost action	1.00	Cutbanks cave	1.00	Ponding	1.00
	Low strength	1.00	Ponding	1.00		
	Ponding	1.00				
	Flooding	0.40				
7865:						
Pits, gravel--------	Not rated		Not rated		Not rated	

Table 15a.--Sanitary Facilities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
2A:				
Cisne	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00		
3A:				
Hoyleton	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00		
3B:				
Hoyleton	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Seepage	0.53
			Slope	0.08
6B2:				
Fishhook	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	0.08
7C2:				
Atlas	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
7C3:				
Atlas	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.04		
7D2:				
Atlas	Very limited		Very limited	
	Slow water movement	1.00	Slope	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slope	0.63		

Table 15a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
8F:				
Hickory-------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Slow water movement	1.00	Seepage	0.53
12A:				
Wynoose-------------	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Seepage	0.53
13A:				
Bluford-------------	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
13B2:				
Bluford-------------	Very limited		Somewhat limited	
	Slow water movement	1.00	Depth to saturated zone	0.99
	Depth to saturated zone	1.00	Slope	0.08
14B:				
Ava-----------------	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
			Slope	0.08
14C2:				
Ava-----------------	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.01		
31A:				
Pierron-------------	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00		
50A:				
Virden--------------	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00		

Table 15a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
79B:				
Menfro--------------	Very limited		Somewhat limited	
	Slow water movement	1.00	Seepage	0.53
			Slope	0.08
79C2:				
Menfro--------------	Somewhat limited		Very limited	
	Slow water movement	0.46	Slope	1.00
			Seepage	0.53
	Slope	0.01		
79D2:				
Menfro--------------	Very limited		Very limited	
	Slow water movement	1.00	Slope	1.00
			Seepage	0.53
	Slope	0.37		
79F:				
Menfro--------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Slow water movement	1.00	Seepage	0.53
112A:				
Cowden--------------	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00		
119C2:				
Elco----------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Slope	1.00
			Seepage	0.53
119D:				
Elco----------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Slope	1.00
			Depth to saturated zone	1.00
	Slow water movement	1.00		
			Seepage	0.53
	Slope	0.37		
131A:				
Alvin---------------	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
131B:				
Alvin---------------	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
			Slope	0.08
131C2:				
Alvin---------------	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
			Slope	0.92

Table 15a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
131D2:				
Alvin	Very limited		Very limited	
	Seepage	1.00	Slope	1.00
	Slope	0.96	Seepage	1.00
131F:				
Alvin	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Seepage	1.00	Seepage	1.00
138A:				
Shiloh	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00		
142A:				
Patton	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00
	Slow water movement	0.46	Seepage	0.53
164A:				
Stoy	Very limited		Somewhat limited	
	Slow water movement	1.00	Depth to saturated zone	0.96
	Depth to saturated zone	1.00		
164B:				
Stoy	Very limited		Somewhat limited	
	Slow water movement	1.00	Depth to saturated zone	0.83
	Depth to saturated zone	1.00	Seepage	0.53
			Slope	0.08
178A:				
Ruark	Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00
	Slow water movement	0.46		
184A:				
Roby	Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Depth to saturated zone	1.00
214B:				
Hosmer	Very limited		Somewhat limited	
	Slow water movement	1.00	Depth to saturated zone	0.78
	Depth to saturated zone	1.00	Seepage	0.53
			Slope	0.32

Table 15a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
214C2:				
Hosmer	Very limited		Very limited	
	Slow water movement	1.00	Slope	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	0.78
	Slope	0.01	Seepage	0.53
218A:				
Newberry	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Ponding	1.00
	Ponding	1.00		
307B2:				
Iona	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Slope	0.32
434A:				
Ridgway	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
	Slow water movement	0.46		
434B:				
Ridgway	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
	Slow water movement	0.46	Slope	0.18
434C2:				
Ridgway	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
	Slow water movement	0.46	Slope	1.00
	Slope	0.01		
453A:				
Muren	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Seepage	0.53
615C2:				
Vanmeter	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	0.94
	Slow water movement	1.00	Slope	0.92

Table 15a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
615F:				
Vanmeter------------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Depth to saturated zone	1.00	Slope	1.00
	Slope	1.00	Depth to saturated zone	0.94
	Slow water movement	1.00		
630D3:				
Navlys--------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Depth to saturated zone	0.99	Depth to saturated zone	0.68
	Slow water movement	0.46	Seepage	0.53
908D2:				
Hickory-------------	Very limited		Very limited	
	Slow water movement	1.00	Slope	1.00
	Slope	0.96	Seepage	0.53
Kell----------------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	1.00	Slope	1.00
	Slow water movement	0.46	Seepage	0.53
908F:				
Hickory-------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Slow water movement	1.00	Seepage	0.53
Kell----------------	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to soft bedrock	1.00
	Slope	1.00	Slope	1.00
	Slow water movement	1.00	Seepage	0.53
912A:				
Hoyleton------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00		
Darmstadt-----------	Very limited		Very limited	
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
946D2:				
Hickory-------------	Very limited		Very limited	
	Slow water movement	1.00	Slope	1.00
	Slope	0.96	Seepage	0.53

Table 15a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
946D2:				
Atlas	Very limited		Very limited	
	Depth to saturated zone	1.00	Slope	1.00
	Slow water movement	1.00	Depth to saturated zone	1.00
	Slope	0.63		
3070A:				
Beaucoup	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Ponding	1.00
	Ponding	1.00		
	Depth to bedrock	0.09		
3071A:				
Darwin	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Slow water movement	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00		
3284A:				
Tice	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	0.46	Seepage	0.53
3288A:				
Petrolia	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Ponding	1.00
	Ponding	1.00		
3331A:				
Haymond	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	0.95
	Slow water movement	0.46	Seepage	0.53
3333A:				
Wakeland	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	0.46	Seepage	0.53

Table 15a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
3334A:				
Birds	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	1.00	Ponding	1.00
	Ponding	1.00		
3424A:				
Shoals	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slow water movement	0.46	Seepage	0.53
3597A:				
Armiesburg	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Slow water movement	0.46	Seepage	0.53
3665A:				
Stonelick	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Seepage	1.00	Seepage	1.00
7155A:				
Stockland	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
	Flooding	0.40	Flooding	0.40
7155B:				
Stockland	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
	Flooding	0.40	Flooding	0.40
			Slope	0.32
7155C:				
Stockland	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
	Flooding	0.40	Slope	1.00
			Flooding	0.40
7286A:				
Carmi	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
	Flooding	0.40	Flooding	0.40
7286B:				
Carmi	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
	Flooding	0.40	Flooding	0.40
			Slope	0.08
7803C:				
Orthents	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
	Flooding	0.40	Slope	1.00
	Slope	0.16	Flooding	0.40

Table 15a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
7841A:				
Carmi---------------	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
	Flooding	0.40	Flooding	0.40
Westland------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Ponding	1.00
	Slow water movement	0.46	Flooding	0.40
	Flooding	0.40		
7865:				
Pits, gravel--------	Not rated		Not rated	

Table 15b.--Sanitary Facilities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	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
2A:						
Cisne	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
3A:						
Hoyleton	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.98
					Too clayey	0.50
3B:						
Hoyleton	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.86
6B2:						
Fishhook	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
7C2:						
Atlas	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
7C3:						
Atlas	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	Slope	0.04	Too clayey	0.50
	Slope	0.04			Slope	0.04
7D2:						
Atlas	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	0.63	Slope	0.63	Slope	0.63
	Too clayey	0.50			Too clayey	0.50
8F:						
Hickory	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50
12A:						
Wynoose	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

Table 15b.--Sanitary Facilities--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
13A:						
Bluford	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
13B2:						
Bluford	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.99	Depth to saturated zone	0.99
	Too clayey	0.50			Too clayey	0.50
14B:						
Ava	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
14C2:						
Ava	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	0.01	Too clayey	0.50
	Slope	0.01			Slope	0.01
31A:						
Pierron	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
50A:						
Virden	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
79B:						
Menfro	Not limited		Not limited		Somewhat limited	
					Too clayey	0.50
79C2:						
Menfro	Somewhat limited		Somewhat limited		Somewhat limited	
	Too clayey	0.50	Slope	0.01	Too clayey	0.50
	Slope	0.01			Slope	0.01
79D2:						
Menfro	Somewhat limited		Somewhat limited		Somewhat limited	
	Too clayey	0.50	Slope	0.37	Too clayey	0.50
	Slope	0.37			Slope	0.37
79F:						
Menfro	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50

Table 15b.--Sanitary Facilities--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
112A:						
Cowden	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
119C2:						
Elco	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.91
	Too clayey	0.50			Too clayey	0.50
119D:						
Elco	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
					Slope	0.37
	Too clayey	0.50	Slope	0.37	Depth to saturated zone	0.07
	Slope	0.37				
131A:						
Alvin	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Seepage	0.52
	Too sandy	0.50			Too sandy	0.50
131B:						
Alvin	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Seepage	0.52
	Too sandy	0.50			Too sandy	0.50
131C2:						
Alvin	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Seepage	0.52
	Too sandy	0.50			Too sandy	0.50
131D2:						
Alvin	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Slope	0.96
	Slope	0.96	Slope	0.96	Seepage	0.52
131F:						
Alvin	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage	1.00	Seepage	1.00	Seepage	0.52
138A:						
Shiloh	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			Hard to compact	1.00
					Ponding	1.00
142A:						
Patton	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 15b.--Sanitary Facilities--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
164A:						
Stoy----------------	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.96	Depth to saturated zone	0.98
	Too clayey	0.50			Too clayey	0.50
164B:						
Stoy----------------	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.83	Depth to saturated zone	0.91
	Too clayey	0.50			Too clayey	0.50
178A:						
Ruark---------------	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	Seepage	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Seepage	0.52
184A:						
Roby----------------	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	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00			Seepage	0.52
214B:						
Hosmer--------------	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.78	Depth to saturated zone	0.88
	Too clayey	0.50			Too clayey	0.50
214C2:						
Hosmer--------------	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.78	Depth to saturated zone	0.88
	Too clayey	0.50	Slope	0.01	Too clayey	0.50
	Slope	0.01			Slope	0.01
218A:						
Newberry------------	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
307B2:						
Iona----------------	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.84
	Too clayey	0.50			Too clayey	0.50
434A:						
Ridgway-------------	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Seepage	0.51
	Too sandy	0.50			Too sandy	0.50
					Too clayey	0.50

Table 15b.--Sanitary Facilities--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
434B:						
Ridgway-------------	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Seepage	0.51
	Too sandy	0.50			Too sandy	0.50
					Too clayey	0.50
434C2:						
Ridgway-------------	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Seepage	0.51
	Too sandy	0.50	Slope	0.01	Too sandy	0.50
	Slope	0.01			Too clayey	0.50
					Slope	0.01
453A:						
Muren---------------	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
615C2:						
Vanmeter------------	Very limited		Very limited		Very limited	
	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	0.94	Too clayey	1.00
	Too clayey	1.00			Depth to saturated zone	0.96
615F:						
Vanmeter------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Slope	1.00	Depth to bedrock	1.00
	Slope	1.00	Depth to bedrock	1.00	Slope	1.00
	Depth to bedrock	1.00	Depth to saturated zone	0.94	Too clayey	1.00
	Too clayey	1.00			Depth to saturated zone	0.96
630D3:						
Navlys--------------	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		
908D2:						
Hickory-------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.96	Slope	0.96	Slope	0.96
	Too clayey	0.50			Too clayey	0.50
Kell----------------	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
908F:						
Hickory-------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50
Kell----------------	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

Table 15b.--Sanitary Facilities--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
912A:						
Hoyleton------------	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.98
					Too clayey	0.50
Darmstadt-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Excess sodium	1.00			Sodium content	1.00
	Too clayey	0.50			Too clayey	0.50
946D2:						
Hickory-------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.96	Slope	0.96	Slope	0.96
	Too clayey	0.50			Too clayey	0.50
Atlas---------------	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	0.63	Slope	0.63	Slope	0.63
	Too clayey	0.50			Too clayey	0.50
3070A:						
Beaucoup------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Depth to bedrock	1.00	Ponding	1.00	Too clayey	0.50
	Ponding	1.00				
	Too clayey	0.50				
3071A:						
Darwin--------------	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	1.00
	Too clayey	1.00	Ponding	1.00	Hard to compact	1.00
	Ponding	1.00			Ponding	1.00
3284A:						
Tice----------------	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.99
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
3288A:						
Petrolia------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00	Too clayey	0.50
	Too clayey	0.50				
3331A:						
Haymond-------------	Very limited		Very limited		Not limited	
	Flooding	1.00	Flooding	1.00		
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		

Table 15b.--Sanitary Facilities--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
3333A:						
Wakeland-----------	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		
3334A:						
Birds--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Ponding	1.00		
3424A:						
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		
3597A:						
Armiesburg----------	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Too clayey	0.50
	Too clayey	0.50				
3665A:						
Stonelick-----------	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Seepage	0.52
	Seepage	1.00	Seepage	1.00	Too sandy	0.50
	Too sandy	0.50				
7155A:						
Stockland-----------	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Gravel content	0.99
	Flooding	0.40	Flooding	0.40	Seepage	0.52
7155B:						
Stockland-----------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00	Flooding	0.40	Gravel content	0.96
	Flooding	0.40			Seepage	0.52
7155C:						
Stockland-----------	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Gravel content	0.98
	Flooding	0.40	Flooding	0.40	Seepage	0.52
7286A:						
Carmi---------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Flooding	0.40	Flooding	0.40		
7286B:						
Carmi---------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00	Flooding	0.40	Seepage	1.00
	Flooding	0.40				

Table 15b.--Sanitary Facilities--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
7803C:						
Orthents	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Seepage	0.52
	Flooding	0.40	Flooding	0.40	Slope	0.16
	Slope	0.16	Slope	0.16		
7841A:						
Carmi	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Flooding	0.40	Flooding	0.40		
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	Flooding	0.40	Too clayey	0.50
	Too clayey	0.50				
	Flooding	0.40				
7865:						
Pits, gravel	Not rated		Not rated		Not rated	

Table 16a.--Construction Materials

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table)

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
2A:				
Cisne	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
3A:				
Hoyleton	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
3B:				
Hoyleton	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
6B2:				
Fishhook	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
7C2:				
Atlas	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
7C3:				
Atlas	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
7D2:				
Atlas	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
8F:				
Hickory	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
12A:				
Wynoose	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
13A:				
Bluford	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00

Table 16a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
13B2:				
Bluford	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
14B:				
Ava	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
14C2:				
Ava	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
31A:				
Pierron	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
50A:				
Virden	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
79B:				
Menfro	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
79C2:				
Menfro	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
79D2:				
Menfro	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
79F:				
Menfro	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
112A:				
Cowden	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
119C2:				
Elco	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
119D:				
Elco	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00

Table 16a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
131A:				
Alvin---------------	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.06
131B:				
Alvin---------------	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.06
131C2:				
Alvin---------------	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.06
131D2:				
Alvin---------------	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.06
131F:				
Alvin---------------	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.06
138A:				
Shiloh--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
142A:				
Patton--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
164A:				
Stoy----------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
164B:				
Stoy----------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
178A:				
Ruark---------------	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.04
184A:				
Roby----------------	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.04
	Thickest layer	0.00	Bottom layer	0.10
214B:				
Hosmer--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00

Table 16a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
214C2:				
Hosmer	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
218A:				
Newberry	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
307B2:				
Iona	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
434A:				
Ridgway	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.08
434B:				
Ridgway	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.08
434C2:				
Ridgway	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.08
453A:				
Muren	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
615C2:				
Vanmeter	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
615F:				
Vanmeter	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
630D3:				
Navlys	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
908D2:				
Hickory	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Kell	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00

Table 16a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
908F:				
Hickory----------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Kell----------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
912A:				
Hoyleton------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Darmstadt-----------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
946D2:				
Hickory-------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Atlas---------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
3070A:				
Beaucoup------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
3071A:				
Darwin--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
3284A:				
Tice----------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
3288A:				
Petrolia------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
3331A:				
Haymond-------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
3333A:				
Wakeland------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
3334A:				
Birds---------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00

Table 16a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
3424A:				
Shoals	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
3597A:				
Armiesburg	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
3665A:				
Stonelick	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
7155A:				
Stockland	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.10
	Thickest layer	0.00	Bottom layer	0.80
7155B:				
Stockland	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.05
	Thickest layer	0.00	Bottom layer	0.77
7155C:				
Stockland	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.05
	Thickest layer	0.00	Bottom layer	0.08
7286A:				
Carmi	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.03
	Thickest layer	0.00	Bottom layer	0.84
7286B:				
Carmi	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.84
7803C:				
Orthents	Poor		Fair	
	Bottom layer	0.00	Bottom layer	0.03
	Thickest layer	0.00	Thickest layer	0.03
7841A:				
Carmi	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.03
	Thickest layer	0.00	Bottom layer	0.84
Westland	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.84
7865:				
Pits, gravel	Not rated		Not rated	

Table 16b.--Construction Materials

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2A:						
Cisne	Fair		Poor		Poor	
	Organic matter content	0.12	Wetness	0.00	Wetness	0.00
	Too clayey	0.32	Low strength	0.00	Too clayey	0.20
	Water erosion	0.37	Shrink-swell	0.94	Too acid	0.95
	Too acid	0.46				
3A:						
Hoyleton	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Organic matter content	0.02	Wetness	0.24	Wetness	0.24
	Water erosion	0.37	Shrink-swell	0.78	Too acid	0.92
	Too acid	0.50				
3B:						
Hoyleton	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Organic matter content	0.02	Wetness	0.53	Wetness	0.53
	Too acid	0.50	Shrink-swell	0.91	Too acid	0.88
	Water erosion	0.68				
6B2:						
Fishhook	Fair		Poor		Fair	
	Organic matter content	0.50	Low strength	0.00	Wetness	0.14
	Water erosion	0.90	Wetness	0.14	Too clayey	0.64
	Too acid	0.92	Shrink-swell	0.93		
	Too clayey	0.98				
7C2:						
Atlas	Fair		Poor		Poor	
	Organic matter content	0.02	Low strength	0.00	Wetness	0.00
	Too clayey	0.08	Wetness	0.00	Too clayey	0.05
	Too acid	0.54	Shrink-swell	0.93	Too acid	0.98
	Water erosion	0.90				
7C3:						
Atlas	Fair		Poor		Poor	
	Organic matter content	0.02	Wetness	0.00	Wetness	0.00
	Too clayey	0.08	Low strength	0.00	Too clayey	0.05
	Too acid	0.68	Shrink-swell	0.59	Slope	0.96
7D2:						
Atlas	Fair		Poor		Poor	
	Too clayey	0.08	Low strength	0.00	Wetness	0.00
	Too acid	0.12	Wetness	0.00	Too clayey	0.05
	Organic matter content	0.18	Shrink-swell	0.75	Slope	0.37
	Water erosion	0.90			Too acid	0.59

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
8F:						
Hickory-------------	Fair		Poor		Poor	
	Organic matter content	0.18	Slope	0.00	Slope	0.00
	Too acid	0.68	Low strength	0.00	Too clayey	0.58
	Too clayey	0.98	Shrink-swell	0.98		
	Water erosion	0.99				
12A:						
Wynoose-------------	Poor		Poor		Poor	
	Too clayey	0.00	Wetness	0.00	Wetness	0.00
	Organic matter content	0.05	Low strength	0.00	Too clayey	0.00
	Too acid	0.08	Shrink-swell	0.94	Too acid	0.50
	Water erosion	0.37				
13A:						
Bluford-------------	Poor		Poor		Poor	
	Too clayey	0.00	Low strength	0.00	Too clayey	0.00
	Organic matter content	0.05	Wetness	0.04	Wetness	0.04
	Water erosion	0.37	Shrink-swell	0.97	Too acid	0.68
	Too acid	0.50				
13B2:						
Bluford-------------	Fair		Poor		Fair	
	Too clayey	0.08	Low strength	0.00	Too clayey	0.05
	Organic matter content	0.32	Wetness	0.18	Wetness	0.18
	Too acid	0.50	Shrink-swell	0.82	Too acid	0.76
	Water erosion	0.90				
14B:						
Ava-----------------	Fair		Poor		Fair	
	Too acid	0.20	Low strength	0.00	Too clayey	0.60
	Organic matter content	0.24	Wetness	0.76	Wetness	0.76
	Water erosion	0.37			Too acid	0.76
	Too clayey	0.98				
14C2:						
Ava-----------------	Fair		Poor		Fair	
	Too acid	0.39	Low strength	0.00	Too clayey	0.69
	Organic matter content	0.82	Wetness	0.76	Wetness	0.76
	Water erosion	0.90			Too acid	0.92
	Too clayey	0.98				
31A:						
Pierron-------------	Poor		Poor		Poor	
	Too clayey	0.00	Wetness	0.00	Wetness	0.00
	Too acid	0.08	Low strength	0.00	Too clayey	0.00
	Organic matter content	0.18	Shrink-swell	0.42	Too acid	0.50
	Water erosion	0.37				

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
50A:						
Virden	Fair		Poor		Poor	
	Too clayey	0.08	Wetness	0.00	Wetness	0.00
	Water erosion	0.68	Low strength	0.00	Too clayey	0.06
	Organic matter content	0.98	Shrink-swell	0.80		
79B:						
Menfro	Fair		Poor		Fair	
	Organic matter content	0.08	Low strength	0.00	Too clayey	0.55
			Shrink-swell	0.95		
	Too acid	0.84				
	Water erosion	0.90				
	Too clayey	0.98				
79C2:						
Menfro	Fair		Poor		Fair	
	Organic matter content	0.08	Low strength	0.00	Too clayey	0.55
			Shrink-swell	0.90		
	Too acid	0.80				
	Water erosion	0.90				
	Too clayey	0.98				
79D2:						
Menfro	Fair		Poor		Fair	
	Organic matter content	0.08	Low strength	0.00	Too clayey	0.55
			Shrink-swell	0.97	Slope	0.63
	Too acid	0.54			Too acid	0.98
	Water erosion	0.90				
	Too clayey	0.98				
79F:						
Menfro	Fair		Poor		Poor	
	Organic matter content	0.08	Low strength	0.00	Slope	0.00
			Slope	0.00	Too clayey	0.55
	Too acid	0.54	Shrink-swell	0.93	Too acid	0.98
	Water erosion	0.90				
	Too clayey	0.98				
112A:						
Cowden	Fair		Poor		Poor	
	Too clayey	0.08	Wetness	0.00	Wetness	0.00
	Organic matter content	0.24	Low strength	0.00	Too clayey	0.05
			Shrink-swell	0.78		
	Too acid	0.54				
	Water erosion	0.68				
119C2:						
Elco	Fair		Poor		Fair	
	Organic matter content	0.02	Low strength	0.00	Wetness	0.44
			Wetness	0.44	Too clayey	0.64
	Too acid	0.74	Shrink-swell	0.99		
	Water erosion	0.90				
	Too clayey	0.98				
119D:						
Elco	Fair		Poor		Fair	
	Water erosion	0.37	Low strength	0.00	Slope	0.63
	Organic matter content	0.50	Shrink-swell	0.94	Too clayey	0.64
	Too acid	0.74				
	Too clayey	0.98				

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
131A:						
Alvin	Fair		Good		Good	
	Organic matter content	0.02				
131B:						
Alvin	Fair		Good		Good	
	Organic matter content	0.02				
	Too acid	0.68				
131C2:						
Alvin	Fair		Good		Good	
	Organic matter content	0.02				
	Too acid	0.74				
131D2:						
Alvin	Fair		Good		Fair	
	Organic matter content	0.12			Slope	0.04
	Too acid	0.68				
131F:						
Alvin	Fair		Poor		Poor	
	Organic matter content	0.12	Slope	0.00	Slope	0.00
					Too acid	0.98
	Too acid	0.54				
138A:						
Shiloh	Poor		Poor		Poor	
	Too clayey	0.00	Wetness	0.00	Wetness	0.00
			Low strength	0.00	Too clayey	0.00
			Shrink-swell	0.22		
142A:						
Patton	Fair		Poor		Poor	
	Organic matter content	0.12	Wetness	0.00	Wetness	0.00
			Low strength	0.00	Too clayey	0.87
	Water erosion	0.90	Shrink-swell	0.87		
	Too clayey	0.92				
164A:						
Stoy	Fair		Poor		Fair	
	Organic matter content	0.05	Low strength	0.00	Wetness	0.24
			Wetness	0.24	Too clayey	0.64
	Water erosion	0.37	Shrink-swell	0.96	Too acid	0.88
	Too acid	0.50				
	Too clayey	0.98				
164B:						
Stoy	Fair		Poor		Fair	
	Organic matter content	0.05	Low strength	0.00	Wetness	0.44
			Wetness	0.44	Too clayey	0.60
	Water erosion	0.37	Shrink-swell	0.96	Too acid	0.88
	Too acid	0.50				
	Too clayey	0.98				

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
178A:						
Ruark	Fair		Poor		Poor	
	Organic matter content	0.02	Wetness	0.00	Wetness	0.00
	Too acid	0.50			Too acid	0.82
184A:						
Roby	Fair		Fair		Fair	
	Organic matter content	0.02	Wetness	0.04	Wetness	0.04
	Too sandy	0.08			Too sandy	0.08
	Too acid	0.92				
214B:						
Hosmer	Fair		Poor		Fair	
	Organic matter content	0.12	Low strength	0.00	Wetness	0.50
	Water erosion	0.68	Wetness	0.50		
	Too acid	0.68				
214C2:						
Hosmer	Fair		Poor		Fair	
	Organic matter content	0.12	Low strength	0.00	Wetness	0.50
	Too acid	0.16	Wetness	0.50		
	Water erosion	0.68				
218A:						
Newberry	Fair		Poor		Poor	
	Organic matter content	0.05	Wetness	0.00	Wetness	0.00
	Too acid	0.16	Low strength	0.00	Too clayey	0.56
	Water erosion	0.37	Shrink-swell	0.98	Too acid	0.68
	Sodium content	0.90			Sodium content	0.90
	Too clayey	0.92				
307B2:						
Iona	Fair		Poor		Fair	
	Water erosion	0.37	Low strength	0.00	Wetness	0.56
	Organic matter content	0.50	Wetness	0.56	Too acid	0.88
	Too acid	0.50				
434A:						
Ridgway	Fair		Good		Fair	
	Organic matter content	0.02			Too clayey	0.76
	Too acid	0.74				
	Water erosion	0.90				
	Too clayey	0.98				
434B:						
Ridgway	Fair		Good		Fair	
	Organic matter content	0.02			Too clayey	0.76
	Too acid	0.54				
	Water erosion	0.90				
	Too clayey	0.98				

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
434C2:						
Ridgway	Fair		Good		Fair	
	Organic matter content	0.02			Too clayey	0.76
	Too acid	0.54				
	Water erosion	0.90				
	Too clayey	0.98				
453A:						
Muren	Fair		Poor		Fair	
	Organic matter content	0.24	Low strength	0.00	Wetness	0.14
			Wetness	0.14	Too clayey	0.56
	Too acid	0.32	Shrink-swell	0.96	Too acid	0.88
	Water erosion	0.68				
	Too clayey	0.92				
615C2:						
Vanmeter	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
	Droughty	0.27	Low strength	0.00	Hard to reclaim (dense layer)	0.00
	Depth to bedrock	0.29	Stone content	0.00		
	Organic matter content	0.32	Wetness	0.29	Depth to bedrock	0.29
			Shrink-swell	0.31	Wetness	0.29
	Water erosion	0.99				
615F:						
Vanmeter	Poor		Poor		Poor	
	Too clayey	0.00	Depth to bedrock	0.00	Slope	0.00
	Droughty	0.30	Low strength	0.00	Too clayey	0.00
	Organic matter content	0.32	Stone content	0.00	Hard to reclaim (dense layer)	0.00
			Slope	0.00		
	Depth to bedrock	0.58	Wetness	0.29	Wetness	0.29
	Water erosion	0.99	Shrink-swell	0.59	Depth to bedrock	0.58
630D3:						
Navlys	Fair		Good		Poor	
	Organic matter content	0.02			Slope	0.00
					Too clayey	0.65
	Water erosion	0.06				
	Carbonate content	0.32				
	Too acid	0.84				
	Too clayey	0.99				
908D2:						
Hickory	Fair		Fair		Fair	
	Organic matter content	0.08	Low strength	0.78	Slope	0.04
			Shrink-swell	0.99	Too clayey	0.55
	Too acid	0.54			Rock fragments	0.88
	Too clayey	0.98			Too acid	0.98
Kell	Fair		Poor		Poor	
	Organic matter content	0.08	Depth to bedrock	0.00	Hard to reclaim (dense layer)	0.00
			Low strength	0.00		
	Too acid	0.50	Slope	0.98	Slope	0.00
	Droughty	0.96	Shrink-swell	0.99	Too clayey	0.55
	Too clayey	0.98			Too acid	0.88
	Depth to bedrock	0.99			Rock fragments	0.88
	Water erosion	0.99			Depth to bedrock	0.99

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
908F:						
Hickory	Fair		Poor		Poor	
	Organic matter content	0.08	Slope	0.00	Slope	0.00
	Too acid	0.16	Low strength	0.78	Too clayey	0.55
	Water erosion	0.90			Too acid	0.68
	Too clayey	0.98			Rock fragments	0.88
Kell	Fair		Poor		Poor	
	Organic matter content	0.08	Depth to bedrock	0.00	Slope	0.00
	Droughty	0.33	Low strength	0.00	Hard to reclaim (dense layer)	0.00
	Too acid	0.50	Slope	0.50	Too clayey	0.55
	Depth to bedrock	0.90	Stone content	0.94	Too acid	0.68
	Too clayey	0.98	Shrink-swell	0.99	Rock fragments	0.88
	Water erosion	0.99			Depth to bedrock	0.90
912A:						
Hoyleton	Fair		Poor		Fair	
	Too clayey	0.02	Low strength	0.00	Too clayey	0.01
	Organic matter content	0.02	Wetness	0.24	Wetness	0.24
	Too acid	0.54	Shrink-swell	0.78	Too acid	0.98
	Water erosion	0.68				
Darmstadt	Fair		Poor		Poor	
	Organic matter content	0.02	Low strength	0.00	Sodium content	0.00
	Water erosion	0.06	Wetness	0.07	Wetness	0.07
	Too clayey	0.92	Shrink-swell	0.95	Too clayey	0.49
	Sodium content	0.97				
946D2:						
Hickory	Fair		Fair		Fair	
	Organic matter content	0.08	Low strength	0.78	Slope	0.04
	Too acid	0.54	Shrink-swell	0.99	Too clayey	0.55
	Too clayey	0.98			Rock fragments	0.88
					Too acid	0.98
Atlas	Fair		Poor		Poor	
	Too clayey	0.08	Low strength	0.00	Wetness	0.00
	Too acid	0.12	Wetness	0.00	Too clayey	0.05
	Organic matter content	0.18	Shrink-swell	0.75	Slope	0.37
	Water erosion	0.90			Too acid	0.59
3070A:						
Beaucoup	Fair		Poor		Poor	
	Too clayey	0.98	Wetness	0.00	Wetness	0.00
	Water erosion	0.99	Low strength	0.00	Too clayey	0.76
			Shrink-swell	0.80		
3071A:						
Darwin	Poor		Poor		Poor	
	Too clayey	0.00	Wetness	0.00	Too clayey	0.00
			Low strength	0.00	Wetness	0.00
			Shrink-swell	0.16		

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
3284A:						
Tice----------------	Fair		Poor		Fair	
	Organic matter content	0.92	Low strength	0.00	Wetness	0.18
			Wetness	0.18		
	Water erosion	0.99	Shrink-swell	0.94		
3288A:						
Petrolia------------	Fair		Poor		Poor	
	Organic matter content	0.68	Wetness	0.00	Wetness	0.00
			Low strength	0.00	Too clayey	0.67
	Too clayey	0.98	Shrink-swell	0.87		
	Water erosion	0.99				
	Too acid	0.99				
3331A:						
Haymond-------------	Fair		Good		Good	
	Organic matter content	0.32				
	Water erosion	0.37				
	Too acid	0.88				
3333A:						
Wakeland------------	Fair		Poor		Poor	
	Water erosion	0.37	Wetness	0.00	Wetness	0.00
	Organic matter content	0.88				
	Too acid	0.95				
3334A:						
Birds---------------	Fair		Poor		Poor	
	Water erosion	0.68	Wetness	0.00	Wetness	0.00
	Organic matter content	0.88	Low strength	0.00		
3424A:						
Shoals--------------	Fair		Fair		Fair	
	Organic matter content	0.50	Wetness	0.04	Wetness	0.04
			Low strength	0.22		
	Water erosion	0.90				
3597A:						
Armiesburg----------	Fair		Poor		Fair	
	Organic matter content	0.88	Low strength	0.00	Too clayey	0.70
			Shrink-swell	0.81		
	Too clayey	0.98				
	Water erosion	0.99				
3665A:						
Stonelick-----------	Fair		Good		Good	
	Organic matter content	0.24				
	Water erosion	0.99				
7155A:						
Stockland-----------	Fair		Good		Poor	
	Carbonate content	0.68			Hard to reclaim (rock fragments)	0.00
	Too acid	0.84				
					Rock fragments	0.00

Table 16b.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material: Rating class and limiting features	Value	Potential as source of roadfill: Rating class and limiting features	Value	Potential as source of topsoil: Rating class and limiting features	Value
7155B:						
Stockland-----------	Fair		Good		Poor	
	Organic matter content	0.02			Hard to reclaim (rock fragments)	0.00
					Rock fragments	0.00
7155C:						
Stockland-----------	Fair		Good		Poor	
	Too acid	0.68			Hard to reclaim (rock fragments)	0.00
					Rock fragments	0.00
7286A:						
Carmi---------------	Fair		Good		Good	
	Too acid	0.84				
	Organic matter content	0.88				
7286B:						
Carmi---------------	Fair		Good		Fair	
	Organic matter content	0.08			Hard to reclaim (rock fragments)	0.68
	Too acid	0.54				
	Carbonate content	0.92				
	Droughty	0.96				
7803C:						
Orthents------------	Fair		Poor		Fair	
	Organic matter content	0.88	Low strength	0.00	Rock fragments	0.76
					Slope	0.84
7841A:						
Carmi---------------	Fair		Good		Good	
	Too acid	0.84				
	Organic matter content	0.88				
Westland------------	Fair		Poor		Poor	
	Too clayey	0.82	Wetness	0.00	Wetness	0.00
	Carbonate content	0.92	Low strength	0.00	Hard to reclaim (rock fragments)	0.68
					Too clayey	0.72
					Rock fragments	0.88
7865:						
Pits, gravel--------	Not rated		Not rated		Not rated	

Table 17a.--Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	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
2A:						
Cisne	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.04	Depth to saturated zone	1.00	Slow refill	0.28
			Ponding	1.00	Cutbanks cave	0.10
			Piping	0.23		
3A:						
Hoyleton	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.04	Depth to saturated zone	1.00	Slow refill	0.96
			Piping	0.01	Cutbanks cave	0.10
3B:						
Hoyleton	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.04	Depth to saturated zone	1.00	Slow refill	0.96
			Piping	0.08	Cutbanks cave	0.10
					Depth to saturated zone	0.01
6B2:						
Fishhook	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.04	Depth to saturated zone	1.00	Slow refill	0.96
			Piping	0.06	Cutbanks cave	0.10
7C2:						
Atlas	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.01	Depth to saturated zone	1.00	Slow refill	1.00
			Piping	0.06	Cutbanks cave	0.10
7C3:						
Atlas	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Slow refill	1.00
					Cutbanks cave	0.10
7D2:						
Atlas	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.01	Depth to saturated zone	1.00	Slow refill	1.00
	Seepage	0.01	Piping	0.01	Cutbanks cave	0.10
8F:						
Hickory	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.82	Depth to water	1.00
	Slope	0.34				
12A:						
Wynoose	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
			Ponding	1.00	Cutbanks cave	0.10
			Piping	0.09		

Table 17a.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
13A:						
Bluford	Somewhat limited		Very limited		Very limited	
	Seepage	0.04	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	1.00		
13B2:						
Bluford	Somewhat limited		Very limited		Very limited	
	Seepage	0.04	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.01		
14B:						
Ava	Somewhat limited		Somewhat limited		Somewhat limited	
	Seepage	0.72	Piping	0.97	Slow refill	0.28
			Depth to saturated zone	0.95	Cutbanks cave	0.10
					Depth to saturated zone	0.02
14C2:						
Ava	Somewhat limited		Somewhat limited		Somewhat limited	
	Seepage	0.04	Depth to saturated zone	0.95	Slow refill	0.96
					Cutbanks cave	0.10
			Piping	0.91	Depth to saturated zone	0.02
31A:						
Pierron	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.04	Depth to saturated zone	1.00	Cutbanks cave	0.50
					Slow refill	0.28
			Ponding	1.00		
50A:						
Virden	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.04	Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Ponding	1.00		
79B:						
Menfro	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.26	Depth to water	1.00
79C2:						
Menfro	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.08	Depth to water	1.00
79D2:						
Menfro	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.43	Depth to water	1.00
	Slope	0.01				
79F:						
Menfro	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.20	Depth to water	1.00
	Slope	0.50				

Table 17a.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
112A:						
Cowden----------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.04	Depth to saturated zone	1.00	Slow refill	0.28
			Ponding	1.00	Cutbanks cave	0.10
			Piping	0.01		
119C2:						
Elco------------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
			Piping	0.45	Cutbanks cave	0.10
119D:						
Elco------------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	0.37	Slow refill	0.96
	Slope	0.01	Piping	0.36	Depth to saturated zone	0.29
					Cutbanks cave	0.10
131A:						
Alvin-----------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.06	Depth to water	1.00
131B:						
Alvin-----------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.06	Depth to water	1.00
131C2:						
Alvin-----------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.06	Depth to water	1.00
131D2:						
Alvin-----------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.06	Depth to water	1.00
	Slope	0.02				
131F:						
Alvin-----------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.06	Depth to water	1.00
	Slope	0.28				
138A:						
Shiloh----------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.04	Depth to saturated zone	1.00	Slow refill	0.96
			Ponding	1.00	Cutbanks cave	0.10
			Hard to pack	0.13		
142A:						
Patton----------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
			Ponding	1.00	Cutbanks cave	0.10
			Piping	0.23		
164A:						
Stoy------------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.04	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.25		

Table 17a.--Water Management--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
164B:						
Stoy----------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.21		
178A:						
Ruark---------------	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
			Ponding	1.00		
			Seepage	0.04		
184A:						
Roby----------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Seepage	0.10		
214B:						
Hosmer--------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.95		
214C2:						
Hosmer--------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Depth to water	1.00
			Piping	0.95		
218A:						
Newberry------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.04	Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Ponding	1.00		
			Piping	0.79		
307B2:						
Iona----------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.04	Depth to saturated zone	1.00	Slow refill	0.96
					Cutbanks cave	0.50
			Piping	0.99	Depth to saturated zone	0.01
434A:						
Ridgway-------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	Depth to water	1.00
			Seepage	0.08		
434B:						
Ridgway-------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	Depth to water	1.00
			Seepage	0.08		
434C2:						
Ridgway-------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	Depth to water	1.00
			Seepage	0.08		

Table 17a.--Water Management--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
453A:						
Muren	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Piping	0.21		
615C2:						
Vanmeter	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.19	Depth to saturated zone	1.00	Depth to water	1.00
	Seepage	0.04				
			Thin layer	0.93		
			Piping	0.10		
615F:						
Vanmeter	Somewhat limited		Very limited		Very limited	
	Slope	0.32	Depth to saturated zone	1.00	Depth to water	1.00
	Depth to bedrock	0.11				
	Seepage	0.04	Thin layer	0.85		
			Piping	0.15		
630D3:						
Navlys	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Piping	1.00	Depth to saturated zone	0.82
	Slope	0.03				
					Cutbanks cave	0.50
					Slow refill	0.28
908D2:						
Hickory	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.90	Depth to water	1.00
	Slope	0.02				
Kell	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.79	Depth to water	1.00
	Slope	0.04	Thin layer	0.56		
	Depth to bedrock	0.02				
908F:						
Hickory	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.97	Depth to water	1.00
	Slope	0.34				
Kell	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.80	Depth to water	1.00
	Slope	0.12	Thin layer	0.70		
	Depth to bedrock	0.04				
912A:						
Hoyleton	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.04	Depth to saturated zone	1.00	Slow refill	0.96
					Cutbanks cave	0.10
			Piping	0.01		
Darmstadt	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.04	Depth to saturated zone	1.00	Slow refill	0.96
					Cutbanks cave	0.10
			Piping	1.00		

Table 17a.--Water Management--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
946D2:						
Hickory	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.90	Depth to water	1.00
	Slope	0.02				
Atlas	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.01	Depth to saturated zone	1.00	Slow refill	1.00
	Seepage	0.01	Piping	0.01	Cutbanks cave	0.10
3070A:						
Beaucoup	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.04	Depth to saturated zone	1.00	Slow refill	0.28
			Ponding	1.00	Cutbanks cave	0.10
			Piping	0.01		
3071A:						
Darwin	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Slow refill	1.00
			Ponding	1.00	Cutbanks cave	0.10
			Hard to pack	0.50		
3284A:						
Tice	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
			Piping	0.10	Cutbanks cave	0.10
3288A:						
Petrolia	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.04	Depth to saturated zone	1.00	Slow refill	0.96
			Ponding	1.00	Cutbanks cave	0.10
			Piping	0.01		
3331A:						
Haymond	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Piping	1.00	Depth to saturated zone	0.64
			Depth to saturated zone	0.03	Slow refill	0.28
					Cutbanks cave	0.10
3333A:						
Wakeland	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
			Piping	1.00	Cutbanks cave	0.10
3334A:						
Birds	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.04	Depth to saturated zone	1.00	Slow refill	0.96
			Ponding	1.00	Cutbanks cave	0.10
			Piping	0.85		

Table 17a.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
3424A:						
Shoals	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
			Piping	0.88	Cutbanks cave	0.10
3597A:						
Armiesburg	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.01	Depth to water	1.00
					Slow refill	0.28
3665A:						
Stonelick	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	Depth to water	1.00
7155A:						
Stockland	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.84	Depth to water	1.00
7155B:						
Stockland	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.95	Depth to water	1.00
7155C:						
Stockland	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.08	Depth to water	1.00
7286A:						
Carmi	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.84	Depth to water	1.00
7286B:						
Carmi	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.84	Depth to water	1.00
7803C:						
Orthents	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.03	Depth to water	1.00
7841A:						
Carmi	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.84	Depth to water	1.00
Westland	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Ponding	1.00		
			Seepage	0.84		
7865:						
Pits, gravel	Not rated		Not rated		Not rated	

Table 17b.--Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Constructing grassed waterways and surface drains		Constructing terraces and diversions		Tile drains and underground outlets	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2A:						
Cisne	Not limited		Very limited		Somewhat limited	
			Water erosion	1.00	Slow water movement	0.92
			Ponding	1.00	Cutbanks cave	0.28
			Depth to saturated zone	1.00		
3A:						
Hoyleton	Not limited		Very limited		Somewhat limited	
			Water erosion	1.00	Cutbanks cave	0.36
			Depth to saturated zone	1.00	Slow water movement	0.31
					Excess sodium	0.10
					Slope	0.01
3B:						
Hoyleton	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.16	Water erosion	1.00	Slope	0.99
			Depth to saturated zone	1.00	Cutbanks cave	0.36
			Slope	0.16	Slow water movement	0.31
6B2:						
Fishhook	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.16	Water erosion	1.00	Slope	0.99
			Depth to saturated zone	1.00	Slow water movement	0.31
			Slope	0.16	Cutbanks cave	0.24
7C2:						
Atlas	Somewhat limited		Very limited		Very limited	
	Slope	0.96	Water erosion	1.00	Slope	1.00
			Depth to saturated zone	1.00	Slow water movement	0.31
			Slope	0.96	Cutbanks cave	0.20
7C3:						
Atlas	Very limited		Very limited		Very limited	
	Slope	1.00	Depth to saturated zone	1.00	Slope	1.00
			Slope	1.00	Slow water movement	0.92
			Water erosion	0.88		
7D2:						
Atlas	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
			Slope	1.00	Slow water movement	0.31
			Depth to saturated zone	1.00	Cutbanks cave	0.20
8F:						
Hickory	Very limited		Very limited		Drainage not needed	
	Slope	1.00	Water erosion	1.00		
			Slope	1.00		

Table 17b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains		Constructing terraces and diversions		Tile drains and underground outlets	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
12A:						
Wynoose-------------	Not limited		Very limited		Somewhat limited	
			Water erosion	1.00	Slow water movement	0.92
			Ponding	1.00	Cutbanks cave	0.76
			Depth to saturated zone	1.00		
13A:						
Bluford-------------	Not limited		Very limited		Somewhat limited	
			Water erosion	1.00	Excess sodium	0.10
			Depth to saturated zone	1.00	Cutbanks cave	0.64
					Slow water movement	0.31
					Slope	0.01
13B2:						
Bluford-------------	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.16	Water erosion	1.00	Slope	0.99
			Depth to saturated zone	1.00	Slow water movement	0.31
			Slope	0.16	Cutbanks cave	0.28
					Excess sodium	0.10
14B:						
Ava-----------------	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.16	Water erosion	1.00	Slope	0.99
			Depth to saturated zone	1.00	Slow water movement	0.92
			Slope	0.16	Cutbanks cave	0.32
14C2:						
Ava-----------------	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
			Depth to saturated zone	1.00	Slow water movement	0.92
			Slope	1.00	Cutbanks cave	0.28
31A:						
Pierron-------------	Not limited		Very limited		Very limited	
			Water erosion	1.00	Slow water movement	1.00
			Ponding	1.00	Cutbanks cave	0.64
			Depth to saturated zone	1.00		
50A:						
Virden--------------	Not limited		Very limited		Somewhat limited	
			Water erosion	1.00	Cutbanks cave	0.40
			Ponding	1.00	Slow water movement	0.31
			Depth to saturated zone	1.00		
79B:						
Menfro--------------	Somewhat limited		Very limited		Drainage not needed	
	Slope	0.16	Water erosion	1.00		
			Slope	0.16		
79C2:						
Menfro--------------	Very limited		Very limited		Drainage not needed	
	Slope	1.00	Water erosion	1.00		
			Slope	1.00		

Table 17b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains		Constructing terraces and diversions		Tile drains and underground outlets	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
79D2:						
Menfro	Very limited		Very limited		Drainage not needed	
	Slope	1.00	Water erosion	1.00		
			Slope	1.00		
79F:						
Menfro	Very limited		Very limited		Drainage not needed	
	Slope	1.00	Water erosion	1.00		
			Slope	1.00		
112A:						
Cowden	Not limited		Very limited		Somewhat limited	
			Water erosion	1.00	Slow water movement	0.31
			Ponding	1.00		
			Depth to saturated zone	1.00		
119C2:						
Elco	Somewhat limited		Very limited		Very limited	
	Slope	0.96	Water erosion	1.00	Slope	1.00
			Depth to saturated zone	1.00	Cutbanks cave	0.24
			Slope	0.96		
119D:						
Elco	Very limited		Very limited		Drainage not needed	
	Slope	1.00	Water erosion	1.00		
			Slope	1.00		
131A:						
Alvin	Not limited		Somewhat limited		Drainage not needed	
			Water erosion	0.12		
131B:						
Alvin	Somewhat limited		Somewhat limited		Drainage not needed	
	Slope	0.16	Slope	0.16		
			Water erosion	0.12		
131C2:						
Alvin	Somewhat limited		Somewhat limited		Drainage not needed	
	Slope	0.84	Slope	0.84		
			Water erosion	0.12		
131D2:						
Alvin	Very limited		Very limited		Drainage not needed	
	Slope	1.00	Slope	1.00		
			Water erosion	0.12		
131F:						
Alvin	Very limited		Very limited		Drainage not needed	
	Slope	1.00	Slope	1.00		
			Water erosion	0.12		
138A:						
Shiloh	Not limited		Very limited		Somewhat limited	
			Ponding	1.00	Slow water movement	0.31
			Depth to saturated zone	1.00		
			Water erosion	0.88		

Table 17b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Tile drains and underground outlets: Rating class and limiting features	Value
142A:						
Patton	Not limited		Very limited		Somewhat limited	
			Ponding	1.00	Cutbanks cave	0.32
			Depth to saturated zone	1.00		
			Water erosion	0.88		
164A:						
Stoy	Not limited		Very limited		Somewhat limited	
			Water erosion	1.00	Slow water movement	0.31
			Depth to saturated zone	1.00	Cutbanks cave	0.28
					Slope	0.01
164B:						
Stoy	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.16	Water erosion	1.00	Slope	0.99
			Depth to saturated zone	1.00	Slow water movement	0.31
			Slope	0.16	Cutbanks cave	0.28
178A:						
Ruark	Not limited		Very limited		Somewhat limited	
			Ponding	1.00	Cutbanks cave	0.88
			Depth to saturated zone	1.00		
			Water erosion	0.50		
184A:						
Roby	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Cutbanks cave	1.00
			Too sandy	1.00		
			Water erosion	0.88		
214B:						
Hosmer	Somewhat limited		Very limited		Very limited	
	Slope	0.37	Water erosion	1.00	Slope	1.00
			Depth to saturated zone	1.00	Slow water movement	0.92
			Slope	0.37	Cutbanks cave	0.28
214C2:						
Hosmer	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
			Depth to saturated zone	1.00	Slow water movement	1.00
			Slope	1.00	Cutbanks cave	0.28
218A:						
Newberry	Not limited		Very limited		Somewhat limited	
			Water erosion	1.00	Excess sodium	0.50
			Ponding	1.00	Slow water movement	0.31
			Depth to saturated zone	1.00	Cutbanks cave	0.28

Table 17b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Tile drains and underground outlets: Rating class and limiting features	Value
307B2:						
Iona	Somewhat limited		Very limited		Very limited	
	Slope	0.37	Water erosion	1.00	Slope	1.00
			Depth to saturated zone	1.00	Cutbanks cave	0.80
			Slope	0.37		
434A:						
Ridgway	Not limited		Very limited		Drainage not needed	
			Water erosion	1.00		
434B:						
Ridgway	Somewhat limited		Very limited		Drainage not needed	
	Slope	0.26	Water erosion	1.00		
			Slope	0.26		
434C2:						
Ridgway	Very limited		Very limited		Drainage not needed	
	Slope	1.00	Water erosion	1.00		
			Slope	1.00		
453A:						
Muren	Not limited		Very limited		Somewhat limited	
			Water erosion	1.00	Cutbanks cave	0.36
			Depth to saturated zone	1.00	Slope	0.01
615C2:						
Vanmeter	Somewhat limited		Very limited		Very limited	
	Slope	0.84	Water erosion	1.00	Depth to bedrock	1.00
	Depth to soft bedrock	0.71	Depth to saturated zone	1.00	Slope	1.00
			Slope	0.84	Slow water movement	1.00
			Depth to soft bedrock	0.71		
615F:						
Vanmeter	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Depth to bedrock	1.00
	Depth to soft bedrock	0.42	Slope	1.00	Slope	1.00
	Content of large stones	0.38	Depth to saturated zone	1.00	Slow water movement	1.00
			Depth to soft bedrock	0.42		
			Content of large stones	0.38		
630D3:						
Navlys	Very limited		Very limited		Drainage not needed	
	Slope	1.00	Water erosion	1.00		
			Slope	1.00		
908D2:						
Hickory	Very limited		Very limited		Drainage not needed	
	Slope	1.00	Slope	1.00		
			Water erosion	0.88		

Table 17b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains		Constructing terraces and diversions		Tile drains and underground outlets	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
908D2:						
Kell	Very limited		Very limited		Drainage not needed	
	Slope	1.00	Water erosion	1.00		
	Depth to soft bedrock	0.01	Slope	1.00		
			Depth to soft bedrock	0.01		
908F:						
Hickory	Very limited		Very limited		Drainage not needed	
	Slope	1.00	Water erosion	1.00		
			Slope	1.00		
Kell	Very limited		Very limited		Drainage not needed	
	Slope	1.00	Water erosion	1.00		
	Content of large stones	0.81	Slope	1.00		
	Depth to soft bedrock	0.10	Content of large stones	0.81		
			Depth to soft bedrock	0.10		
912A:						
Hoyleton	Not limited		Very limited		Somewhat limited	
			Water erosion	1.00	Cutbanks cave	0.36
			Depth to saturated zone	1.00	Slow water movement	0.31
					Excess sodium	0.10
					Slope	0.01
Darmstadt	Not limited		Very limited		Very limited	
			Water erosion	1.00	Excess sodium	1.00
			Depth to saturated zone	1.00	Slow water movement	0.92
					Cutbanks cave	0.12
					Slope	0.01
946D2:						
Hickory	Very limited		Very limited		Drainage not needed	
	Slope	1.00	Slope	1.00		
			Water erosion	0.88		
Atlas	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
			Slope	1.00	Slow water movement	0.31
			Depth to saturated zone	1.00		
3070A:						
Beaucoup	Not limited		Very limited		Somewhat limited	
			Water erosion	1.00	Frequent flooding	0.80
			Ponding	1.00	Cutbanks cave	0.16
			Depth to saturated zone	1.00		

Table 17b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Tile drains and underground outlets: Rating class and limiting features	Value
3071A:						
Darwin	Not limited		Very limited		Somewhat limited	
			Ponding	1.00	Slow water movement	0.92
			Depth to saturated zone	1.00	Frequent flooding	0.80
			Water erosion	0.50		
3284A:						
Tice	Not limited		Very limited		Somewhat limited	
			Water erosion	1.00	Frequent flooding	0.80
			Depth to saturated zone	1.00	Cutbanks cave	0.24
					Slope	0.01
3288A:						
Petrolia	Not limited		Very limited		Somewhat limited	
			Water erosion	1.00	Frequent flooding	0.80
			Ponding	1.00	Cutbanks cave	0.16
			Depth to saturated zone	1.00		
3331A:						
Haymond	Not limited		Very limited		Drainage not needed	
			Water erosion	1.00		
3333A:						
Wakeland	Not limited		Very limited		Somewhat limited	
			Water erosion	1.00	Frequent flooding	0.80
			Depth to saturated zone	1.00	Cutbanks cave	0.80
					Slope	0.01
3334A:						
Birds	Not limited		Very limited		Somewhat limited	
			Water erosion	1.00	Frequent flooding	0.80
			Ponding	1.00	Cutbanks cave	0.48
			Depth to saturated zone	1.00		
3424A:						
Shoals	Not limited		Very limited		Very limited	
			Water erosion	1.00	Depth to saturated zone	1.00
			Depth to saturated zone	1.00	Frequent flooding	0.80
					Cutbanks cave	0.52
3597A:						
Armiesburg	Not limited		Very limited		Somewhat limited	
			Water erosion	1.00	Frequent flooding	0.80
					Cutbanks cave	0.16
3665A:						
Stonelick	Not limited		Very limited		Somewhat limited	
			Water erosion	1.00	Cutbanks cave	0.96
					Frequent flooding	0.80
7155A:						
Stockland	Not limited		Not limited		Drainage not needed	

Table 17b.--Water Management--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Tile drains and underground outlets: Rating class and limiting features	Value
7155B:						
Stockland	Somewhat limited		Very limited		Drainage not needed	
	Slope	0.37	Too sandy	1.00		
			Slope	0.37		
7155C:						
Stockland	Somewhat limited		Somewhat limited		Drainage not needed	
	Slope	0.96	Slope	0.96		
	Content of large stones	0.01	Content of large stones	0.01		
7286A:						
Carmi	Not limited		Somewhat limited		Drainage not needed	
			Water erosion	0.12		
7286B:						
Carmi	Somewhat limited		Very limited		Drainage not needed	
	Slope	0.16	Too sandy	1.00		
			Slope	0.16		
			Water erosion	0.12		
7803C:						
Orthents	Very limited		Very limited		Drainage not needed	
	Slope	1.00	Slope	1.00		
7841A:						
Carmi	Not limited		Somewhat limited		Drainage not needed	
			Water erosion	0.12		
Westland	Not limited		Very limited		Very limited	
			Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00	Rare flooding	0.10
			Water erosion	0.50		
7865:						
Pits, gravel	Not rated		Not rated		Not rated	

Table 17c.--Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Irrigation (all application methods)		Sprinkler irrigation		Drip or trickle irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2A:						
Cisne	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Wetness	1.00
	Percs slowly	1.00	Excess sodium	0.05	Excess sodium	0.05
	Too acid	0.44				
3A:						
Hoyleton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Wetness	1.00
	Percs slowly	0.31	Excess sodium	0.27	Excess sodium	0.27
	Too acid	0.22				
3B:						
Hoyleton	Somewhat limited		Very limited		Not limited	
	Depth to saturated zone	0.99	Water erosion	1.00		
	Percs slowly	0.31	Depth to saturated zone	0.97		
	Too acid	0.08				
6B2:						
Fishhook	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Wetness	1.00
	Percs slowly	1.00	Water erosion	1.00		
7C2:						
Atlas	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Wetness	1.00
	Percs slowly	1.00	Depth to saturated zone	1.00		
	Slope	0.92	Droughty	0.05		
	Too acid	0.08	Slope	0.02		
7C3:						
Atlas	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Wetness	1.00
	Percs slowly	1.00	Depth to saturated zone	1.00		
	Slope	1.00	Slope	0.22		
	Too acid	0.01	Droughty	0.11		
7D2:						
Atlas	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Wetness	1.00
	Slope	1.00	Depth to saturated zone	1.00		
	Percs slowly	1.00	Slope	0.78		
			Droughty	0.01		

Table 17c.--Water Management--Continued

Map symbol and soil name	Irrigation (all application methods)		Sprinkler irrigation		Drip or trickle irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
8F:						
Hickory-------------	Very limited		Very limited		Not limited	
	Slope	1.00	Slope	1.00		
	Too acid	0.32	Water erosion	1.00		
	Percs slowly	0.31				
12A:						
Wynoose-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Wetness	1.00
	Percs slowly	1.00	Excess sodium	0.05	Excess sodium	0.05
13A:						
Bluford-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Wetness	1.00
	Percs slowly	1.00	Excess sodium	1.00	Excess sodium	1.00
13B2:						
Bluford-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Wetness	1.00
	Percs slowly	1.00	Water erosion	1.00		
14B:						
Ava-----------------	Very limited		Very limited		Not limited	
	Percs slowly	1.00	Water erosion	1.00		
	Depth to saturated zone	0.95				
	Too acid	0.04				
14C2:						
Ava-----------------	Very limited		Very limited		Not limited	
	Percs slowly	1.00	Water erosion	1.00		
	Slope	1.00	Slope	0.10		
	Depth to saturated zone	0.95				
31A:						
Pierron-------------	Very limited		Very limited		Very limited	
	Percs slowly	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Wetness	1.00
	Depth to saturated zone	1.00				
	Too acid	0.32				
50A:						
Virden--------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Wetness	1.00
	Percs slowly	1.00				
79B:						
Menfro--------------	Somewhat limited		Very limited		Not limited	
	Too acid	0.01	Water erosion	1.00		

Table 17c.--Water Management--Continued

Map symbol and soil name	Irrigation (all application methods)		Sprinkler irrigation		Drip or trickle irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
79C2:						
Menfro	Very limited		Very limited		Not limited	
	Slope	1.00	Water erosion	1.00		
	Too acid	0.01	Slope	0.10		
79D2:						
Menfro	Very limited		Very limited		Not limited	
	Slope	1.00	Water erosion	1.00		
	Too acid	0.08	Slope	0.60		
	Percs slowly	0.06				
79F:						
Menfro	Very limited		Very limited		Not limited	
	Slope	1.00	Slope	1.00		
	Percs slowly	0.31	Water erosion	1.00		
	Too acid	0.14				
112A:						
Cowden	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Wetness	1.00
	Percs slowly	1.00				
	Too acid	0.44				
119C2:						
Elco	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Wetness	1.00
			Slope	0.02		
	Slope	0.92				
	Percs slowly	0.31				
119D:						
Elco	Very limited		Very limited		Not limited	
	Slope	1.00	Water erosion	1.00		
	Depth to saturated zone	0.38	Slope	0.60		
	Percs slowly	0.31				
131A:						
Alvin	Not limited		Somewhat limited		Not limited	
			Droughty	0.67		
131B:						
Alvin	Somewhat limited		Somewhat limited		Not limited	
	Too acid	0.32	Droughty	0.94		
131C2:						
Alvin	Somewhat limited		Somewhat limited		Not limited	
	Slope	0.68	Droughty	0.81		
	Too acid	0.04				
131D2:						
Alvin	Very limited		Somewhat limited		Not limited	
	Slope	1.00	Slope	0.98		
	Too acid	0.32	Droughty	0.32		

Table 17c.--Water Management--Continued

Map symbol and soil name	Irrigation (all application methods)		Sprinkler irrigation		Drip or trickle irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
131F:						
Alvin	Very limited		Very limited		Not limited	
	Slopes	1.00	Slope	1.00		
			Droughty	0.45		
138A:						
Shiloh	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Wetness	1.00
	Percs slowly	1.00	Droughty	0.02		
142A:						
Patton	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Wetness	1.00
164A:						
Stoy	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Wetness	1.00
	Percs slowly	1.00				
164B:						
Stoy	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Wetness	0.98
	Percs slowly	1.00	Water erosion	1.00		
	Too acid	0.78				
178A:						
Ruark	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Wetness	1.00
			Droughty	0.06		
184A:						
Roby	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Wetness	1.00
			Droughty	0.92		
214B:						
Hosmer	Very limited		Very limited		Not Limited	
	Depth to saturated zone	1.00	Water erosion	1.00		
	Percs slowly	1.00				
	Slope	0.08				
214C2:						
Hosmer	Very limited		Very limited		Not limited	
	Depth to saturated zone	1.00	Water erosion	1.00		
			Slope	0.10		
	Percs slowly	1.00				
	Slope	1.00				
	Too acid	0.14				

Table 17c.--Water Management--Continued

Map symbol and soil name	Irrigation (all application methods)		Sprinkler irrigation		Drip or trickle irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
218A:						
Newberry------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Wetness	1.00
	Percs slowly	0.31	Excess sodium	0.91	Excess sodium	0.91
	Excess sodium	0.18				
307B2:						
Iona----------------	Somewhat limited		Very limited		Not limited	
	Depth to saturated zone	0.99	Water erosion	1.00		
	Percs slowly	0.31				
	Too acid	0.08				
	Slope	0.08				
434A:						
Ridgway-------------	Not limited		Not limited		Not limited	
434B:						
Ridgway-------------	Somewhat limited		Very limited		Not limited	
	Slope	0.02	Water erosion	1.00		
434C2:						
Ridgway-------------	Very limited		Very limited		Not limited	
	Slope	1.00	Water erosion	1.00		
			Slope	0.10		
453A:						
Muren---------------	Very limited		Not limited		Very limited	
	Depth to saturated zone	1.00			Wetness	1.00
615C2:						
Vanmeter------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to soft bedrock	1.00	Wetness	1.00
	Percs slowly	1.00	Water erosion	1.00	Percs slowly	1.00
	Droughty	0.79	Percs slowly	1.00		
	Bedrock	0.71	Droughty	0.99		
	Slope	0.68				
615F:						
Vanmeter------------	Very limited		Very limited		Very limited	
	Percs slowly	1.00	Slope	1.00	Wetness	1.00
	Depth to saturated zone	1.00	Water erosion	1.00	Percs slowly	1.00
			Percs slowly	1.00		
	Slope	1.00	Depth to soft bedrock	0.99		
	Droughty	0.76	Droughty	0.99		
630D3:						
Navlys--------------	Very limited		Very limited		Not limited	
	Slope	1.00	Water erosion	1.00		
	Too acid	0.22	Slope	1.00		

Table 17c.--Water Management--Continued

Map symbol and soil name	Irrigation (all application methods)		Sprinkler irrigation		Drip or trickle irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
908D2:						
Hickory	Very limited		Very limited		Not limited	
	Slope	1.00	Water erosion	1.00		
	Percs slowly	0.31	Slope	0.98		
			Droughty	0.18		
Kell	Very limited		Very limited		Not limited	
	Slope	1.00	Water erosion	1.00		
	Too acid	0.44	Slope	1.00		
	Low adsorption	0.34	Depth to soft bedrock	0.61		
	Droughty	0.04	Droughty	0.08		
908F:						
Hickory	Very limited		Very limited		Not limited	
	Low adsorption	1.00	Slope	1.00		
	Slope	1.00	Water erosion	1.00		
	Too acid	1.00	Droughty	0.16		
	Percs slowly	0.31				
Kell	Very limited		Very limited		Not limited	
	Slope	1.00	Slope	1.00		
	Droughty	0.74	Water erosion	1.00		
	Too acid	0.44	Droughty	0.98		
	Bedrock	0.10	Depth to soft bedrock	0.84		
912A:						
Hoyleton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Wetness	1.00
	Percs slowly	0.31				
	Too acid	0.22				
Darmstadt	Very limited		Very limited		Very limited	
	Percs slowly	1.00	Excess sodium	1.00	Excess sodium	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Wetness	1.00
	Excess sodium	0.08				
946D2:						
Hickory	Very limited		Very limited		Not limited	
	Slope	1.00	Water erosion	1.00		
	Percs slowly	0.31	Slope	0.98		
			Droughty	0.18		
Atlas	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Wetness	1.00
	Slope	1.00	Depth to saturated zone	1.00		
	Percs slowly	0.96	Slope	0.78		
			Droughty	0.01		
3070A:						
Beaucoup	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Flooding	1.00	Flooding	1.00
	Frequent flooding	0.80	Depth to saturated zone	1.00	Wetness	1.00
	Percs slowly	0.31				

Table 17c.--Water Management--Continued

Map symbol and soil name	Irrigation (all application methods) Rating class and limiting features	Value	Sprinkler irrigation Rating class and limiting features	Value	Drip or trickle irrigation Rating class and limiting features	Value
3071A:						
Darwin	Very limited		Very limited		Very limited	
	Percs slowly	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Wetness	1.00
	Frequent flooding	0.80	Droughty	0.22		
3284A:						
Tice	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Flooding	1.00	Flooding	1.00
	Frequent flooding	0.80	Depth to saturated zone	1.00	Wetness	1.00
3288A:						
Petrolia	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Flooding	1.00	Flooding	1.00
	Frequent flooding	0.80	Depth to saturated zone	1.00	Wetness	1.00
	Percs slowly	0.31				
3331A:						
Haymond	Somewhat limited		Very limited		Very limited	
	Frequent flooding	0.80	Flooding	1.00	Flooding	1.00
	Too acid	0.32				
	Depth to saturated zone	0.04				
3333A:						
Wakeland	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Flooding	1.00	Flooding	1.00
	Frequent flooding	0.80	Depth to saturated zone	1.00	Wetness	1.00
	Too acid	0.04				
3334A:						
Birds	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Flooding	1.00	Flooding	1.00
	Frequent flooding	0.80	Depth to saturated zone	1.00	Wetness	1.00
	Percs slowly	0.31				
3424A:						
Shoals	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Flooding	1.00	Flooding	1.00
	Frequent flooding	0.80	Depth to saturated zone	1.00	Wetness	1.00
3597A:						
Armiesburg	Somewhat limited		Very limited		Very limited	
	Frequent flooding	0.80	Flooding	1.00	Flooding	1.00
3665A:						
Stonelick	Somewhat limited		Very limited		Very limited	
	Frequent flooding	0.80	Flooding	1.00	Flooding	1.00

Table 17c.--Water Management--Continued

Map symbol and soil name	Irrigation (all application methods)		Sprinkler irrigation		Drip or trickle irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
7155A:						
Stockland	Somewhat limited		Somewhat limited		Not limited	
	Too acid	0.44	Droughty	0.88		
7155B:						
Stockland	Somewhat limited		Somewhat limited		Not limited	
	Slope	0.08	Droughty	0.71		
7155C:						
Stockland	Somewhat limited		Somewhat limited		Not limited	
	Slope	0.92	Droughty	0.15		
	Too acid	0.78	Slope	0.02		
7286A:						
Carmi	Somewhat limited		Somewhat limited		Not limited	
	Too acid	0.01	Droughty	0.94		
7286B:						
Carmi	Somewhat limited		Somewhat limited		Not limited	
	Too acid	0.22	Droughty	0.99		
	Droughty	0.05				
7803C:						
Orthents	Very limited		Somewhat limited		Not limited	
	Slope	1.00	Droughty	0.68		
			Slope	0.40		
7841A:						
Carmi	Somewhat limited		Somewhat limited		Not limited	
	Too acid	0.01	Droughty	0.94		
Westland	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Wetness	1.00
			Droughty	0.01		
7865:						
Pits, gravel	Not rated		Not rated		Not rated	

Table 18.--Engineering Index Properties

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
2A:												
Cisne-----------	0-8	Silt loam	CL-ML, ML, CL	A-6, A-4	0	0	100	100	96-100	88-99	22-36	6-13
	8-17	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	88-99	21-34	6-13
	17-37	Silty clay loam, silty clay	CL, CH	A-7-6	0	0	100	100	98-100	92-99	40-57	19-33
	37-60	Silty clay loam, silt loam, clay loam, loam	CL	A-6, A-7-6	0	0	95-100	84-100	78-99	61-91	29-46	11-22
	60-80	Silt loam, loam, clay loam, silty clay loam	CL	A-6, A-7-6	0	0	95-100	82-97	72-96	52-89	29-44	13-25
3A:												
Hoyleton--------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	96-100	85-100	21-37	5-18
	8-11	Silt loam	CL, ML, CL-ML	A-4, A-6	0	0	100	100	96-100	85-100	21-37	4-18
	11-39	Silty clay loam, silty clay	CH, CL	A-7-6	0	0	100	100	96-100	91-100	44-57	22-33
	39-80	Silt loam, silty clay loam, clay loam, loam	CL	A-6, A-7-6	0	0	100	95-100	84-100	60-97	28-46	10-25
3B:												
Hoyleton--------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	96-100	85-100	21-37	5-18
	8-15	Silt loam	CL, ML, CL-ML	A-4, A-6	0	0	100	100	96-100	85-100	21-37	4-18
	15-34	Silty clay loam, silty clay	CH, CL	A-7-6	0	0	100	100	96-100	91-100	44-57	22-33
	34-60	Silt loam, silty clay loam, clay loam, loam	CL	A-6, A-7-6	0	0	100	95-100	84-100	60-97	28-46	10-25

Table 18.--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	
6B2:												
Fishhook--------	0-5	Silt loam	CL-ML, CL	A-4	0	0	100	100	93-100	79-100	21-29	4-10
	5-31	Silty clay loam	CL	A-7-6, A-6	0	0	100	100	95-100	83-100	37-46	16-24
	31-47	Silty clay loam, clay loam, silty clay, clay	CL	A-6, A-7-6	0	0	100	92-100	83-98	63-89	40-50	20-28
	47-60	Clay loam, loam	CL	A-6, A-4	0	0	100	92-100	82-100	61-91	29-39	9-18
7C2:												
Atlas-----------	0-4	Silt loam	CL, ML	A-4, A-6	0	0	100	91-100	83-100	65-98	24-37	7-18
	4-34	Clay loam, silty clay loam, silty clay, clay	CL	A-7-6	0	0	95-100	90-100	80-95	65-90	42-50	20-28
	34-68	Clay loam, loam	CL	A-6	0	0	95-100	80-100	70-95	50-90	30-40	10-20
7C3:												
Atlas-----------	0-2	Silty clay loam	CL	A-6	0	0	100	91-100	83-100	73-98	37-40	16-20
	2-24	Clay loam, silty clay loam, silty clay, clay	CL	A-7-6	0	0	95-100	90-100	80-95	65-95	42-50	20-28
	24-68	Clay loam, silty clay loam, silty clay, clay	CL	A-7-6	0	0	95-100	90-100	80-95	65-90	42-50	20-28
7D2:												
Atlas-----------	0-6	Silt loam	CL, ML	A-4, A-6	0	0	100	91-100	83-100	65-98	24-37	7-18
	6-50	Clay loam, silty clay loam, silty clay, clay	CL	A-7-6	0	0	95-100	90-100	80-95	65-90	42-50	20-28
	50-65	Clay loam, loam	CL	A-6	0	0	95-100	80-100	70-95	50-90	30-40	10-20

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
8F:												
Hickory---------	0-4	Silt loam	CL, ML, CL-ML	A-6, A-4	0	0-5	95-100	91-100	82-100	64-93	21-35	5-15
	4-12	Silt loam, loam	CL, ML	A-6, A-4	0	0-5	95-100	91-100	76-100	51-90	25-30	7-15
	12-46	Clay loam, loam, silty clay loam, gravelly clay loam	CL, ML, SC	A-6	0-1	0-5	85-100	70-100	60-100	40-90	31-40	11-18
	46-58	Loam, clay loam, gravelly clay loam	SC, CL, SC-SM, ML, CL-ML	A-6, A-4	0-1	0-5	85-100	70-100	53-100	36-84	25-40	6-16
	58-80	Loam, sandy loam, gravelly clay loam	CL, SC-SM, SC, CL-ML, ML	A-6, A-4	0-1	0-5	85-100	70-97	53-96	36-79	25-35	6-15
12A:												
Wynoose---------	0-7	Silt loam	CL-ML, ML, CL	A-4	0	0	100	100	94-100	86-98	19-29	2-10
	7-20	Silt loam	CL-ML, CL, ML	A-4, A-6	0	0	100	100	94-100	86-98	19-29	2-11
	20-36	Silty clay, silty clay loam	CL, CH	A-7-6	0	0	100	100	97-100	92-100	46-54	25-31
	36-66	Silty clay loam, clay loam, silt loam	CL	A-7-6, A-6	0	0	98-100	92-100	88-98	68-88	35-46	15-25
	66-80	Silty clay loam, clay loam, silt loam	CL	A-7-6, A-6	0	0	98-100	87-100	84-98	68-88	35-46	15-25
13A:												
Bluford---------	0-7	Silt loam	CL-ML, CL, ML	A-4	0	0	100	100	96-100	89-98	16-27	1-9
	7-20	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	96-99	90-98	21-32	4-14
	20-35	Silty clay, silty clay loam	CH, CL	A-7-6	0	0	100	100	98-100	93-99	46-56	25-33
	35-60	Silty clay loam, silt loam, loam	CL	A-7-6, A-6	0	0	100	98-100	90-98	72-88	29-46	11-25

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
13B2:												
Bluford---------	0-9	Silt loam	CL-ML, CL, ML	A-4	0	0	100	100	92-100	82-98	19-27	2-9
	9-37	Silty clay loam, silty clay	CL, CH	A-7-6	0	0	100	100	95-100	91-100	45-54	23-30
	37-60	Silty clay loam, loam, clay loam, silt loam	CL	A-6	0	0	100	95-100	90-100	71-90	29-40	11-21
14B:												
Ava-------------	0-6	Silt loam	CL-ML, CL, ML	A-4	0	0	100	100	96-100	93-99	25-32	6-11
	6-14	Silt loam	CL-ML, CL	A-4	0	0	100	100	96-100	93-99	25-32	6-12
	14-34	Silty clay loam, silt loam	CL	A-6	0	0	100	100	99-100	95-100	32-39	11-17
	34-50	Silty clay loam, loam, silt loam, clay loam	CL-ML, CL	A-6, A-4	0	0	100	93-100	87-100	69-88	25-35	6-15
	50-60	Loam, silty clay loam, clay loam, silt loam	CL-ML, CL	A-6, A-4	0	0	100	97-100	90-99	72-88	25-35	6-15
14C2:												
Ava-------------	0-7	Silt loam	CL-ML, CL, ML	A-4	0	0	100	100	96-100	93-99	25-32	6-11
	7-31	Silty clay loam, silt loam	CL	A-6	0	0	100	100	99-100	95-100	32-39	11-17
	31-50	Silty clay loam, silt loam, loam, clay loam	CL-ML, CL	A-6, A-4	0	0	100	93-100	87-99	69-88	25-35	6-15
	50-60	Silty clay loam, loam, clay loam, silt loam	CL-ML, CL	A-6, A-4	0	0	100	97-100	90-99	72-88	25-35	6-15

Table 18.--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	
31A:												
Pierron---------	0-8	Silt loam	CL, ML	A-4, A-6	0	0	100	98-100	90-100	85-100	30-40	10-20
	8-20	Silt loam, silt	CL, ML	A-4, A-6	0	0	100	98-100	90-100	85-100	25-40	10-20
	20-36	Silty clay, silty clay loam	CH	A-7-6	0	0	100	100	95-100	93-100	50-60	30-40
	36-66	Silty clay loam, silty clay	CH, CL, MH	A-7-6	0	0	100	100	95-100	93-100	45-60	25-35
	66-80	Clay loam, silty clay loam, loam, silt loam	ML, CL	A-6	0	0	100	100	90-100	80-100	35-45	15-25
50A:												
Virden----------	0-12	Silty clay loam	CL, ML	A-6, A-7-6	0	0	100	100	95-100	95-100	37-45	15-21
	12-36	Silty clay, silty clay loam	CL, CH	A-7-6	0	0	100	100	98-100	94-100	45-54	22-29
	36-60	Silty clay loam, silt loam	CL	A-6	0	0	100	100	98-100	94-100	29-40	11-21
79B:												
Menfro----------	0-10	Silt loam	CL, ML, CL-ML	A-4, A-6	0	0	100	100	94-100	90-98	21-37	4-16
	10-39	Silty clay loam	CL	A-7-6, A-6	0	0	100	100	95-100	90-99	37-46	16-24
	39-70	Silt loam, silty clay loam	CL	A-6	0	0	100	100	97-100	91-100	29-40	11-21
	70-80	Silt loam, silty clay loam	CL	A-6, A-4	0	0	100	100	97-100	91-100	24-35	7-16
79C2:												
Menfro----------	0-7	Silt loam	CL, ML, CL-ML	A-4, A-6	0	0	100	100	94-100	90-98	21-37	4-16
	7-48	Silty clay loam	CL	A-7-6, A-6	0	0	100	100	95-100	90-99	37-46	16-24
	48-60	Silt loam, silty clay loam	CL	A-6	0	0	100	100	97-100	91-100	29-40	11-21

Table 18.--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	
79D2:												
Menfro----------	0-8	Silt loam	CL, ML, CL-ML	A-4, A-6	0	0	100	100	94-100	90-98	21-37	4-16
	8-35	Silty clay loam	CL	A-7-6, A-6	0	0	100	100	95-100	90-99	37-46	16-24
	35-49	Silt loam, silty clay loam	CL	A-6	0	0	100	100	97-100	91-100	29-40	11-21
	49-75	Silt loam, silty clay loam	CL	A-6, A-4	0	0	100	100	97-100	91-100	24-35	7-16
79F:												
Menfro----------	0-13	Silt loam	CL, ML, CL-ML	A-4, A-6	0	0	100	100	94-100	90-98	21-37	4-16
	13-49	Silty clay loam	CL	A-7-6, A-6	0	0	100	100	95-100	90-99	37-46	16-24
	49-75	Silt loam, silty clay loam	CL	A-6	0	0	100	100	97-100	91-100	29-40	11-21
112A:												
Cowden----------	0-8	Silt loam	CL, ML	A-6, A-4	0	0	100	100	96-100	87-97	27-37	8-15
	8-19	Silt loam	CL	A-6, A-4	0	0	100	100	96-100	87-97	27-37	9-17
	19-50	Silty clay loam, silty clay	CL, CH	A-7-6	0	0	100	100	98-100	94-99	45-54	23-30
	50-80	Silt loam, silty clay loam	CL	A-6	0	0	100	91-100	89-100	86-99	29-40	11-21
119C2:												
Elco------------	0-8	Silt loam	CL-ML, CL	A-4	0	0	100	100	93-100	79-100	21-29	4-10
	8-31	Silty clay loam	CL	A-6, A-7-6	0	0	100	100	95-100	83-100	37-46	16-24
	31-60	Clay loam, loam	CL	A-6, A-4	0	0	100	92-100	89-100	66-91	29-39	9-18
119D:												
Elco------------	0-3	Silt loam	CL, CL-ML	A-4	0	0	100	100	93-100	79-100	21-29	4-10
	3-9	Silt loam	CL, CL-ML	A-4	0	0	100	100	93-100	79-100	21-29	4-10
	9-37	Silty clay loam	CL	A-6, A-7-6	0	0	100	100	95-100	83-100	37-46	16-24
	37-50	Clay loam, silty clay loam, silty clay, clay	CL, ML	A-6, A-7-6	0	0	100	100	90-98	68-89	35-46	13-23
	50-69	Clay loam, loam	CL	A-6, A-4	0	0	100	92-100	89-100	66-91	29-39	9-18

Table 18.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
131A:												
Alvin-----------	0-8	Fine sandy loam	SC-SM, CL, ML, SM, CL-ML	A-4	0	0	100	100	76-96	35-59	15-25	3-8
	8-13	Fine sandy loam, sandy loam	SC-SM, CL, ML, SM, CL-ML	A-4	0	0	100	100	76-96	35-59	15-25	3-8
	13-33	Fine sandy loam, sandy loam, loam	SC, CL	A-4, A-6	0	0	100	95-100	70-96	35-64	20-30	7-11
	33-60	Stratified loamy fine sand to fine sandy loam, very fine sand, fine sandy loam, loamy fine sand	SM, ML	A-2-4, A-4	0	0	92-100	92-100	73-96	18-55	11-17	NP-4
131B:												
Alvin-----------	0-8	Fine sandy loam	SC-SM, CL, ML, SM, CL-ML	A-4	0	0	100	100	76-96	35-59	15-25	3-8
	8-11	Fine sandy loam, sandy loam	SC-SM, CL, ML, SM, CL-ML	A-4	0	0	100	100	76-96	35-59	15-25	NP-8
	11-25	Fine sandy loam, sandy loam, loam	SC, CL	A-4, A-6	0	0	100	95-100	70-96	35-64	15-30	7-11
	25-80	Stratified loamy fine sand to fine sandy loam, very fine sand, fine sandy loam, loamy fine sand	SM, ML	A-2-4, A-4	0	0	92-100	92-100	73-96	18-55	11-17	NP-4

Table 18.--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	
131C2:												
Alvin-----------	0-10	Fine sandy loam	SC-SM, CL, ML, SM, CL-ML	A-4	0	0	100	100	76-96	35-59	15-25	3-8
	10-30	Fine sandy loam, sandy loam, loam	SC, CL	A-4, A-6	0	0	100	95-100	70-96	35-64	20-30	7-11
	30-60	Stratified loamy fine sand to fine sandy loam, very fine sand, fine sandy loam, loamy fine sand	SM, ML	A-2-4, A-4	0	0	92-100	92-100	73-96	18-55	11-17	NP-4
131F:												
Alvin-----------	0-7	Fine sandy loam	SC-SM, CL, ML, SM, CL-ML	A-4	0	0	100	100	76-96	35-59	15-25	3-8
	7-37	Fine sandy loam, sandy loam, loam	SC, CL	A-4, A-6	0	0	100	95-100	70-96	35-64	20-30	7-11
	37-60	Stratified loamy fine sand to fine sandy loam, very fine sand, fine sandy loam, loamy fine sand	SM, ML	A-2-4, A-4	0	0	92-100	92-100	73-96	18-55	11-17	NP-4
138A:												
Shiloh----------	0-19	Silty clay loam	MH	A-7-5	0	0	100	100	98-100	91-98	50-55	13-23
	19-48	Silty clay, silty clay loam	CH, MH	A-7-5, A-7-6	0	0	100	100	98-100	90-98	50-63	22-34
	48-68	Silty clay loam, silty clay	CL, CH	A-7-6	0	0	100	100	98-100	89-99	43-57	24-33
	68-86	Clay, silty clay, silty clay loam, clay loam	CL, CH	A-7-6	0	0	100	91-100	84-98	65-92	45-62	25-36

Table 18.--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	
142A:												
Patton----------	0-15	Silty clay loam	CL, ML	A-6, A-7-6	0	0	100	100	95-100	90-100	35-45	15-20
	15-35	Silty clay loam	CL	A-6, A-7-6	0	0	100	100	95-100	90-100	35-45	15-25
	35-60	Stratified silty clay loam to silt loam	CL	A-6, A-4	0	0	100	95-100	85-100	75-98	29-39	9-17
164A:												
Stoy------------	0-9	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	96-100	92-98	21-32	4-13
	9-14	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	96-100	92-98	21-32	4-13
	14-31	Silty clay loam	CL	A-7-6, A-6	0	0	100	100	98-100	94-99	35-46	15-24
	31-60	Silt loam, silty clay loam	CL	A-6, A-7-6	0	0	100	100	98-100	92-100	35-46	15-25
164B:												
Stoy------------	0-6	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	96-100	92-98	21-32	4-13
	6-13	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	96-100	92-98	21-32	4-13
	13-32	Silty clay loam	CL	A-7-6, A-6	0	0	100	100	98-100	94-99	35-46	15-24
	32-65	Silty clay loam, silt loam	CL	A-6, A-7-6	0	0	100	100	98-100	92-100	35-46	15-25
178A:												
Ruark-----------	0-8	Fine sandy loam	SM	A-4, A-2-4	0	0	100	100	80-95	30-45	15-25	NP-4
	8-16	Fine sandy loam	SM	A-4, A-2-4	0	0	100	100	80-95	30-45	15-25	NP-4
	16-34	Sandy clay loam, loam, clay loam	CL, SC	A-6, A-4	0	0	100	100	62-98	41-74	29-38	9-17
	34-60	Fine sandy loam, sandy loam, sandy clay loam	SC, SM, SC-SM, ML, CL, CL-ML	A-4, A-2-4, A-2-6, A-6	0	0	100	97-100	53-98	26-67	20-31	2-12

Table 18.--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	
184A:												
Roby------------	0-9	Fine sandy loam	SM, ML	A-4, A-2-4	0	0	100	100	80-98	33-56	12-20	NP-4
	9-15	Loamy fine sand, fine sandy loam	SM, SC-SM, CL-ML, ML	A-2-4, A-4	0	0	100	100	80-99	27-56	12-20	NP-6
	15-23	Sandy loam, fine sandy loam, loam	CL, SC	A-4, A-2-4	0	0	100	100	57-100	28-78	24-27	8-10
	23-60	Stratified sand to sandy loam, loamy sand, loamy fine sand, sand, sandy loam	SM, SP-SM	A-2-4, A-3	0	0	91-100	91-100	51-95	6-34	12-17	NP-4
214B:												
Hosmer----------	0-8	Silt loam	CL, ML, CL-ML	A-4, A-6	0	0	100	100	96-100	93-100	21-38	5-17
	8-10	Silt loam	CL-ML, CL	A-4	0	0	100	100	96-100	93-100	22-30	4-10
	10-24	Silty clay loam, silt loam	CL	A-6, A-4	0	0	100	100	94-100	93-100	26-37	7-16
	24-53	Silty clay loam, silt loam	CL	A-6, A-4	0	0	100	100	94-100	82-100	27-39	8-17
	53-60	Silt loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	83-100	25-35	6-15
214C2:												
Hosmer----------	0-6	Silt loam	CL, ML, CL-ML	A-4, A-6	0	0	100	100	96-100	93-100	21-38	5-17
	6-24	Silty clay loam, silt loam	CL	A-6, A-4	0	0	100	100	94-100	93-100	26-37	7-16
	24-48	Silty clay loam, silt loam	CL	A-6, A-4	0	0	100	100	94-100	82-100	27-39	8-17
	48-60	Silt loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	100	100	93-100	77-99	25-35	6-15

Table 18.--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	
218A:												
Newberry--------	0-9	Silt loam	CL-ML, CL, ML	A-4	0	0	100	100	96-100	89-98	21-29	3-9
	9-16	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	96-100	89-98	21-29	4-11
	16-35	Silty clay loam, silt loam	CL	A-7-6, A-6	0	0	100	100	98-100	93-99	37-46	16-25
	35-48	Silty clay loam, clay loam, silt loam, loam	CL	A-6, A-7-6	0	0	96-100	91-100	88-98	73-92	33-46	14-25
	48-80	Clay loam, silty clay loam	CL, CH	A-7-6	0	0	95-100	84-100	75-96	55-86	45-52	23-29
307B2:												
Iona------------	0-8	Silt loam	CL-ML, ML	A-4	0	0	100	100	94-100	90-98	19-27	2-7
	8-35	Silty clay loam, silt loam	CL	A-6, A-4	0	0	100	100	95-100	90-100	27-40	9-20
	35-60	Silt loam, silt	CL, ML, CL-ML	A-4, A-6	0	0	100	100	97-100	91-100	15-31	1-14
434A:												
Ridgway---------	0-10	Silt loam	CL-ML, ML, CL	A-4	0	0	100	100	92-100	85-99	20-30	2-10
	10-30	Silty clay loam	CL	A-7-6, A-6	0	0	100	98-100	95-100	85-100	37-47	16-23
	30-39	Clay loam, loam, sandy clay loam	CL, SC, ML	A-6	0	0	97-100	85-98	65-95	45-80	35-40	12-20
	39-80	Stratified sandy loam to loamy sand	SM, SC-SM	A-1-b, A-2-4	0	0	94-98	85-95	45-85	15-35	19-25	2-7
434B:												
Ridgway---------	0-10	Silt loam	CL-ML, ML, CL	A-4	0	0	100	100	92-100	85-99	20-30	2-10
	10-30	Silty clay loam	CL	A-7-6, A-6	0	0	100	98-100	95-100	85-100	37-47	16-23
	30-39	Clay loam, loam, sandy clay loam	CL, ML, SC	A-6	0	0	97-100	85-98	65-95	45-80	35-40	12-20
	39-80	Stratified loamy sand to sandy loam	SC-SM, SM	A-1-b, A-2-4	0	0	94-98	85-95	45-85	15-35	19-25	2-7

Table 18.--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	
434C2:												
Ridgway---------	0-10	Silt loam	CL-ML, ML, CL	A-4	0	0	100	100	92-100	85-99	20-30	2-10
	10-30	Silty clay loam	CL	A-7-6, A-6	0	0	100	98-100	95-100	85-100	37-47	16-23
	30-39	Clay loam, loam, sandy clay loam	CL, ML, SC	A-6	0	0	97-100	85-98	65-95	45-80	35-40	12-20
	39-80	Stratified loamy sand to sandy loam	SC-SM, SM	A-1-b, A-2-4	0	0	94-98	85-95	45-85	15-35	19-25	2-7
453A:												
Muren-----------	0-9	Silt loam	CL-ML, CL, ML	A-4	0	0	100	100	96-100	89-99	19-27	2-9
	9-12	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	96-100	91-99	21-32	4-14
	12-40	Silty clay loam	CL	A-7-6, A-6	0	0	100	100	98-100	92-99	37-46	16-24
	40-60	Silty clay loam, silt loam	CL	A-6	0	0	100	100	97-100	90-100	29-40	11-21
615C2:												
Vanmeter--------	0-9	Silty clay loam	CL	A-7-6, A-6	0	0	94-100	75-100	65-100	56-99	38-42	14-18
	9-14	Silty clay loam	CL	A-7-6, A-6	0	0	94-100	75-100	71-100	63-97	38-45	15-20
	14-27	Silty clay	CL	A-7-6	0	0	92-100	75-100	73-100	69-99	42-50	18-25
	27-60	Extremely paraflaggy silty clay loam, extremely paraflaggy clay loam	CL, ML	A-6	40-65	30-45	85-95	80-95	70-90	60-80	33-38	10-16
615F:												
Vanmeter--------	0-9	Silty clay loam	CL	A-6, A-7-6	0	0	94-100	75-100	65-100	56-99	38-42	14-18
	9-14	Silty clay loam	CL	A-6, A-7-6	0	0	94-100	75-100	71-100	63-97	38-45	15-20
	14-27	Silty clay	CL	A-7-6	0	0	92-100	75-100	73-100	69-99	42-50	18-25
	27-60	Extremely paraflaggy silty clay loam, extremely paraflaggy clay loam	ML, CL	A-6	40-65	30-45	85-95	80-95	70-90	60-80	33-38	10-16

Table 18.--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	
630D3:												
Navlys----------	0-7	Silty clay loam	CL	A-6, A-7-6	0	0	100	100	97-100	90-100	37-41	16-20
	7-22	Silty clay loam	CL	A-6, A-7-6	0	0	100	100	97-100	90-100	37-46	16-23
	22-31	Silt loam	CL	A-6	0	0	100	100	97-100	90-100	27-38	12-19
	31-80	Silt loam, silt	CL, ML, CL-ML	A-4	0	0	100	100	97-100	90-100	19-31	3-10
908D2:												
Hickory---------	0-10	Silt loam	CL-ML, CL, ML	A-4	0	0	90-100	80-100	70-100	50-85	22-28	3-8
	10-45	Clay loam, loam	CL, SC	A-6	0	0-2	90-100	75-99	60-95	40-80	32-39	11-18
	45-60	Clay loam, loam	CL, SC, CL-ML, SC-SM	A-6, A-4	0	0-2	90-100	75-95	65-90	40-70	22-34	4-14
Kell------------	0-4	Silt loam	CL-ML, CL, ML	A-4	0	0	90-100	85-100	80-100	65-95	21-27	4-9
	4-17	Silt loam, loam	CL	A-6, A-4	0	0	85-100	75-100	70-100	60-95	27-33	8-13
	17-38	Silty clay loam, clay loam	CL	A-6	0	0-5	85-95	75-95	70-90	60-80	33-38	12-18
	38-80	Extremely paraflaggy loamy sand, extremely paraflaggy sand	SP-SM, SM, SP	A-1	40-65	30-45	70-95	65-85	35-50	0-15	0-15	NP-4
908F:												
Hickory---------	0-4	Silt loam	CL-ML, CL, ML	A-4	0	0	90-100	80-100	70-100	50-85	22-28	3-8
	4-12	Silt loam	CL-ML, CL, ML	A-4	0	0	90-100	80-100	70-100	50-85	22-28	3-8
	12-46	Clay loam, loam	CL, SC	A-6	0	0-2	90-100	75-99	60-95	40-80	32-39	11-18
	46-58	Clay loam, loam	CL, SC, CL-ML, SC-SM	A-6, A-4	0	0-2	90-100	75-95	65-90	40-70	22-34	4-14
	58-80	Loam	CL, SC, CL-ML, SC-SM	A-6, A-4	0	0-2	90-100	75-95	65-90	40-70	22-33	4-13

Table 18.--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	
908F:												
Kell------------	0-3	Silt loam	CL-ML, CL, ML	A-4	0	0	90-100	85-100	80-100	65-95	21-27	4-9
	3-13	Silt loam, loam	CL	A-6, A-4	0	0	85-100	75-100	70-100	60-95	27-33	8-13
	13-25	Silty clay loam, clay loam	CL	A-6	0	0-5	85-95	75-95	70-90	60-80	33-38	12-18
	25-35	Very parachannery silty clay loam, very parachannery clay loam	GC, GM	A-6	0-15	25-40	80-90	70-90	60-85	55-75	33-38	10-16
	35-60	Extremely paraflaggy silty clay loam, extremely paraflaggy clay loam	GC, GC-GM, GM	A-1	40-65	30-45	85-95	80-95	70-90	60-80	33-38	10-16
912A:												
Hoyleton--------	0-8	Silt loam	CL, ML, CL-ML	A-4, A-6	0	0	100	100	96-100	85-100	21-37	5-18
	8-11	Silt loam	CL, ML, CL-ML	A-4, A-6	0	0	100	100	96-100	85-100	21-37	4-18
	11-39	Silty clay loam, silty clay	CH, CL	A-7-6	0	0	100	100	96-100	91-100	44-57	22-33
	39-80	Silt loam, silty clay loam, clay loam, loam	CL	A-6, A-7-6	0	0	100	95-100	84-100	60-97	28-46	10-25
Darmstadt-------	0-10	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	100	95-100	86-100	21-37	4-17
	10-16	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	86-100	21-37	5-18
	16-24	Silty clay loam	CL	A-7-6, A-6	0	0	100	100	95-100	86-99	37-46	16-25
	24-47	Silty clay loam	CL	A-7-6, A-6	0	0	100	100	95-100	86-99	37-46	16-25
	47-60	Clay loam, loam	CL	A-6, A-4	0	0	100	90-100	75-100	50-85	24-41	7-21
946D2:												
Hickory---------	0-10	Silt loam	CL-ML, CL, ML	A-4	0	0	90-100	80-100	70-100	50-85	22-28	3-8
	10-45	Clay loam, loam	CL, SC	A-6	0	0-2	90-100	75-99	60-95	40-80	32-39	11-18
	45-60	Clay loam, loam	CL, SC, CL-ML, SC-SM	A-6, A-4	0	0-2	90-100	75-95	65-90	40-70	22-34	4-14

Table 18.--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	
946D2:												
Atlas-----------	0-6	Silt loam	CL, ML	A-4, A-6	0	0	100	91-100	83-100	65-98	24-37	7-18
	6-50	Clay loam, silty clay loam, silty clay, clay	CL	A-7-6	0	0	95-100	90-100	80-95	65-90	42-50	20-28
	50-65	Clay loam, loam	CL	A-6	0	0	95-100	80-100	70-95	50-90	30-40	10-20
3070A:												
Beaucoup--------	0-12	Silty clay loam	CL, ML	A-7-6, A-6	0	0	100	100	95-100	85-100	37-46	16-20
	12-65	Silty clay loam	CL	A-7-6, A-6	0	0	100	100	95-100	85-100	37-47	16-23
	65-80	Bedrock			---	---	---	---	---	---	---	---
3071A:												
Darwin----------	0-14	Silty clay	CH, MH	A-7-6	0	0	100	100	96-100	90-100	51-63	25-34
	14-46	Silty clay, clay	CH, MH	A-7-5, A-7-6	0	0	100	100	95-100	88-100	51-74	26-43
	46-68	Silty clay loam, silty clay	CH, CL, MH	A-7-6, A-7-5	0	0	100	100	95-100	86-100	45-74	23-44
3284A:												
Tice------------	0-19	Silty clay loam	CL, ML	A-6, A-7-6	0	0	100	100	95-100	84-99	35-46	12-20
	19-60	Silty clay loam, silt loam	CL	A-6, A-7-6	0	0	100	100	98-100	88-99	33-44	14-22
3288A:												
Petrolia--------	0-14	Silty clay loam	CL, ML	A-6, A-7-6	0	0	100	100	89-100	80-100	37-44	16-22
	14-60	Silty clay loam	CL	A-7-6, A-6	0	0	100	100	92-100	77-100	37-46	16-24
3331A:												
Haymond---------	0-9	Silt loam	CL-ML, CL, ML	A-4	0	0	100	100	92-100	76-100	19-27	3-10
	9-44	Silt loam	CL, CL-ML, ML	A-4	0	0	100	100	92-100	76-100	19-27	3-10
	44-80	Very fine sandy loam, silt loam, loam	CL-ML, CL, SM, ML, SC-SM	A-4, A-6, A-2-4, A-2-6	0	0	91-100	91-100	65-100	32-99	13-36	NP-17
3333A:												
Wakeland--------	0-9	Silt loam	CL-ML, CL, ML	A-4	0	0	100	100	92-100	76-100	19-27	2-10
	9-60	Silt loam	CL, CL-ML, ML	A-4	0	0	100	100	92-100	76-100	19-27	2-10
3334A:												
Birds-----------	0-6	Silt loam	CL, ML, CL-ML	A-4, A-6	0	0	100	100	95-100	80-99	24-35	6-14
	6-80	Silt loam	CL	A-6, A-4	0	0	100	100	95-100	80-99	27-37	9-18

Table 18.--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	
3424A:												
Shoals----------	0-8	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	99-100	95-100	86-100	70-98	24-35	6-15
	8-60	Silt loam, loam	CL, ML	A-6, A-4	0	0	99-100	95-100	85-98	61-85	27-37	9-18
3597A:												
Armiesburg------	0-14	Silty clay loam	CL, ML	A-7-6, A-6	0	0	100	100	95-100	85-100	37-46	16-20
	14-80	Silty clay loam	CL	A-7-6, A-6	0	0	100	100	95-100	85-100	37-47	16-23
3665A:												
Stonelick-------	0-14	Loam	CL-ML, CL, ML	A-4, A-6	0	0	99-100	95-100	80-96	48-74	19-29	3-11
	14-60	Stratified loam to fine sandy loam to loamy fine sand to silt loam	SC-SM, SM, ML, CL-ML	A-4, A-2-4	0	0	95-100	84-100	58-94	25-72	13-23	NP-7
7155A:												
Stockland-------	0-8	Gravelly sandy loam	SC-SM, SC, SM	A-1-b, A-2-4, A-4	0	0	70-100	51-75	30-60	15-40	14-29	NP-8
	8-14	Gravelly coarse sandy loam, coarse sandy loam, gravelly sandy loam, sandy loam	SW-SC, SC-SM, SM, SC, SW-SM	A-1-b, A-2-4, A-4	0	0-2	70-100	51-85	15-60	10-40	19-29	3-10
	14-44	Very gravelly coarse sandy loam, very gravelly sandy loam	SW-SC, SC-SM, SC	A-1-b, A-1-a	0-2	0-8	65-75	35-50	10-45	7-25	19-29	4-11
	44-60	Very gravelly loamy coarse sand	SP-SM, SC-SM, SM	A-1-a, A-1-b	0-8	0-8	65-75	35-50	10-40	5-15	10-20	NP-6
	60-80	Very gravelly coarse sand	SP, SW-SM, SP-SM	A-1-a, A-1-b	0-8	0-15	65-75	35-50	5-35	2-10	9-12	NP

Table 18.--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	
7155B:												
Stockland-------	0-16	Gravelly sandy loam	SM, SC, SC-SM	A-1-b, A-2-4, A-4	0	0	70-100	51-75	30-60	15-40	19-29	1-8
	16-31	Very gravelly sandy loam	SW-SC, SC-SM, SC, SM, SW-SM	A-1-a, A-1-b, A-2-4	0-8	0-8	65-75	35-50	20-45	10-30	19-28	3-10
	31-42	Very gravelly loamy sand	SP-SM, SW-SM, SC-SM, SC, SM, SW-SC	A-1-b, A-1-a	0-8	0-8	65-75	35-50	20-50	5-15	16-23	2-8
	42-60	Very gravelly sand	SM, SP	A-1-a, A-2-4, A-3, A-1-b	0-8	0-16	65-75	35-50	15-65	1-15	8-15	NP-2
7155C:												
Stockland-------	0-14	Gravelly sandy loam	SM, SC, SC-SM	A-1-b, A-2-4, A-4	0	0	70-100	51-75	30-60	15-40	19-29	1-8
	14-62	Very gravelly sandy loam	SC, SM, SW-SM, SW-SC, SC-SM	A-1-a, A-1-b, A-2-4	0-8	0-8	65-75	35-50	20-45	10-30	19-28	3-10
7286A:												
Carmi-----------	0-10	Sandy loam	SC-SM, SM, CL, ML, CL-ML	A-4, A-2-4	0	0	95-100	75-100	45-95	25-55	20-30	2-10
	10-26	Sandy loam	SC-SM, SC, SM, CL-ML, CL, ML	A-4, A-2-4	0	0	95-100	75-100	45-95	25-55	20-30	2-10
	26-37	Gravelly coarse sandy loam, gravelly sandy clay loam	SC, SC-SM, SM, SW-SM, SW-SC	A-2-4, A-2-6, A-1-b	0	0	90-98	50-75	20-55	10-35	20-30	2-13
	37-57	Stratified sandy loam to coarse sandy loam	SC-SM, SC, SM	A-2-4, A-1-b, A-4	0	0	95-100	75-100	35-95	15-50	20-30	3-11
	57-82	Loamy coarse sand, stratified loamy sand to coarse sand	SM, SW-SM, SC-SM	A-2-4, A-1-b	0	0	90-98	75-90	15-60	5-20	18-22	1-6
	82-93	Stratified loamy coarse sand to very gravelly coarse sand	SW-SM, SP	A-1-b	0-1	0-4	80-95	50-80	10-40	3-12	15-20	NP-4

Table 18.--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	
7286B:												
Carmi-----------	0-15	Sandy loam	SC-SM, SM, CL, ML, CL-ML	A-4, A-2-4	0	0	95-100	75-100	45-95	25-55	20-30	2-10
	15-23	Sandy loam	SC-SM, SC, SM, CL, ML, CL-ML	A-4, A-2-4	0	0	95-100	75-100	45-95	25-55	20-30	2-10
	23-30	Gravelly coarse sandy loam, gravelly sandy clay loam	SC, SC-SM, SM, SP-SM, SP-SC	A-2-4, A-2-6, A-1-b	0	0	90-98	50-75	20-55	10-35	20-30	2-13
	30-42	Loamy sand	SM, SW-SM, SC-SM	A-2-4, A-3, A-1-b	0	0	90-100	80-100	40-85	5-35	12-19	NP-5
	42-54	Gravelly loamy sand	SM, SC-SM, SW-SM	A-1-b, A-2-4, A-3	0	0-1	75-85	55-75	25-65	5-20	12-19	NP-5
	54-80	Stratified sand to very gravelly sand	SP-SM, SP	A-1-b, A-3, A-2-4	0-2	0-5	85-95	50-75	20-65	1-12	10-15	NP-1
7803C:												
Orthents--------	0-80	Stratified sandy loam to coarse sandy loam	SC-SM, SC, SM	A-2-4, A-1-b, A-2-6, A-4, A-6	0	0	95-100	75-100	35-95	15-50	20-30	3-11

Table 18.--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	
7841A:												
Carmi-----------	0-10	Sandy loam	SC-SM, SM, CL, ML	A-4, A-2-4	0	0	95-100	75-100	45-95	25-55	20-30	2-10
	10-26	Sandy loam	ML, CL, CL-ML, SC-SM, SC, SM	A-4, A-2-4	0	0	95-100	75-100	45-95	25-55	20-30	2-10
	26-37	Gravelly coarse sandy loam, gravelly sandy clay loam	SC, SC-SM, SM, SP-SM, SP-SC	A-2-4, A-2-6, A-1-b	0	0	90-98	50-75	20-55	10-35	20-30	2-13
	37-57	Stratified sandy loam to coarse sandy loam	SC-SM, SC, SM	A-2-4, A-1-b, A-4	0	0	95-100	75-100	35-95	15-50	20-30	3-11
	57-82	Loamy coarse sand, stratified loamy sand to coarse sand	SM, SP-SM, SC-SM	A-2-4, A-1-b	0	0	90-98	75-90	15-60	5-20	18-22	1-6
	82-93	Stratified loamy coarse sand to very gravelly coarse sand	SW-SM, SP	A-1-b	0-1	0-4	80-95	50-80	10-40	3-12	15-20	NP-4
Westland--------	0-11	Silty clay loam	CL, ML	A-6	0	0	95-100	90-100	80-100	75-95	35-40	13-17
	11-30	Clay loam	CL, SC	A-6, A-7-6	0	0	95-99	80-95	65-95	45-85	35-45	15-25
	30-48	Gravelly clay loam, gravelly sandy clay loam, gravelly loam	SC, CL	A-6, A-2-6, A-2-4	0	0-2	85-95	55-75	45-75	25-55	30-40	10-20
	48-60	Stratified sand to very gravelly sand	SP-SM, SP	A-1-b, A-2-4, A-3	0-2	0-5	85-95	50-75	20-65	1-12	10-15	NP-1
7865.												
Pits, gravel												

Table 19.--Physical Properties of the Soils

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
2A:														
Cisne---------------	0-8	1-10	70-83	10-20	1.30-1.50	0.6-2	0.17-0.23	0.0-2.9	1.0-2.5	.37	.37	3	5	56
	8-17	0-10	70-87	10-20	1.40-1.60	0.2-0.6	0.18-0.24	0.0-2.9	0.2-1.5	.55	.55			
	17-37	0-10	50-65	35-45	1.30-1.50	0.01-0.2	0.09-0.15	6.0-8.9	0.2-0.5	.37	.37			
	37-60	15-30	38-61	20-35	1.50-1.70	0.06-0.2	0.12-0.16	3.0-5.9	0.0-0.5	.43	.43			
	60-80	15-35	31-62	20-35	1.50-1.70	0.2-0.6	0.12-0.16	0.0-2.9	0.0-0.3	.43	.43			
3A:														
Hoyleton------------	0-8	1-16	57-87	12-27	1.30-1.50	0.6-2	0.19-0.25	0.0-2.9	1.5-3.5	.37	.37	5	5	56
	8-11	1-16	57-81	18-27	1.30-1.50	0.2-0.6	0.16-0.22	0.0-2.9	0.3-1.5	.55	.55			
	11-39	1-10	45-64	35-45	1.30-1.50	0.2-0.6	0.11-0.17	6.0-8.9	0.2-0.5	.37	.37			
	39-80	6-40	25-75	19-35	1.40-1.60	0.2-0.6	0.15-0.18	0.0-5.9	0.0-0.3	.43	.43			
3B:														
Hoyleton------------	0-8	1-16	57-87	12-27	1.30-1.50	0.6-2	0.20-0.24	0.0-2.9	1.5-3.5	.37	.37	5	5	56
	8-15	1-16	50-81	18-27	1.30-1.50	0.6-2	0.17-0.21	0.0-2.9	0.3-1.5	.49	.49			
	15-34	1-10	45-64	35-45	1.30-1.50	0.2-0.6	0.12-0.16	6.0-8.9	0.2-0.5	.32	.32			
	34-60	6-40	25-75	19-35	1.40-1.60	0.2-0.6	0.15-0.18	0.0-5.9	0.0-0.3	.37	.37			
6B2:														
Fishhook------------	0-5	1-14	67-87	12-20	1.30-1.50	0.6-2	0.20-0.24	0.0-2.9	1.0-2.5	.43	.43	4	5	56
	5-31	1-14	54-70	27-35	1.30-1.50	0.2-2	0.13-0.17	3.0-5.9	0.2-0.8	.43	.43			
	31-47	15-33	30-50	35-45	1.50-1.70	0.06-0.2	0.09-0.13	3.0-5.9	0.0-0.5	.37	.37			
	47-60	20-35	32-50	20-35	1.55-1.75	0.2-0.6	0.10-0.14	0.0-2.9	0.0-0.3	.37	.37			
7C2:														
Atlas---------------	0-4	4-29	55-81	15-27	1.35-1.55	0.6-2	0.18-0.22	0.0-2.9	1.0-2.5	.43	.43	3	6	48
	4-34	15-35	30-45	35-45	1.45-1.65	0.06-0.2	0.12-0.16	3.0-5.9	0.2-0.5	.28	.28			
	34-68	20-45	30-50	25-35	1.50-1.75	0.06-0.6	0.06-0.15	1.0-2.9	0.0-0.3	.37	.37			
7C3:														
Atlas---------------	0-2	8-20	50-65	27-30	1.40-1.60	0.2-0.6	0.09-0.13	3.0-5.9	1.0-2.5	.32	.32	2	6	48
	2-24	15-35	30-45	35-45	1.45-1.65	0.06-0.2	0.12-0.16	3.0-5.9	0.2-0.5	.28	.28			
	24-68	15-35	30-45	35-45	1.45-1.65	0.06-0.2	0.12-0.16	3.0-5.9	0.0-0.3	.28	.28			
7D2:														
Atlas---------------	0-6	4-29	55-81	15-27	1.35-1.55	0.6-2	0.18-0.22	0.0-2.9	1.0-2.5	.43	.43	3	6	48
	6-50	15-35	30-45	35-45	1.45-1.65	0.06-0.2	0.12-0.16	3.0-5.9	0.2-0.5	.28	.28			
	50-65	20-45	30-50	25-35	1.50-1.75	0.06-0.6	0.06-0.15	1.0-2.9	0.0-0.3	.37	.37			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
8F:														
Hickory-------------	0-4	10-30	50-78	12-25	1.30-1.50	0.6-2	0.20-0.22	0.0-2.9	1.0-3.0	.32	.32	5	5	56
	4-12	15-45	33-70	15-22	1.30-1.50	0.6-2	0.20-0.22	0.0-2.9	0.1-0.5	.37	.37			
	12-46	15-45	30-50	24-35	1.45-1.65	0.6-2	0.15-0.19	3.0-5.9	0.1-0.5	.32	.32			
	46-58	25-49	28-50	15-32	1.50-1.70	0.2-2	0.11-0.19	0.0-2.9	0.1-0.5	.32	.32			
	58-80	30-55	25-50	15-30	1.50-1.75	0.2-0.6	0.10-0.15	0.0-2.9	0.1-0.5	.37	.37			
12A:														
Wynoose-------------	0-7	0-15	68-80	10-20	1.30-1.50	0.6-2	0.20-0.24	0.0-2.9	1.0-2.5	.43	.43	3	5	56
	7-20	0-15	67-80	10-20	1.30-1.50	0.2-0.6	0.20-0.24	0.0-2.9	0.2-1.5	.55	.55			
	20-36	0-10	51-64	35-42	1.30-1.50	0.02-0.2	0.12-0.16	6.0-8.9	0.2-0.5	.37	.37			
	36-66	15-30	39-59	25-35	1.50-1.70	0.6-2	0.12-0.16	3.0-5.9	0.0-0.3	.37	.37			
	66-80	15-40	39-59	25-35	1.50-1.70	0.6-2	0.12-0.16	3.0-5.9	0.0-0.3	.37	.37			
13A:														
Bluford-------------	0-7	5-12	70-79	10-18	1.30-1.50	0.6-2	0.19-0.25	0.0-2.9	1.0-2.5	.43	.43	4	5	56
	7-20	5-10	70-80	15-25	1.35-1.55	0.2-0.6	0.20-0.26	0.0-2.9	0.2-1.5	.55	.55			
	20-35	0-8	50-64	35-45	1.30-1.50	0.2-0.6	0.11-0.17	6.0-8.9	0.2-0.5	.32	.32			
	35-60	15-30	40-64	20-35	1.50-1.70	0.06-0.2	0.08-0.12	0.0-5.9	0.0-0.3	.43	.43			
13B2:														
Bluford-------------	0-9	7-19	65-80	10-18	1.40-1.60	0.6-2	0.20-0.24	0.0-2.9	1.0-2.5	.43	.43	4	5	56
	9-37	1-13	50-62	35-42	1.30-1.50	0.2-0.6	0.12-0.16	6.0-9.0	0.2-0.5	.37	.37			
	37-60	15-30	43-64	20-30	1.50-1.70	0.06-0.2	0.12-0.16	0.0-2.9	0.0-0.3	.43	.43			
14B:														
Ava-----------------	0-6	2-8	73-83	12-20	1.35-1.55	0.6-2	0.20-0.24	0.0-2.9	1.0-2.5	.43	.43	4	5	56
	6-14	2-8	73-83	12-20	1.35-1.55	0.2-0.6	0.20-0.24	0.0-2.9	0.2-1.5	.55	.55			
	14-34	0-8	58-74	25-35	1.35-1.55	0.6-2	0.17-0.21	3.0-5.9	0.2-0.5	.43	.43			
	34-50	16-30	42-61	20-30	1.55-1.75	0.0016-0.06	0.13-0.17	0.0-2.9	0.0-0.3	.49	.49			
	50-60	16-30	42-61	20-30	1.55-1.75	0.06-0.6	0.15-0.19	0.0-2.9	0.0-0.3	.43	.43			
14C2:														
Ava-----------------	0-7	2-8	72-83	12-20	1.35-1.55	0.6-2	0.20-0.24	0.0-2.9	1.0-2.0	.43	.43	4	5	56
	7-31	0-8	58-74	25-35	1.35-1.55	0.2-0.6	0.17-0.21	3.0-5.9	0.2-1.0	.43	.43			
	31-50	16-30	42-61	20-30	1.55-1.75	0.0016-0.06	0.13-0.17	0.0-2.9	0.2-0.5	.43	.43			
	50-60	16-30	42-61	20-30	1.55-1.75	0.06-0.6	0.13-0.17	0.0-2.9	0.0-0.3	.43	.43			
31A:														
Pierron-------------	0-8	1-7	71-85	12-25	1.25-1.45	0.6-2	0.18-0.22	0.0-2.9	1.0-3.0	.43	.43	3	5	56
	8-20	1-7	71-88	10-22	1.30-1.50	0.06-0.2	0.15-0.20	0.0-2.9	0.1-0.5	.55	.55			
	20-36	1-7	48-64	35-45	1.35-1.60	0.01-0.06	0.10-0.18	6.0-8.9	0.1-0.5	.37	.37			
	36-66	1-7	54-70	27-42	1.35-1.60	0.01-0.06	0.12-0.18	6.0-8.9	0.1-0.5	.37	.37			
	66-80	5-30	45-70	20-30	1.40-1.60	0.2-0.6	0.17-0.22	0.0-2.9	0.1-0.5	.49	.49			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
50A:														
Virden--------------	0-12	1-7	59-72	27-34	1.30-1.50	0.6-2	0.15-0.21	3.0-5.9	2.0-4.0	.28	.28	5	6	48
	12-36	1-6	52-64	35-42	1.30-1.50	0.06-0.2	0.12-0.16	6.0-8.9	0.3-2.4	.37	.37			
	36-60	2-7	63-78	20-30	1.35-1.55	0.2-0.6	0.18-0.22	0.0-2.9	0.1-0.4	.49	.49			
79B:														
Menfro--------------	0-10	1-10	63-87	12-27	1.35-1.55	0.6-2	0.20-0.24	0.0-2.9	1.0-2.5	.43	.43	5	5	56
	10-39	0-10	55-73	27-35	1.35-1.55	0.6-2	0.14-0.18	3.0-5.9	0.0-0.5	.37	.37			
	39-70	0-10	60-80	20-30	1.35-1.55	0.6-2	0.17-0.21	0.0-2.9	0.0-0.3	.43	.43			
	70-80	1-10	62-84	15-28	1.40-1.60	0.2-0.6	0.19-0.23	0.0-2.9	0.0-0.3	.49	.49			
79C2:														
Menfro--------------	0-7	1-10	63-87	12-27	1.35-1.55	0.6-2	0.20-0.24	0.0-2.9	1.0-2.5	.43	.43	5	5	56
	7-48	0-10	55-73	27-35	1.35-1.55	0.6-2	0.14-0.18	3.0-5.9	0.0-0.5	.37	.37			
	48-60	0-10	60-80	20-30	1.35-1.55	0.6-2	0.17-0.21	0.0-2.9	0.0-0.3	.43	.43			
79D2:														
Menfro--------------	0-8	1-10	63-87	12-27	1.35-1.55	0.6-2	0.20-0.24	0.0-2.9	1.0-2.5	.43	.43	5	5	56
	8-35	0-10	55-73	27-35	1.35-1.55	0.6-2	0.14-0.18	3.0-5.9	0.0-0.5	.37	.37			
	35-49	0-10	60-80	20-30	1.35-1.55	0.6-2	0.17-0.21	3.0-5.9	0.0-0.3	.43	.43			
	49-75	1-10	62-84	15-28	1.40-1.60	0.2-0.6	0.19-0.23	0.0-2.9	0.0-0.3	.49	.49			
79F:														
Menfro--------------	0-13	1-10	63-87	12-27	1.35-1.55	0.6-2	0.20-0.24	0.0-2.9	1.0-2.5	.43	.43	5	5	56
	13-49	0-10	55-73	27-35	1.35-1.55	0.6-2	0.14-0.18	3.0-5.9	0.0-0.5	.37	.37			
	49-75	0-10	60-80	20-30	1.35-1.55	0.2-0.6	0.17-0.21	0.0-2.9	0.0-0.3	.43	.43			
112A:														
Cowden--------------	0-8	0-15	59-79	18-27	1.35-1.55	0.6-2	0.18-0.22	0.0-2.9	1.5-3.5	.37	.37	3	6	48
	8-19	0-15	59-79	18-27	1.35-1.55	0.2-0.6	0.18-0.22	0.0-2.9	0.3-1.5	.49	.49			
	19-50	0-7	53-64	35-42	1.30-1.50	0.06-0.2	0.14-0.18	6.0-8.9	0.2-0.5	.37	.37			
	50-80	0-7	64-77	20-30	1.35-1.55	0.2-0.6	0.20-0.24	0.0-2.9	0.0-0.3	.49	.49			
119C2:														
Elco----------------	0-8	1-14	67-87	12-20	1.30-1.50	0.6-2	0.20-0.24	0.0-2.9	1.0-2.5	.43	.43	4	5	56
	8-31	1-14	54-70	27-35	1.30-1.50	0.6-2	0.13-0.17	3.0-5.9	0.0-0.8	.43	.43			
	31-60	20-35	32-50	20-35	1.55-1.75	0.2-0.6	0.10-0.14	0.0-2.9	0.0-0.5	.37	.37			
119D:														
Elco----------------	0-3	1-14	67-87	12-20	1.30-1.50	0.6-2	0.20-0.24	0.0-2.9	1.0-2.5	.43	.43	4	5	56
	3-9	1-14	59-81	18-27	1.30-1.50	0.6-2	0.18-0.22	0.0-2.9	0.5-2.0	.55	.55			
	9-37	1-14	54-70	27-35	1.30-1.50	0.6-2	0.13-0.17	3.0-5.9	0.0-0.8	.43	.43			
	37-50	15-33	30-53	30-45	1.50-1.70	0.2-0.6	0.08-0.12	3.0-5.9	0.0-0.5	.28	.28			
	50-69	20-35	32-50	20-35	1.55-1.75	0.2-0.6	0.10-0.14	0.0-2.9	0.0-0.5	.37	.37			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Kf	T	Wind erodibility group	Wind erodibility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
131A:														
Alvin---------------	0-8	55-70	15-35	10-15	1.45-1.65	2-6	0.11-0.15	0.0-2.9	0.5-1.0	.20	.20	5	3	86
	8-13	55-70	15-35	10-15	1.45-1.65	2-6	0.11-0.15	0.0-2.9	0.2-0.5	.24	.24			
	13-33	45-70	12-40	15-18	1.40-1.65	2-6	0.11-0.15	0.0-2.9	0.1-0.5	.24	.24			
	33-60	65-95	0-32	3-10	1.45-1.65	2-6	0.05-0.09	0.0-2.9	0.0-0.3	.20	.20			
131B:														
Alvin---------------	0-8	55-70	15-35	10-15	1.45-1.65	2-6	0.11-0.15	0.0-2.9	0.5-1.0	.20	.20	5	3	86
	8-11	55-70	15-35	10-15	1.45-1.65	2-6	0.11-0.15	0.0-2.9	0.0-0.5	.24	.24			
	11-25	45-70	12-40	15-18	1.40-1.65	2-6	0.11-0.15	0.0-2.9	0.0-0.5	.24	.24			
	25-80	65-95	0-32	3-10	1.45-1.65	2-6	0.05-0.09	0.0-2.9	0.0-0.3	.20	.20			
131C2:														
Alvin---------------	0-10	55-70	15-35	10-15	1.45-1.65	2-6	0.11-0.15	0.0-2.9	0.5-1.0	.20	.20	5	3	86
	10-30	45-70	12-40	15-18	1.40-1.65	2-6	0.11-0.15	0.0-2.9	0.2-0.5	.24	.24			
	30-60	65-95	0-32	3-10	1.45-1.65	2-6	0.05-0.09	0.0-2.9	0.0-0.3	.20	.20			
131D2:														
Alvin---------------	0-7	55-70	15-35	10-15	1.45-1.65	2-6	0.11-0.15	0.0-2.9	0.5-1.0	.20	.20	5	3	86
	7-14	55-70	15-35	10-15	1.45-1.65	2-6	0.11-0.15	0.0-2.9	0.0-0.5	.24	.24			
	14-47	45-70	12-40	15-18	1.40-1.65	2-6	0.11-0.15	0.0-2.9	0.0-0.5	.24	.24			
	47-60	65-95	2-32	3-10	1.45-1.65	2-20	0.04-0.08	0.0-2.9	0.0-0.3	.15	.15			
131F:														
Alvin---------------	0-7	55-70	15-35	10-15	1.45-1.65	2-6	0.11-0.15	0.0-2.9	0.5-1.0	.20	.20	5	3	86
	7-37	45-70	12-40	15-18	1.40-1.65	2-6	0.11-0.15	0.0-2.9	0.2-0.5	.24	.24			
	37-60	65-95	0-32	3-10	1.45-1.65	2-6	0.05-0.09	0.0-2.9	0.0-0.3	.20	.20			
138A:														
Shiloh--------------	0-19	1-17	47-64	35-40	1.25-1.45	0.2-0.6	0.12-0.18	6.0-8.9	4.0-6.0	.24	.24	5	4	86
	19-48	1-17	40-64	35-45	1.30-1.50	0.2-0.6	0.11-0.17	6.0-8.9	1.0-3.5	.32	.32			
	48-68	1-15	43-66	33-45	1.35-1.55	0.06-0.2	0.11-0.17	6.0-8.9	0.0-1.0	.37	.37			
	68-86	10-33	30-53	35-50	1.40-1.60	0.06-0.2	0.10-0.16	6.0-8.9	0.0-1.0	.28	.28			
142A:														
Patton--------------	0-15	1-9	56-72	27-35	1.20-1.55	0.6-2	0.15-0.18	3.0-5.9	3.0-6.5	.28	.28	5	6	48
	15-35	1-9	56-72	27-35	1.25-1.45	0.6-2	0.15-0.18	3.0-5.9	1.0-3.0	.32	.32			
	35-60	5-25	50-75	20-35	1.30-1.75	0.6-2	0.15-0.18	3.0-5.9	0.0-1.0	.43	.43			
164A:														
Stoy----------------	0-9	1-8	71-80	12-23	1.30-1.50	0.6-2	0.19-0.23	0.0-2.9	1.0-2.5	.43	.43	4	5	56
	9-14	1-8	71-80	12-23	1.30-1.50	0.2-0.6	0.18-0.22	0.0-2.9	0.2-1.5	.55	.55			
	14-31	1-8	58-70	27-35	1.30-1.50	0.2-0.6	0.16-0.20	3.0-5.9	0.2-1.0	.37	.37			
	31-60	1-9	57-72	20-35	1.45-1.65	0.06-0.2	0.14-0.18	3.0-5.9	0.0-0.3	.43	.43			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
164B:														
Stoy----------------	0-6	1-8	71-80	12-23	1.30-1.50	0.6-2	0.19-0.23	0.0-2.9	1.0-2.5	.43	.43	4	5	56
	6-13	1-8	71-80	12-23	1.30-1.50	0.2-0.6	0.19-0.23	0.0-2.9	0.2-1.5	.55	.55			
	13-32	1-8	58-70	27-35	1.30-1.50	0.6-2	0.16-0.20	3.0-5.9	0.2-0.5	.37	.37			
	32-65	1-9	57-72	20-35	1.45-1.65	0.06-0.2	0.14-0.18	3.0-5.9	0.0-0.3	.43	.43			
178A:														
Ruark---------------	0-8	55-70	15-35	10-15	1.45-1.65	2-6	0.14-0.17	0.0-2.9	0.5-1.0	.20	.20	5	3	86
	8-16	55-70	15-35	10-15	1.45-1.65	2-6	0.12-0.15	0.0-2.9	0.2-0.5	.28	.28			
	16-34	40-60	17-35	20-34	1.50-1.70	0.6-2	0.12-0.16	0.0-2.9	0.1-0.5	.24	.24			
	34-60	52-73	10-40	6-24	1.55-1.75	0.6-6	0.10-0.14	0.0-2.9	0.0-0.3	.24	.24			
184A:														
Roby----------------	0-9	59-74	14-31	4-12	1.45-1.65	2-6	0.09-0.13	0.0-2.9	0.5-1.0	.20	.20	4	3	86
	9-15	59-87	0-33	8-15	1.50-1.70	2-6	0.08-0.12	0.0-2.9	0.2-0.5	.17	.17			
	15-23	36-72	10-49	15-18	1.45-1.65	2-6	0.14-0.18	0.0-2.9	0.1-0.5	.32	.32			
	23-60	75-93	2-19	4-10	1.60-1.80	2-14	0.07-0.11	0.0-2.9	0.0-0.3	.15	.15			
214B:														
Hosmer--------------	0-8	1-7	66-87	12-27	1.35-1.55	0.6-2	0.20-0.24	0.0-2.9	1.0-2.5	.43	.43	4	5	56
	8-10	1-7	71-89	10-22	1.40-1.60	0.2-0.6	0.21-0.25	0.0-2.9	0.2-1.0	.49	.49			
	10-24	2-15	52-80	18-35	1.35-1.55	0.6-2	0.17-0.21	0.0-2.9	0.0-0.5	.37	.37			
	24-53	1-20	45-81	18-35	1.45-1.65	0.01-0.2	0.15-0.19	3.0-5.9	0.0-0.5	.49	.49			
	53-60	1-20	50-84	15-30	1.50-1.70	0.2-0.6	0.16-0.20	0.0-2.9	0.0-0.2	.49	.49			
214C2:														
Hosmer--------------	0-6	1-7	66-87	12-27	1.35-1.55	0.6-2	0.20-0.24	0.0-2.9	1.0-2.5	.43	.43	4	5	56
	6-24	2-15	52-80	18-35	1.35-1.55	0.6-2	0.17-0.21	0.0-2.9	0.0-1.0	.37	.37			
	24-48	1-20	45-81	18-35	1.45-1.65	0.01-0.2	0.15-0.19	3.0-5.9	0.0-0.5	.49	.49			
	48-60	2-25	50-83	15-27	1.50-1.70	0.2-0.6	0.15-0.19	0.0-2.9	0.0-0.2	.43	.43			
218A:														
Newberry------------	0-9	1-12	70-87	12-20	1.35-1.55	0.6-2	0.20-0.24	0.0-2.9	1.5-3.5	.37	.37	4	5	56
	9-16	1-12	72-82	12-20	1.40-1.60	0.2-0.6	0.20-0.24	0.0-2.9	0.2-1.5	.55	.55			
	16-35	1-8	59-71	25-35	1.30-1.50	0.2-0.6	0.14-0.18	3.0-5.9	0.2-0.5	.43	.43			
	35-48	10-25	41-64	24-35	1.45-1.65	0.2-0.6	0.15-0.19	3.0-5.9	0.0-0.5	.37	.37			
	48-80	10-25	40-55	35-40	1.50-1.70	0.2-0.6	0.13-0.17	3.0-5.9	0.0-0.3	.28	.28			
307B2:														
Iona----------------	0-8	1-10	72-89	10-18	1.35-1.55	0.6-2	0.21-0.25	0.0-2.9	1.0-3.0	.43	.43	5	5	56
	8-35	1-10	60-81	18-30	1.30-1.50	0.2-0.6	0.17-0.21	3.0-5.9	0.2-1.0	.43	.43			
	35-60	1-10	68-92	7-22	1.40-1.60	0.2-0.6	0.22-0.26	0.0-2.9	0.0-0.5	.55	.55			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
434A:														
Ridgway-------------	0-10	1-20	64-87	10-20	1.30-1.50	0.6-2	0.20-0.24	0.0-2.9	1.0-3.0	.43	.43	5	5	56
	10-30	1-18	50-72	27-35	1.30-1.50	0.6-2	0.18-0.20	3.0-5.9	0.5-1.5	.37	.37			
	30-39	30-50	22-43	25-30	1.50-1.70	0.6-2	0.13-0.17	3.0-5.9	0.0-0.5	.20	.24			
	39-80	70-85	5-22	5-14	1.55-1.75	2-6	0.07-0.11	0.0-2.9	0.0-0.3	.15	.15			
434B:														
Ridgway-------------	0-10	1-20	64-87	10-20	1.30-1.50	0.6-2	0.20-0.24	0.0-2.9	1.0-3.0	.43	.43	5	5	56
	10-30	1-18	50-72	27-35	1.30-1.50	0.6-2	0.18-0.20	3.0-5.9	0.5-1.5	.37	.37			
	30-39	30-50	22-43	25-30	1.50-1.70	0.6-2	0.13-0.17	3.0-5.9	0.0-0.5	.32	.32			
	39-80	70-85	5-22	5-14	1.55-1.75	2-6	0.07-0.11	0.0-2.9	0.0-0.3	.15	.15			
434C2:														
Ridgway-------------	0-10	1-20	64-87	10-20	1.30-1.50	0.6-2	0.20-0.24	0.0-2.9	1.0-3.0	.43	.43	5	5	56
	10-30	1-18	50-72	27-35	1.30-1.50	0.6-2	0.18-0.20	3.0-5.9	0.5-1.5	.37	.37			
	30-39	30-50	22-43	25-30	1.50-1.70	0.6-2	0.13-0.17	3.0-5.9	0.0-0.5	.28	.32			
	39-80	70-85	5-22	5-14	1.55-1.75	2-6	0.07-0.11	0.0-2.9	0.0-0.3	.15	.17			
453A:														
Muren---------------	0-9	3-12	72-80	10-18	1.30-1.50	0.6-2	0.20-0.24	0.0-2.9	1.0-2.5	.43	.43	5	5	56
	9-12	1-10	70-82	12-23	1.35-1.55	0.6-2	0.19-0.23	0.0-2.9	0.2-1.5	.49	.49			
	12-40	1-10	57-71	27-35	1.30-1.50	0.6-2	0.14-0.18	3.0-5.9	0.2-0.5	.37	.37			
	40-60	1-12	58-78	20-30	1.35-1.55	0.2-2	0.18-0.22	0.0-2.9	0.0-0.3	.49	.49			
615C2:														
Vanmeter------------	0-9	2-20	40-61	35-40	1.25-1.45	0.06-0.2	0.12-0.16	3.0-5.9	1.5-3.5	.32	.32	3	4	86
	9-14	1-15	48-63	35-40	1.30-1.50	0.06-0.2	0.14-0.18	3.0-5.9	0.5-1.5	.37	.37			
	14-27	1-9	47-59	40-45	1.30-1.50	0.2-0.6	0.13-0.17	6.0-8.9	0.2-0.5	.32	.32			
	27-60	15-35	30-58	27-35	1.85-2.05	0.01-0.06	0.00-0.04	0.0-2.9	0.0-0.1	.02	.43			
615F:														
Vanmeter------------	0-9	2-20	40-61	35-40	1.25-1.45	0.06-0.2	0.12-0.16	3.0-5.9	1.5-3.5	.32	.32	3	4	86
	9-14	1-15	48-63	35-40	1.30-1.50	0.06-0.2	0.14-0.18	3.0-5.9	0.5-1.5	.37	.37			
	14-27	1-9	47-59	40-45	1.30-1.50	0.2-0.6	0.13-0.17	6.0-8.9	0.2-0.5	.32	.32			
	27-60	15-35	30-58	27-35	1.85-2.05	0.01-0.06	0.00-0.04	0.0-2.9	0.0-0.1	.02	.43			
630D3:														
Navlys--------------	0-7	2-15	55-71	27-31	1.30-1.50	0.6-2	0.13-0.17	3.0-5.9	0.8-2.0	.37	.37	3	6	48
	7-22	2-15	62-70	27-35	1.35-1.55	0.6-2	0.15-0.19	3.0-5.9	0.2-1.0	.37	.37			
	22-31	2-15	63-80	18-27	1.30-1.50	0.6-2	0.18-0.22	0.0-2.9	0.0-0.5	.55	.55			
	31-80	2-15	70-88	10-18	1.40-1.60	0.6-2	0.22-0.26	0.0-2.9	0.0-0.3	.64	.64			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
908D2:														
Hickory-------------	0-10	20-40	50-70	10-20	1.40-1.60	0.6-2	0.16-0.20	0.0-2.9	1.0-2.5	.32	.32	5	5	56
	10-45	25-50	25-45	25-35	1.50-1.70	0.6-2	0.10-0.14	3.0-5.9	0.1-0.5	.24	.24			
	45-60	30-50	30-45	10-30	1.60-1.80	0.2-0.6	0.11-0.15	0.0-2.9	0.0-0.3	.28	.32			
Kell----------------	0-4	15-30	53-70	12-18	1.40-1.60	0.6-2	0.16-0.20	0.0-2.9	1.0-2.5	.32	.32	3	5	56
	4-17	15-35	40-60	18-27	1.40-1.55	0.6-2	0.12-0.16	0.0-2.9	0.1-0.5	.37	.37			
	17-38	15-35	30-58	27-35	1.40-1.60	0.6-2	0.12-0.16	3.0-5.9	0.1-0.5	.32	.37			
	38-80	75-99	0-20	0-5	1.85-2.05	0.01-0.6	0.00-0.02	0.0-2.9	0.0-0.1	.02	.10			
908F:														
Hickory-------------	0-4	20-40	50-70	10-20	1.30-1.50	0.6-2	0.16-0.20	0.0-2.9	1.0-3.0	.32	.32	5	5	56
	4-12	20-40	50-70	10-20	1.35-1.55	0.6-2	0.15-0.19	0.0-2.9	0.1-0.5	.43	.49			
	12-46	25-50	25-45	25-35	1.50-1.70	0.6-2	0.10-0.14	3.0-5.9	0.1-0.5	.24	.28			
	46-58	30-50	30-45	10-28	1.55-1.75	0.2-2	0.11-0.15	0.0-2.9	0.1-0.3	.28	.32			
	58-80	30-50	30-45	10-27	1.60-1.80	0.2-0.6	0.11-0.15	0.0-2.9	0.0-0.3	.32	.37			
Kell----------------	0-3	15-30	53-70	12-18	1.40-1.60	0.6-2	0.16-0.20	0.0-2.9	1.0-2.5	.32	.32	3	5	56
	3-13	15-35	40-60	18-27	1.40-1.55	0.6-2	0.12-0.16	0.0-2.9	0.1-0.5	.37	.37			
	13-25	15-35	30-58	27-35	1.40-1.60	0.6-2	0.12-0.16	3.0-5.9	0.1-0.5	.32	.37			
	25-35	15-35	30-58	27-35	1.65-1.85	0.2-2	0.04-0.06	3.0-5.9	0.0-0.3	.15	.37			
	35-60	15-35	30-58	27-35	1.85-2.05	0.01-0.6	0.00-0.04	0.0-2.9	0.0-0.1	.02	.43			
912A:														
Hoyleton------------	0-8	1-16	57-87	12-27	1.30-1.50	0.6-2	0.20-0.24	0.0-2.9	1.5-3.5	.37	.37	5	5	56
	8-11	1-16	57-81	18-27	1.30-1.50	0.6-2	0.17-0.21	0.0-2.9	0.3-1.5	.49	.49			
	11-39	1-10	45-64	35-45	1.30-1.50	0.2-0.6	0.12-0.16	6.0-8.9	0.2-0.5	.32	.32			
	39-80	6-40	25-75	19-35	1.40-1.60	0.2-0.6	0.15-0.18	0.0-5.9	0.0-0.3	.43	.43			
Darmstadt-----------	0-10	1-16	57-87	12-27	1.40-1.60	0.6-2	0.19-0.23	0.0-2.9	1.0-2.5	.43	.43	3	5	56
	10-16	1-16	57-87	12-27	1.40-1.60	0.2-0.6	0.18-0.22	0.0-2.9	0.2-0.5	.64	.64			
	16-24	2-16	49-71	27-35	1.30-1.50	0.2-0.6	0.14-0.18	3.0-5.9	0.2-0.5	.43	.43			
	24-47	2-16	49-71	27-35	1.35-1.55	0.0015-0.06	0.09-0.13	3.0-5.9	0.1-0.3	.43	.43			
	47-60	20-45	30-50	15-30	1.45-1.65	0.06-0.2	0.07-0.11	0.0-2.9	0.0-0.3	.43	.43			
946D2:														
Hickory-------------	0-10	20-40	50-70	10-20	1.40-1.60	0.6-2	0.16-0.20	0.0-2.9	1.0-2.5	.32	.32	5	5	56
	10-45	25-50	25-45	25-35	1.50-1.70	0.6-2	0.10-0.14	3.0-5.9	0.1-0.5	.24	.28			
	45-60	30-50	30-45	10-30	1.60-1.80	0.2-0.6	0.11-0.15	0.0-2.9	0.0-0.3	.28	.32			
Atlas---------------	0-6	4-29	55-81	15-27	1.35-1.55	0.2-0.6	0.18-0.22	0.0-2.9	1.0-2.5	.43	.43	3	6	48
	6-50	15-35	30-45	35-45	1.45-1.65	0.06-0.6	0.12-0.16	3.0-5.9	0.2-0.5	.28	.28			
	50-65	20-45	30-50	25-35	1.50-1.75	0.06-0.6	0.06-0.15	0.0-2.9	0.0-0.3	.37	.37			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
3070A:														
Beaucoup------------	0-12	2-18	47-71	27-35	1.30-1.50	0.6-2	0.21-0.23	3.0-5.9	2.5-7.0	.28	.28	5	6	48
	12-65	1-18	50-72	27-35	1.30-1.50	0.2-0.6	0.18-0.20	3.0-5.9	0.5-2.0	.37	.37			
	65-80	---	---	---	---	---	---	---	---	---	---			
3071A:														
Darwin--------------	0-14	0-11	41-59	40-50	1.35-1.55	0.06-0.2	0.12-0.16	6.0-8.9	1.5-5.0	.28	.28	5	4	86
	14-46	0-12	35-58	40-60	1.35-1.55	0.06-0.2	0.11-0.15	6.0-8.9	0.5-1.6	.28	.28			
	46-68	0-15	33-64	35-60	1.35-1.55	0.0015-0.06	0.11-0.15	6.0-8.9	0.0-0.6	.37	.37			
3284A:														
Tice----------------	0-19	2-18	50-71	27-35	1.30-1.50	0.6-2	0.14-0.18	3.0-5.9	3.5-5.0	.28	.28	5	6	48
	19-60	1-15	54-74	24-35	1.35-1.55	0.6-2	0.15-0.19	3.0-5.9	0.3-1.5	.37	.37			
3288A:														
Petrolia------------	0-14	1-19	46-73	27-35	1.35-1.55	0.2-0.6	0.21-0.23	3.0-5.9	1.0-3.0	.32	.32	5	6	48
	14-60	0-19	46-73	27-35	1.35-1.55	0.2-0.6	0.18-0.20	3.0-5.9	0.3-1.0	.37	.37			
3331A:														
Haymond-------------	0-9	1-26	56-89	10-18	1.30-1.50	0.6-2	0.20-0.24	0.0-2.9	1.0-3.0	.43	.43	5	5	56
	9-44	1-26	56-89	10-18	1.40-1.60	0.6-2	0.21-0.25	0.0-2.9	0.3-1.0	.55	.55			
	44-80	1-65	9-86	5-26	1.40-1.60	0.6-2	0.17-0.21	0.0-2.9	0.3-1.0	.49	.49			
3333A:														
Wakeland------------	0-9	1-26	56-88	10-18	1.30-1.50	0.6-2	0.21-0.25	0.0-2.9	1.0-3.0	.43	.43	5	5	56
	9-60	1-26	56-88	10-18	1.30-1.50	0.6-2	0.19-0.23	0.0-2.9	0.3-1.0	.55	.55			
3334A:														
Birds---------------	0-6	2-24	55-80	15-25	1.30-1.50	0.6-2	0.19-0.23	0.0-2.9	1.0-3.0	.43	.43	5	5	56
	6-80	2-25	55-80	18-27	1.30-1.50	0.2-0.6	0.17-0.21	0.0-2.9	0.3-1.0	.49	.49			
3424A:														
Shoals--------------	0-8	1-30	50-80	15-25	1.35-1.55	0.6-2	0.18-0.22	0.0-2.9	1.0-2.5	.37	.37	5	5	56
	8-60	20-38	35-60	18-27	1.50-1.70	0.6-2	0.13-0.17	0.0-2.9	0.3-1.0	.43	.43			
3597A:														
Armiesburg----------	0-14	2-18	47-71	27-35	1.30-1.50	0.6-2	0.21-0.23	3.0-5.9	1.5-7.0	.28	.28	5	6	48
	14-80	1-18	50-72	27-35	1.30-1.50	0.6-2	0.18-0.20	3.0-5.9	0.3-1.5	.37	.37			
3665A:														
Stonelick-----------	0-14	30-48	35-48	10-20	1.40-1.60	0.6-2	0.14-0.18	0.0-2.9	0.5-2.5	.28	.28	5	5	56
	14-60	35-80	15-55	5-15	1.50-1.70	2-6	0.19-0.23	0.0-2.9	0.3-1.0	.37	.37			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
7155A:														
Stockland-----------	0-8	53-75	14-34	6-20	1.45-1.65	2-6	0.11-0.15	0.0-2.9	2.0-5.0	.10	.15	4	5	56
	8-14	56-80	5-32	10-20	1.35-1.55	2-6	0.12-0.16	0.0-2.9	1.0-3.5	.10	.15			
	14-44	56-80	5-32	10-20	1.35-1.55	2-6	0.08-0.12	0.0-2.9	0.5-1.6	.10	.15			
	44-60	75-87	2-21	2-12	1.50-1.70	6-20	0.06-0.10	0.0-2.9	0.2-0.5	.02	.05			
	60-80	87-96	1-12	1-5	1.55-1.75	6-20	0.04-0.08	0.0-2.9	0.0-0.5	.02	.02			
7155B:														
Stockland-----------	0-16	53-75	12-34	10-20	1.45-1.65	2-6	0.11-0.15	0.0-2.9	2.0-5.0	.10	.15	4	5	56
	16-31	53-82	3-32	10-19	1.50-1.70	2-6	0.12-0.16	0.0-2.9	1.0-2.0	.10	.17			
	31-42	79-89	1-12	8-15	1.50-1.70	2-6	0.04-0.08	0.0-2.9	0.2-0.5	.02	.05			
	42-60	88-97	0-9	0-8	1.50-1.70	2-6	0.04-0.08	0.0-2.9	0.0-0.5	.02	.02			
7155C:														
Stockland-----------	0-14	53-75	12-34	10-20	1.45-1.65	2-6	0.11-0.15	0.0-2.9	2.0-5.0	.10	.15	4	5	56
	14-62	53-82	3-32	10-19	1.50-1.70	2-6	0.12-0.16	0.0-2.9	0.5-2.0	.10	.17			
7286A:														
Carmi---------------	0-10	52-70	20-35	10-20	1.45-1.65	2-6	0.10-0.14	0.0-2.9	1.0-5.0	.15	.15	4	3	86
	10-26	52-70	20-35	10-20	1.45-1.65	2-6	0.10-0.14	0.0-2.9	1.0-2.5	.24	.24			
	26-37	60-80	5-25	10-22	1.50-1.70	2-6	0.06-0.10	0.0-2.9	0.5-1.5	.05	.10			
	37-57	52-80	5-35	10-20	1.50-1.70	2-6	0.10-0.14	0.0-2.9	0.2-1.0	.20	.20			
	57-82	75-94	2-20	3-11	1.60-1.80	6-20	0.05-0.09	0.0-2.9	0.2-0.5	.02	.05			
	82-93	86-95	2-5	2-10	1.60-1.80	6-20	0.03-0.07	0.0-2.9	0.2-0.3	.02	.02			
7286B:														
Carmi---------------	0-15	52-70	20-35	10-20	1.45-1.65	2-6	0.10-0.14	0.0-2.9	1.0-5.0	.15	.15	4	3	86
	15-23	52-70	20-35	10-20	1.45-1.65	2-6	0.10-0.14	0.0-2.9	1.0-2.5	.24	.24			
	23-30	60-80	5-25	10-22	1.50-1.70	2-6	0.06-0.10	0.0-2.9	0.5-1.5	.05	.10			
	30-42	75-88	3-21	4-11	1.55-1.75	6-20	0.04-0.08	0.0-2.9	0.2-0.8	.05	.05			
	42-54	75-88	3-21	4-11	1.60-1.80	6-20	0.03-0.07	0.0-2.9	0.2-0.5	.02	.05			
	54-80	90-98	0-8	0-8	1.55-1.75	20-60	0.01-0.05	0.0-2.9	0.2-0.3	.02	.02			
7803C:														
Orthents------------	0-80	52-80	5-35	10-20	1.50-1.70	2-6	0.10-0.14	0.0-2.9	0.2-1.0	.10	.15	3	3	86
7841A:														
Carmi---------------	0-10	52-70	20-35	10-20	1.45-1.65	2-6	0.10-0.14	0.0-2.9	1.0-5.0	.15	.15	4	3	86
	10-26	52-70	20-35	10-20	1.45-1.65	2-6	0.10-0.14	0.0-2.9	1.0-2.5	.24	.24			
	26-37	60-80	5-25	10-22	1.50-1.70	2-6	0.06-0.10	0.0-2.9	0.5-1.5	.05	.10			
	37-57	52-80	5-35	10-20	1.50-1.70	2-6	0.10-0.14	0.0-2.9	0.2-1.0	.20	.20			
	57-82	75-94	2-20	3-11	1.60-1.80	6-20	0.05-0.09	0.0-2.9	0.2-0.5	.02	.05			
	82-93	86-95	2-5	2-10	1.60-1.80	6-20	0.03-0.07	0.0-2.9	0.2-0.3	.02	.02			

Table 19.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
7841A:														
Westland------------	0-11	10-20	50-62	27-30	1.30-1.50	0.6-2	0.14-0.18	3.0-5.9	1.5-6.0	.28	.28	4	6	48
	11-30	20-44	27-52	27-35	1.45-1.65	0.6-2	0.13-0.17	3.0-5.9	0.5-1.5	.24	.28			
	30-48	36-54	23-42	20-30	1.50-1.70	0.6-2	0.11-0.15	3.0-5.9	0.3-1.0	.20	.24			
	48-60	90-98	0-8	0-8	1.55-1.75	20-60	0.01-0.05	0.0-2.9	0.2-0.5	.02	.02			
7865.														
Pits, gravel														

Table 20.--Chemical Properties of the Soils

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbon-ate	Organic matter	Sodium adsorp-tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	
2A:							
Cisne----------------	0-8	7.8-19	---	5.1-7.3	0	1.0-2.5	0-5
	8-17	4.6-16	---	5.1-6.5	0	0.2-1.5	0-5
	17-37	---	18-29	4.5-6.0	0	0.2-0.5	0-5
	37-60	3.7-18	---	5.1-6.5	0	0.0-0.5	0-5
	60-80	3.7-15	---	5.6-7.3	0	0.0-0.3	0-13
3A:							
Hoyleton-------------	0-8	10-28	---	4.5-7.3	0	1.5-3.5	0
	8-11	6.1-21	---	4.5-7.3	0	0.3-1.5	0
	11-39	---	18-27	4.5-5.5	0	0.2-0.5	0-3
	39-80	3.5-15	---	5.6-7.3	0	0.0-0.3	0-13
3B:							
Hoyleton-------------	0-8	10-28	---	4.5-7.3	0	1.5-3.5	0-1
	8-15	---	6.3-18	4.5-6.0	0	0.3-1.5	0-1
	15-34	---	18-27	4.5-5.5	0	0.2-0.5	0-3
	34-60	3.5-15	---	5.1-6.5	0	0.0-0.3	0-5
6B2:							
Fishhook-------------	0-5	10-17	---	5.1-7.3	0	1.0-2.5	0
	5-31	20-27	---	4.5-7.3	0	0.2-0.8	0
	31-47	23-34	---	4.5-7.3	0-5	0.0-0.5	0
	47-60	14-26	---	6.1-7.8	0-5	0.0-0.3	0
7C2:							
Atlas----------------	0-4	11-25	---	4.5-7.3	0	1.0-2.5	0
	4-34	---	18-35	4.5-7.3	0	0.2-0.5	0
	34-68	4.5-15	---	6.1-7.8	0	0.0-0.3	0-5
7C3:							
Atlas----------------	0-2	18-27	---	4.5-7.3	0	1.0-2.5	0
	2-24	13-23	---	4.5-7.3	0	0.2-0.5	0
	24-68	6.0-19	---	6.1-7.8	0	0.0-0.3	0-5
7D2:							
Atlas----------------	0-6	11-25	---	4.5-7.3	0	1.0-2.5	0
	6-50	---	18-35	4.5-7.3	0	0.2-0.5	0
	50-65	4.5-15	---	6.1-7.8	0	0.0-0.3	0-5
8F:							
Hickory--------------	0-4	6.5-14	---	4.5-7.3	0	1.0-3.0	0
	4-12	7.8-12	---	4.5-7.3	0	0.1-0.5	0
	12-46	12-18	---	4.5-6.0	0	0.1-0.5	0
	46-58	7.8-17	---	5.1-7.3	0	0.1-0.5	0
	58-80	7.8-16	---	5.6-8.4	0-25	0.1-0.5	0
12A:							
Wynoose--------------	0-7	7.8-19	---	5.1-7.3	0	1.0-2.5	0
	7-20	---	4.2-13	3.5-6.0	0	0.2-1.5	0
	20-36	---	14-28	3.5-6.0	0	0.2-0.5	0-5
	36-66	---	10-23	3.5-6.0	0	0.0-0.3	0-5
	66-80	4.5-15	---	5.6-7.8	0	0.0-0.3	0-5

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbon-ate	Organic matter	Sodium adsorp-tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	
13A:							
Bluford--------------	0-7	7.8-17	---	5.6-7.3	0	1.0-2.5	0
	7-20	---	7.8-17	4.5-6.0	0	0.2-1.5	0
	20-35	---	18-29	4.5-6.0	0	0.2-0.5	0-5
	35-60	---	10-23	4.5-6.0	0	0.0-0.3	1-13
13B2:							
Bluford--------------	0-9	7.8-17	---	4.5-7.3	0	1.0-2.5	0
	9-37	---	18-30	4.5-6.5	0	0.2-0.5	0
	37-60	3.7-13	---	4.5-6.0	0	0.0-0.3	0
14B:							
Ava------------------	0-6	6.5-11	---	5.1-7.3	0	1.0-2.5	0
	6-14	---	3.2-7.2	4.5-5.5	0	0.2-1.5	0
	14-34	---	8.3-14	4.5-5.5	0	0.2-0.5	0
	34-50	---	6.8-15	4.5-5.5	0	0.0-0.3	0
	50-60	---	6.8-15	4.5-6.0	0	0.0-0.3	0-5
14C2:							
Ava------------------	0-7	6.5-11	---	5.1-7.3	0	1.0-2.5	0
	7-31	---	9.2-11	4.5-5.5	0	0.2-1.0	0
	31-50	---	7.2-10	4.5-5.5	0	0.2-0.5	0
	50-60	10-16	---	4.5-6.0	0	0.0-0.3	0-5
31A:							
Pierron--------------	0-8	9.1-25	---	4.5-7.3	0	1.0-3.0	0
	8-20	3.6-12	---	4.5-7.3	0	0.1-0.5	0
	20-36	---	14-27	3.5-5.5	0	0.1-0.5	0
	36-66	8.5-21	---	4.5-6.5	0	0.1-0.5	0
	66-80	6.6-16	---	5.1-7.3	0	0.1-0.5	0
50A:							
Virden---------------	0-12	23-35	---	5.6-7.3	0	2.0-4.0	0
	12-36	15-36	---	5.6-7.3	0	0.3-2.4	0
	36-60	6.6-15	---	6.1-8.4	0-15	0.1-0.4	0
79B:							
Menfro---------------	0-10	10-23	---	5.6-7.3	0	1.0-2.5	0
	10-39	19-27	---	4.5-6.5	0	0.0-0.5	0
	39-70	14-23	---	5.1-7.3	0	0.0-0.3	0
	70-80	11-22	---	5.6-7.8	0-5	0.0-0.3	0
79C2:							
Menfro---------------	0-7	10-23	---	5.6-7.3	0	1.0-2.5	0
	7-48	19-27	---	4.5-6.5	0	0.0-0.5	0
	48-60	14-23	---	5.1-7.3	0	0.0-0.3	0
79D2:							
Menfro---------------	0-8	10-23	---	5.6-7.3	0	1.0-2.5	0
	8-35	---	12-17	4.5-6.0	0	0.0-0.5	0
	35-49	---	9.3-15	5.1-7.3	0	0.0-0.3	0
	49-75	11-22	---	5.6-7.8	0-5	0.0-0.3	0
79F:							
Menfro---------------	0-13	10-23	---	5.6-7.3	0	1.0-2.5	0
	13-49	---	12-17	4.5-6.0	0	0.0-0.5	0
	49-75	14-23	---	5.1-7.3	0	0.0-0.3	0

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbon-ate	Organic matter	Sodium adsorp-tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	
112A:							
Cowden---------------	0-8	15-28	---	5.6-7.3	0	1.5-3.5	0
	8-19	---	9.3-18	4.5-6.0	0	0.3-1.5	0
	19-50	13-21	---	4.5-6.5	0	0.2-0.5	0-5
	50-80	3.7-13	---	5.6-7.3	0	0.0-0.3	0-5
119C2:							
Elco-----------------	0-8	10-17	---	6.1-7.3	0	1.0-2.5	0
	8-31	19-27	---	5.1-6.5	0	0.0-0.8	0
	31-60	14-27	---	5.1-7.8	0-5	0.0-0.5	0
119D:							
Elco-----------------	0-3	10-17	---	6.1-7.3	0	1.0-2.5	0
	3-9	10-17	---	6.1-7.3	0	0.5-2.0	0
	9-37	19-27	---	5.1-6.5	0	0.0-0.8	0
	37-50	20-34	---	5.1-6.5	0	0.0-0.5	0
	50-69	14-27	---	5.1-7.8	0-5	0.0-0.5	0
131A:							
Alvin----------------	0-8	8.6-13	---	5.1-7.3	0	0.5-1.0	0
	8-13	8.3-12	---	5.1-7.3	0	0.2-0.5	0
	13-33	12-15	---	5.0-7.3	0	0.1-0.5	0
	33-60	2.6-8.5	---	5.1-7.8	0-25	0.0-0.3	0
131B:							
Alvin----------------	0-8	8.6-13	---	5.0-7.3	0	0.5-1.0	0
	8-11	7.6-12	---	5.0-7.3	0	0.0-0.5	0
	11-25	11-15	---	5.0-7.3	0	0.0-0.5	0
	25-80	2.6-8.5	---	5.1-8.4	0-25	0.0-0.3	0
131C2:							
Alvin----------------	0-10	8.6-13	---	5.1-7.3	0	0.5-1.0	0
	10-30	12-15	---	5.0-7.3	0	0.2-0.5	0
	30-60	2.6-8.5	---	5.1-7.8	0-25	0.0-0.3	0
131D2:							
Alvin----------------	0-7	8.6-13	---	5.0-7.3	0	0.5-1.0	0
	7-14	7.6-12	---	5.0-7.3	0	0.0-0.5	0
	14-47	11-15	---	5.0-7.3	0	0.0-0.5	0
	47-60	2.6-8.5	---	5.1-8.4	0-25	0.0-0.3	0
131F:							
Alvin----------------	0-7	8.6-13	---	5.1-7.3	0	0.5-1.0	0
	7-37	---	7.8-9.5	5.0-7.3	0	0.2-0.5	0
	37-60	2.6-8.5	---	5.1-7.8	0-25	0.0-0.3	0
138A:							
Shiloh---------------	0-19	29-46	---	6.1-7.3	0	4.0-6.0	0
	19-48	18-45	---	6.1-7.3	0	1.0-3.5	0
	48-68	5.7-28	---	6.1-7.3	0	0.0-1.0	0
	68-86	6.0-31	---	6.1-7.8	0	0.0-1.0	0-5
142A:							
Patton---------------	0-15	23-30	---	6.6-7.3	0	3.0-6.5	0
	15-35	22-29	---	6.6-7.8	0-5	1.0-3.0	0
	35-60	14-27	---	6.6-8.4	1-15	0.0-1.0	0

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbon-ate	Organic matter	Sodium adsorp-tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	
164A:							
Stoy-----------------	0-9	10-20	---	5.6-7.3	0	1.0-2.5	0
	9-14	9.8-19	---	5.6-7.3	0	0.2-1.5	0
	14-31	---	13-18	4.5-5.5	0	0.2-1.0	0
	31-60	14-26	---	5.1-6.0	0	0.0-0.3	0
164B:							
Stoy-----------------	0-6	10-20	---	5.0-6.5	0	1.0-2.5	0
	6-13	---	6.4-12	4.5-6.0	0	0.2-1.5	0
	13-32	---	13-17	4.5-5.5	0	0.2-0.5	0
	32-65	---	9.3-17	4.5-5.5	0	0.0-0.3	0
178A:							
Ruark----------------	0-8	5.4-8.2	---	4.5-7.3	0	0.5-1.0	0
	8-16	5.3-8.0	---	4.5-7.3	0	0.2-0.5	0
	16-34	---	7.7-12	4.5-6.0	0	0.1-0.5	0
	34-60	3.1-13	---	5.6-7.8	0	0.0-0.3	0
184A:							
Roby-----------------	0-9	3.9-11	---	4.5-7.3	0	0.5-1.0	0
	9-15	3.7-10	---	4.5-6.0	0	0.2-0.5	0
	15-23	12-15	---	4.5-6.5	0	0.1-0.5	0
	23-60	3.3-8.5	---	5.6-7.8	0-25	0.0-0.3	0
214B:							
Hosmer---------------	0-8	6.5-15	---	6.1-7.3	0	1.0-2.5	0
	8-10	5.3-12	---	4.5-6.0	0	0.2-1.0	0
	10-24	9.1-18	---	4.5-6.0	0	0.0-0.5	0
	24-53	9.1-18	---	4.5-6.0	0	0.0-0.5	0
	53-60	7.6-16	---	5.1-6.0	0	0.0-0.2	0
214C2:							
Hosmer---------------	0-6	6.5-15	---	5.6-7.3	0	1.0-2.5	0
	6-24	9.1-19	---	5.1-6.5	0	0.0-1.0	0
	24-48	---	8.4-12	4.5-6.0	0	0.0-0.5	0
	48-60	7.6-14	---	5.1-6.0	0	0.0-0.2	0
218A:							
Newberry-------------	0-9	11-17	---	5.6-7.3	0	1.5-3.5	0
	9-16	9.8-17	---	4.5-6.0	0	0.2-1.5	0
	16-35	---	12-17	4.5-6.0	0	0.2-0.5	0-13
	35-48	---	11-17	4.5-6.0	0	0.0-0.5	3-13
	48-80	23-30	---	5.6-7.3	0-5	0.0-0.3	3-13
307B2:							
Iona-----------------	0-8	8.9-16	---	5.1-7.3	0	1.0-3.0	0
	8-35	---	9.3-16	4.5-6.5	0	0.2-1.0	0
	35-60	---	3.6-11	4.5-7.3	0	0.0-0.5	0
434A:							
Ridgway--------------	0-10	8.9-17	---	5.1-7.3	0	1.0-3.0	0
	10-30	21-28	---	5.1-7.3	0	0.5-1.5	0
	30-39	---	11-15	5.0-6.5	0	0.0-0.5	0
	39-80	4.1-11	---	5.1-7.3	0	0.0-0.3	0
434B:							
Ridgway--------------	0-10	10-20	---	5.1-7.3	0	1.0-3.0	0
	10-30	17-33	---	5.1-7.3	0	0.5-1.5	0
	30-39	15-25	12-22	5.0-6.5	0	0.0-0.5	0
	39-80	2.0-10	---	5.1-7.3	0	0.0-0.3	0

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbon-ate	Organic matter	Sodium adsorp-tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	
434C2:							
Ridgway	0-10	8.9-17	---	5.1-7.3	0	1.0-3.0	0
	10-30	21-28	---	5.1-7.3	0	0.5-1.5	0
	30-39	---	11-15	5.0-6.5	0	0.0-0.5	0
	39-80	4.1-11	---	5.1-7.3	0	0.0-0.3	0
453A:							
Muren	0-9	8.9-16	---	6.1-7.3	0	1.0-2.5	0
	9-12	9.8-19	---	5.1-6.0	0	0.2-1.5	0
	12-40	---	13-17	4.5-6.0	0	0.2-0.5	0
	40-60	14-23	---	6.6-7.8	0-5	0.0-0.3	0
615C2:							
Vanmeter	0-9	19-22	---	5.6-7.3	0	1.5-3.5	0
	9-14	18-20	---	5.6-7.3	0	0.5-1.5	0
	14-27	16-19	---	5.6-7.8	0-5	0.2-0.5	0
	27-60	8.3-11	---	7.4-8.4	0-15	0.0-0.1	0
615F:							
Vanmeter	0-9	19-22	---	5.6-7.3	0	1.5-3.5	0
	9-14	18-20	---	5.6-7.3	0	0.5-1.5	0
	14-27	16-19	---	5.6-7.8	0-5	0.2-0.5	0
	27-60	8.3-11	---	7.4-8.4	0-15	0.0-0.1	0
630D3:							
Navlys	0-7	22-25	---	5.6-7.3	0	0.8-2.0	0
	7-22	21-27	---	5.6-7.3	0	0.2-1.0	0
	22-31	13-21	---	5.6-7.8	0-25	0.0-0.5	0
	31-80	7.6-14	---	7.4-8.4	15-35	0.0-0.3	0
908D2:							
Hickory	0-10	5.4-11	---	4.5-7.3	0	1.0-2.5	0
	10-45	---	10-12	4.5-6.5	0	0.1-0.5	0
	45-60	5.1-16	---	5.6-8.4	0-15	0.0-0.3	0
Kell	0-4	6.5-9.8	---	5.1-6.0	0	1.0-2.5	0
	4-17	---	6.9-9.1	4.5-6.0	0	0.1-0.5	0
	17-38	---	11-12	3.5-6.0	0	0.1-0.5	0
	38-80	---	0.0-1.6	3.5-6.0	0	0.0-0.1	0
908F:							
Hickory	0-4	---	2.7-5.2	4.5-6.0	0	1.0-3.0	0
	4-12	---	3.5-6.4	4.5-6.0	0	0.1-0.5	0
	12-46	---	10-12	4.5-6.5	0	0.1-0.5	0
	46-58	5.2-15	---	4.5-7.3	0	0.1-0.3	0
	58-80	5.1-14	---	5.6-8.4	0-15	0.0-0.3	0
Kell	0-3	6.5-9.8	---	5.1-6.0	0	1.0-2.5	0
	3-13	9.3-14	---	4.5-6.0	0	0.1-0.5	0
	13-25	---	11-12	3.5-6.0	0	0.1-0.5	0
	25-35	---	4.0-13	3.5-6.0	0	0.0-0.3	0
	35-60	---	4.0-15	3.5-6.0	0	0.0-0.1	0
912A:							
Hoyleton	0-8	10-28	---	4.5-7.3	0	1.5-3.5	0-1
	8-11	---	9.3-22	4.5-7.3	0	0.3-1.5	0-1
	11-39	---	18-32	4.5-6.5	0	0.2-0.5	0-3
	39-80	3.5-15	---	5.6-7.3	0	0.0-0.3	0-5

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbon-ate	Organic matter	Sodium adsorp-tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	
912A:							
Darmstadt------------	0-10	10-23	---	4.5-7.3	0	1.0-2.5	0-5
	10-16	9.8-21	---	5.1-7.3	0	0.2-0.5	0-5
	16-24	20-27	---	5.1-7.8	0-5	0.2-0.5	0-13
	24-47	20-26	---	6.6-9.0	0-15	0.1-0.3	13-25
	47-60	11-23	---	7.4-9.0	0-25	0.0-0.3	4-20
946D2:							
Hickory--------------	0-10	5.4-11	---	4.5-7.3	0	1.0-2.5	0
	10-45	---	10-12	4.5-6.5	0	0.1-0.5	0
	45-60	5.1-16	---	5.6-8.4	0-15	0.0-0.3	0
Atlas----------------	0-6	11-25	---	4.5-7.3	0	1.0-2.5	0
	6-50	---	18-35	4.5-7.3	0	0.2-0.5	0
	50-65	4.5-15	---	6.1-7.8	0	0.0-0.3	0-5
3070A:							
Beaucoup-------------	0-12	23-30	---	5.6-7.8	0	2.5-7.0	0
	12-65	21-28	---	5.6-7.8	0	0.5-2.0	0
	65-80	---	---	---	---	---	---
3071A:							
Darwin---------------	0-14	29-53	---	6.1-7.3	0	1.5-5.0	0
	14-46	20-42	---	6.1-7.8	0	0.5-1.6	0
	46-68	6.0-31	---	6.6-7.8	0-25	0.0-0.6	0
3284A:							
Tice-----------------	0-19	23-29	---	6.1-7.3	0	3.5-5.0	0
	19-60	19-28	---	6.1-7.3	0	0.3-1.5	0
3288A:							
Petrolia-------------	0-14	22-29	---	5.6-7.3	0	1.0-3.0	0
	14-60	21-27	---	5.6-7.3	0	0.3-1.0	0
3331A:							
Haymond--------------	0-9	8.9-16	---	5.6-7.3	0	1.0-3.0	0
	9-44	8.5-15	---	5.6-7.3	0	0.3-1.0	0
	44-80	4.5-21	---	6.1-7.8	0	0.3-1.0	0
3333A:							
Wakeland-------------	0-9	8.9-16	---	5.6-7.3	0	1.0-3.0	0
	9-60	8.5-15	---	5.6-7.8	0	0.3-1.0	0
3334A:							
Birds----------------	0-6	13-21	---	5.6-7.3	0	1.0-3.0	0
	6-80	14-22	---	5.6-7.8	0-15	0.3-1.0	0
3424A:							
Shoals---------------	0-8	13-21	---	6.6-7.3	0-5	1.0-2.5	0
	8-60	14-22	---	6.6-7.8	0-5	0.3-1.0	0
3597A:							
Armiesburg-----------	0-14	22-30	---	6.1-7.8	0	1.5-7.0	0
	14-80	21-28	---	6.1-7.8	0-10	0.3-1.5	0
3665A:							
Stonelick------------	0-14	8.6-17	---	7.4-8.4	1-20	0.5-2.5	0
	14-60	4.6-13	---	7.4-8.4	1-20	0.3-1.0	0

Table 20.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbon-ate	Organic matter	Sodium adsorp-tion ratio
	In	meq/100 g	meq/100 g	pH	Pct	Pct	
7155A:							
Stockland------------	0-8	5.8-18	---	5.6-7.3	0	2.0-5.0	0
	8-14	8.9-17	---	5.1-6.5	0	1.0-3.5	0
	14-44	8.6-17	---	5.1-6.5	0	0.5-1.6	0
	44-60	2.0-10	---	5.6-7.3	0	0.2-0.5	0
	60-80	1.0-4.6	---	7.4-8.4	5-35	0.0-0.5	0
7155B:							
Stockland------------	0-16	9.1-18	---	5.6-7.3	0	2.0-5.0	0
	16-31	8.6-16	---	5.6-7.3	0	1.0-2.0	0
	31-42	6.8-12	---	5.6-7.3	0	0.2-0.5	0
	42-60	0.0-7.1	---	5.6-7.3	0	0.0-0.5	0
7155C:							
Stockland------------	0-14	9.1-18	---	5.1-7.3	0	2.0-5.0	0
	14-62	8.6-16	---	5.6-7.3	0	0.5-2.0	0
7286A:							
Carmi----------------	0-10	8.9-17	---	5.1-7.3	0	1.0-5.0	0
	10-26	8.9-17	---	5.1-7.3	0	1.0-2.5	0
	26-37	8.6-18	---	5.0-6.0	0	0.5-1.5	0
	37-57	8.4-17	---	5.0-6.0	0	0.2-1.0	0
	57-82	2.6-9.4	---	5.6-7.3	0-15	0.2-0.5	0
	82-93	1.8-8.3	---	7.4-8.4	5-25	0.2-0.3	0
7286B:							
Carmi----------------	0-15	8.9-17	---	5.1-7.3	0	1.0-5.0	0
	15-23	8.9-17	---	5.1-7.3	0	1.0-2.5	0
	23-30	---	5.6-12	5.0-6.0	0	0.5-1.5	0
	30-42	---	2.4-6.2	5.0-6.0	0	0.2-0.8	0
	42-54	3.3-9.4	---	5.1-7.3	0	0.2-0.5	0
	54-80	0.0-6.8	---	7.4-8.4	5-35	0.2-0.3	0
7803C:							
Orthents-------------	0-80	7.0-14	---	6.6-7.8	0	0.2-1.0	0
7841A:							
Carmi----------------	0-10	8.9-17	---	5.1-7.3	0	1.0-5.0	0
	10-26	8.9-17	---	5.1-7.3	0	1.0-2.5	0
	26-37	8.6-18	---	5.0-6.0	0	0.5-1.5	0
	37-57	8.4-17	---	5.0-6.0	0	0.2-1.0	0
	57-82	2.6-9.4	---	5.6-7.3	0-15	0.2-0.5	0
	82-93	1.8-8.3	---	7.4-8.4	5-25	0.2-0.3	0
Westland-------------	0-11	22-26	---	6.1-7.3	0	1.5-6.0	0
	11-30	21-28	---	6.1-7.3	0	0.5-1.5	0
	30-48	14-24	---	6.1-7.8	0-10	0.3-1.0	0
	48-60	0.0-6.8	---	7.4-8.4	5-35	0.2-0.5	0
7865.							
Pits, gravel							

Table 21.--Water Features

(See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Hydro- logic group	Ponding			Flooding		Months	Water table		
		Surface water depth	Duration	Frequency	Duration	Frequency		Upper limit	Lower limit	Kind
		Ft						Ft	Ft	
2A:										
Cisne	D	0.0-0.5	Brief	Frequent	---	None	Jan-May	0.0-1.0	>6.0	Apparent
		---	---	---	---	None	Jun-Dec	>6.0	>6.0	---
3A:										
Hoyleton	C	---	---	None	---	None	Jan-May	1.0-2.0	>6.0	Apparent
		---	---	---	---	None	Jun-Dec	>6.0	>6.0	---
3B:										
Hoyleton	C	---	---	None	---	None	Jan-May	1.0-2.0	>6.0	Apparent
		---	---	---	---	None	Jun-Dec	>6.0	>6.0	---
6B2:										
Fishhook	D	---	---	None	---	None	Jan-May	1.0-2.0	>6.0	Apparent
		---	---	---	---	None	Jun-Dec	>6.0	>6.0	---
7C2:										
Atlas	D	---	---	None	---	None	Jan-May	1.0-2.0	>6.0	Apparent
		---	---	---	---	None	Jun-Dec	>6.0	>6.0	---
7C3:										
Atlas	D	---	---	None	---	None	Jan-May	0.5-2.0	>6.0	Apparent
		---	---	---	---	None	Jun-Dec	>6.0	>6.0	---
7D2:										
Atlas	D	---	---	None	---	None	Jan-May	1.0-2.0	>6.0	Apparent
		---	---	---	---	None	Jun-Dec	>6.0	>6.0	---
8F:										
Hickory	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
12A:										
Wynoose	D	0.0-0.5	Brief	Frequent	---	None	Jan-May	0.0-1.0	>6.0	Apparent
		---	---	---	---	None	Jun-Dec	>6.0	>6.0	---
13A:										
Bluford	C	---	---	None	---	None	Jan-May	0.5-2.0	2.5-4.6	Perched
		---	---	---	---	None	Jun-Dec	>6.0	>6.0	---
13B2:										
Bluford	C	---	---	None	---	None	Jan-May	0.5-2.0	2.5-4.6	Perched
		---	---	---	---	None	Jun-Dec	>6.0	>6.0	---
14B:										
Ava	C	---	---	None	---	None	Jan	>6.0	>6.0	---
		---	---	---	---	None	Feb-Apr	1.5-2.9	2.1-3.3	Perched
		---	---	---	---	None	May-Dec	>6.0	>6.0	---
14C2:										
Ava	C	---	---	None	---	None	Jan	>6.0	>6.0	---
		---	---	---	---	None	Feb-Apr	1.5-2.9	2.1-3.3	Perched
		---	---	---	---	None	May-Dec	>6.0	>6.0	---
31A:										
Pierron	D	0.0-0.5	Brief	Frequent	---	None	Jan-May	0.0-1.0	>6.0	Apparent
		---	---	---	---	None	Jun-Dec	>6.0	>6.0	---

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency	Months	Water table: Upper limit	Water table: Lower limit	Water table: Kind
		Ft						Ft	Ft	
50A:										
Virden	B/D	0.0-0.5	Brief	Frequent	---	None	Jan-May	0.0-1.0	>6.0	Apparent
		---	---	---	---	None	Jun-Dec	>6.0	>6.0	---
79B:										
Menfro	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
79C2:										
Menfro	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
79D2:										
Menfro	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
79F:										
Menfro	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
112A:										
Cowden	D	0.0-0.5	Brief	Frequent	---	None	Jan-May	0.0-1.0	>6.0	Apparent
		---	---	---	---	None	Jun-Dec	>6.0	>6.0	---
119C2:										
Elco	B	---	---	None	---	None	Jan	>6.0	>6.0	---
		---	---	---	---	None	Feb-Apr	1.5-4.0	>6.0	Apparent
		---	---	---	---	None	May-Dec	>6.0	>6.0	---
119D:										
Elco	B	---	---	None	---	None	Jan	>6.0	>6.0	---
		---	---	---	---	None	Feb-Apr	1.5-4.0	>6.0	Apparent
		---	---	---	---	None	May-Dec	>6.0	>6.0	---
131A:										
Alvin	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
131B:										
Alvin	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
131C2:										
Alvin	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
131D2:										
Alvin	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
131F:										
Alvin	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
138A:										
Shiloh	C/D	0.0-1.0	Brief	Frequent	---	None	Jan-Jun	0.0-1.0	>6.0	Apparent
		---	---	---	---	None	Jul-Dec	>6.0	>6.0	---
142A:										
Patton	B/D	0.0-0.5	Brief	Frequent	---	None	Jan-May	0.0-1.0	>6.0	Apparent
		---	---	---	---	None	Jun-Dec	>6.0	>6.0	---
164A:										
Stoy	C	---	---	None	---	None	Jan-May	1.0-2.0	2.1-3.7	Perched
		---	---	---	---	None	Jun-Dec	>6.0	>6.0	---
164B:										
Stoy	C	---	---	None	---	None	Jan-May	1.0-2.0	2.1-3.7	Perched
		---	---	---	---	None	Jun-Dec	>6.0	>6.0	---

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency	Months	Water table: Upper limit	Water table: Lower limit	Water table: Kind
		Ft						Ft	Ft	
178A:										
Ruark	B/D	0.0-0.5	Brief	Frequent	---	None	Jan-May	0.0-1.0	>6.0	Apparent
		---	---	---	---	None	Jun-Dec	>6.0	>6.0	---
184A:										
Roby	B	---	---	None	---	None	Jan-May	1.0-2.0	>6.0	Apparent
		---	---	---	---	None	Jun-Dec	>6.0	>6.0	---
214B:										
Hosmer	C	---	---	None	---	None	Jan	>6.0	>6.0	---
		---	---	---	---	None	Feb-Apr	1.5-2.5	1.7-3.0	Perched
		---	---	---	---	None	May-Dec	>6.0	>6.0	---
214C2:										
Hosmer	C	---	---	None	---	None	Jan	>6.0	>6.0	---
		---	---	---	---	None	Feb-Apr	1.5-2.5	1.7-3.0	Perched
		---	---	---	---	None	May-Dec	>6.0	>6.0	---
218A:										
Newberry	C	0.0-0.5	Brief	Frequent	---	None	Jan-May	0.0-1.0	>6.0	Apparent
		---	---	---	---	None	Jun-Dec	>6.0	>6.0	---
307B2:										
Iona	B	---	---	None	---	None	Jan	>6.0	>6.0	---
		---	---	---	---	None	Feb-Apr	2.0-3.5	>6.0	Apparent
		---	---	---	---	None	May-Dec	>6.0	>6.0	---
434A:										
Ridgway	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
434B:										
Ridgway	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
434C2:										
Ridgway	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
453A:										
Muren	B	---	---	None	---	None	Jan	>6.0	>6.0	---
		---	---	---	---	None	Feb-Apr	1.5-2.5	>6.0	Apparent
		---	---	---	---	None	May-Dec	>6.0	>6.0	---
615C2:										
Vanmeter	C	---	---	None	---	None	Jan	>6.0	>6.0	---
		---	---	---	---	None	Feb-Apr	1.4-3.2	1.5-3.3	Perched
		---	---	---	---	None	May-Dec	>6.0	>6.0	---
615F:										
Vanmeter	C	---	---	None	---	None	Jan	>6.0	>6.0	---
		---	---	---	---	None	Feb-Apr	1.4-3.2	1.5-3.3	Perched
		---	---	---	---	None	May-Dec	>6.0	>6.0	---
630D3:										
Navlys	B	---	---	None	---	None	Jan	>6.0	>6.0	---
		---	---	---	---	None	Feb-Apr	4.0-6.5	>6.0	Apparent
		---	---	---	---	None	May-Dec	>6.0	>6.0	---
908D2:										
Hickory	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
Kell	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---

Table 21.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency	Months	Water table: Upper limit	Water table: Lower limit	Water table: Kind
		Ft						Ft	Ft	
908F:										
Hickory	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
Kell	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
912A:										
Hoyleton	C	---	---	None	---	None	Jan-May	1.0-2.0	>6.0	Apparent
		---	---	---	---	None	Jun-Dec	>6.0	>6.0	---
Darmstadt	D	---	---	None	---	None	Jan-May	1.0-2.0	>6.0	Apparent
		---	---	---	---	None	Jun-Dec	>6.0	>6.0	---
946D2:										
Hickory	B	---	---	None	---	None	Jan-Dec	>6.0	>6.0	---
Atlas	D	---	---	None	---	None	Jan-May	1.0-2.0	>6.0	Apparent
		---	---	---	---	None	Jun-Dec	>6.0	>6.0	---
3070A:										
Beaucoup	B/D	0.0-0.5	Brief	Frequent	Brief	Frequent	Jan-May	0.0-1.0	4.6-6.7	Perched
		---	---				Jun-Dec	>6.0	>6.0	---
3071A:										
Darwin	D	0.0-0.5	Brief	Frequent	Brief	Frequent	Jan-May	0.0-1.0	>6.0	Apparent
		---	---				Jun-Dec	>6.0	>6.0	---
3284A:										
Tice	B	---	---	None	Brief	Frequent	Jan-May	1.0-2.0	>6.0	Apparent
		---	---				Jun-Dec	>6.0	>6.0	---
3288A:										
Petrolia	D	0.0-0.5	Brief	Frequent	Brief	Frequent	Jan-May	0.0-1.0	>6.0	Apparent
		---	---				Jun-Dec	>6.0	>6.0	---
3331A:										
Haymond	B	---	---	None		Frequent	Jan	>6.0	>6.0	---
		---	---	---			Feb-Apr	3.5-6.5	>6.0	Apparent
		---	---	---			May-Dec	>6.0	>6.0	---
3333A:										
Wakeland	C	---	---	None	Brief	Frequent	Jan-May	0.5-2.0	>6.0	Apparent
		---	---				Jun-Dec	>6.0	>6.0	---
3334A:										
Birds	C/D	0.0-0.5	Brief	Frequent	Brief	Frequent	Jan-May	0.0-1.0	>6.0	Apparent
		---	---				Jun-Dec	>6.0	>6.0	---
3424A:										
Shoals	C	---	---	None	Brief	Frequent	Jan-May	0.5-2.0	>6.0	Apparent
		---	---				Jun-Dec	>6.0	>6.0	---
3597A:										
Armiesburg	B	---	---	None	Brief	Frequent	Jan	>6.0	>6.0	---
		---	---	---			Feb-Apr	3.5-6.5	>6.0	Apparent
		---	---	---			May-Dec	>6.0	>6.0	---
3665A:										
Stonelick	B	---	---	None	Brief	Frequent	Jan-Jun	>6.0	>6.0	---
		---	---				Jul-Dec	>6.0	>6.0	---

Table 21.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency	Months	Water table: Upper limit	Water table: Lower limit	Water table: Kind
		Ft						Ft	Ft	
7155A:										
Stockland-------------	B	---	---	None	Brief	Rare	Jan-Jun	>6.0	>6.0	---
		---	---				Jul-Dec	>6.0	>6.0	---
7155B:										
Stockland-------------	B	---	---	None	Brief	Rare	Jan-Jun	>6.0	>6.0	---
		---	---				Jul-Dec	>6.0	>6.0	---
7155C:										
Stockland-------------	B	---	---	None	Very brief	Rare	Jan-Jun	>6.0	>6.0	---
		---	---				Jul-Dec	>6.0	>6.0	---
7286A:										
Carmi-----------------	B	---	---	None	Brief	Rare	Jan-Jun	>6.0	>6.0	---
		---	---				Jul-Dec	>6.0	>6.0	---
7286B:										
Carmi-----------------	B	---	---	None	Brief	Rare	Jan-Jun	>6.0	>6.0	---
		---	---				Jul-Dec	>6.0	>6.0	---
7803C:										
Orthents--------------	B	---	---	None	Brief	Rare	Jan-Jun	>6.0	>6.0	---
		---	---				Jul-Dec	>6.0	>6.0	---
7841A:										
Carmi-----------------	B	---	---	None	Brief	Rare	Jan-Jun	>6.0	>6.0	---
		---	---				Jul-Dec	>6.0	>6.0	---
Westland--------------	B/D	0.0-0.5	Brief	Frequent	Brief	Rare	Jan-May	0.0-1.0	>6.0	Apparent
		---	---				Jun-Dec	>6.0	>6.0	---
7865:										
Pits, gravel----------	A	---	---	---	Brief	Rare	Jan-Dec	>6.0	>6.0	---

Table 22.--Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Thickness	Restrictive layer: Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In				
2A:							
Cisne	---	---	---	---	High	High	High
3A:							
Hoyleton	---	---	---	---	Moderate	High	High
3B:							
Hoyleton	---	---	---	---	Moderate	High	High
6B2:							
Fishhook	---	---	---	---	High	High	Moderate
7C2:							
Atlas	---	---	---	---	Moderate	High	High
7C3:							
Atlas	---	---	---	---	High	High	High
7D2:							
Atlas	---	---	---	---	Moderate	High	High
8F:							
Hickory	---	---	---	---	Moderate	Moderate	High
12A:							
Wynoose	---	---	---	---	High	High	High
13A:							
Bluford	Fragipan	30-55	6-60	Noncemented	High	High	High
13B2:							
Bluford	Fragipan	30-55	6-60	Noncemented	High	High	High
14B:							
Ava	Fragipan	25-40	10-33	Noncemented	High	High	High
14C2:							
Ava	Fragipan	25-40	10-33	Noncemented	High	High	High
31A:							
Pierron	---	---	---	---	High	High	High
50A:							
Virden	---	---	---	---	High	High	Moderate
79B:							
Menfro	---	---	---	---	High	Moderate	High
79C2:							
Menfro	---	---	---	---	High	Moderate	High
79D2:							
Menfro	---	---	---	---	High	Moderate	High
79F:							
Menfro	---	---	---	---	High	Moderate	High

Table 22.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
112A:							
Cowden	---	---	---	---	High	High	High
119C2:							
Elco	---	---	---	---	High	High	Moderate
119D:							
Elco	---	---	---	---	High	High	Moderate
131A:							
Alvin	---	---	---	---	Moderate	Low	Moderate
131B:							
Alvin	---	---	---	---	Moderate	Low	Moderate
131C2:							
Alvin	---	---	---	---	Moderate	Low	Moderate
131D2:							
Alvin	---	---	---	---	Moderate	Low	Moderate
131F:							
Alvin	---	---	---	---	Moderate	Low	Moderate
138A:							
Shiloh	---	---	---	---	High	High	Low
142A:							
Patton	---	---	---	---	High	High	Low
164A:							
Stoy	Fragipan	25-45	8-30	Noncemented	High	High	High
164B:							
Stoy	Fragipan	25-45	8-30	Noncemented	High	High	High
178A:							
Ruark	---	---	---	---	High	High	High
184A:							
Roby	---	---	---	---	Moderate	Moderate	Moderate
214B:							
Hosmer	Fragipan	20-36	24-50	Noncemented	High	High	High
214C2:							
Hosmer	Fragipan	20-36	24-50	Noncemented	High	High	High
218A:							
Newberry	---	---	---	---	High	High	High
307B2:							
Iona	---	---	---	---	High	Moderate	High
434A:							
Ridgway	---	---	---	---	High	Moderate	Moderate
434B:							
Ridgway	---	---	---	---	High	Moderate	Moderate
434C2:							
Ridgway	---	---	---	---	High	Moderate	Moderate

Table 22.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Restrictive layer: Thickness	Restrictive layer: Hardness	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In				
453A:							
Muren	---	---	---	---	High	High	High
615C2:							
Vanmeter	Bedrock (paralithic)	20-40	---	Strongly cemented	Moderate	High	Low
615F:							
Vanmeter	Bedrock (paralithic)	20-40	---	Strongly cemented	Moderate	High	Low
630D3:							
Navlys	---	---	---	---	High	Moderate	Moderate
908D2:							
Hickory	---	---	---	---	Moderate	Moderate	High
Kell	Bedrock (paralithic)	20-40	---	Strongly cemented	Moderate	Moderate	High
908F:							
Hickory	---	---	---	---	Moderate	Moderate	High
Kell	Bedrock (paralithic)	20-40	---	Strongly cemented	Moderate	Moderate	High
912A:							
Hoyleton	---	---	---	---	Moderate	High	High
Darmstadt	Natric horizon	16-25	6-44	Noncemented	High	High	Low
946D2:							
Hickory	---	---	---	---	Moderate	Moderate	High
Atlas	---	---	---	---	Moderate	High	High
3070A:							
Beaucoup	Bedrock (paralithic)	60-80	---	Strongly cemented	High	High	Low
3071A:							
Darwin	---	---	---	---	High	High	Low
3284A:							
Tice	---	---	---	---	High	High	Low
3288A:							
Petrolia	---	---	---	---	High	High	Moderate
3331A:							
Haymond	---	---	---	---	High	Low	Moderate
3333A:							
Wakeland	---	---	---	---	High	High	Moderate
3334A:							
Birds	---	---	---	---	High	High	Low
3424A:							
Shoals	---	---	---	---	High	High	Low
3597A:							
Armiesburg	---	---	---	---	High	Moderate	Low

Table 22.--Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
3665A:							
Stonelick--------------	---	---	---	---	Moderate	Low	Low
7155A:							
Stockland--------------	---	---	---	---	Moderate	Low	Moderate
7155B:							
Stockland--------------	---	---	---	---	Moderate	Low	Moderate
7155C:							
Stockland--------------	---	---	---	---	Moderate	Low	Moderate
7286A:							
Carmi------------------	---	---	---	---	Moderate	Low	Moderate
7286B:							
Carmi------------------	---	---	---	---	Moderate	Low	Moderate
7803C:							
Orthents---------------	---	---	---	---	Moderate	Low	Low
7841A:							
Carmi------------------	---	---	---	---	Moderate	Low	Moderate
Westland---------------	---	---	---	---	High	High	Low
7865.							
Pits, gravel							

Table 23.--Engineering Index Test Data

(Absence of an entry indicates that data were not available. The abbreviation MAX means maximum dry density; OPT, optimum moisture; LL, liquid limit; PI, plasticity index; and NP, nonplastic)

Soil name	Sample number	Horizon	Depth	Moisture density		Percentage passing sieve*--				LL	PI	Classification	
				MAX	OPT	No. 4	No. 10	No. 40	No. 200			AASHTO	Unified
			In	lb/ft3	Pct					Pct			
Alvin---------	86IL033051-1	Ap	0-10	124.4	10.2	99.5	99.3	90.3	30.8	16.3	1.5	A-2-4	SM
	86IL033051-2	Bt1	10-20	119.2	12.6	100.0	100.0	92.2	34.3	24.1	11.2	A-2-6	SC
	86IL033051-6	C	50-60	110.5	13.1	100.0	100.0	93.5	7.5	---	NP	A-3(0)	SP-SM
Muren---------	86IL033042-1	Ap	0-8	105.1	18.0	100.0	99.8	96.0	91.5	30.3	4.0	A-4(4)	ML
	86IL033042-4	Bt3	23-30	103.8	20.0	100.0	99.8	98.7	95.9	38.9	16.7	A-6(17)	CL
	86IL033042-6	Cg	35-60	112.0	15.7	100.0	100.0	99.4	93.9	29.4	9.2	A-4(8)	CL
Ruark---------	86IL033048-1	Ap	0-8	120.0	10.5	100.0	99.3	92.6	46.5	18.0	2.5	A-4(0)	SM
	86IL033048-4	Btg2	21-34	111.6	16.0	100.0	100.0	95.8	58.0	32.8	19.3	A-6(8)	CL
	86IL033048-5	Cg	34-60	122.3	11.7	100.0	99.5	94.5	36.5	22.3	8.6	A-4(0)	SC
Westland------	86IL033046-1	Ap	0-10	120.9	11.3	96.8	94.3	84.4	56.9	20.6	4.5	A-4(0)	CL-ML
	86IL033046-4	Bt3	26-38	121.5	11.5	79.5	71.1	58.9	38.5	34.4	18.0	A-6(2)	CL
	86IL033046-6	2C1	44-52	120.8	11.0	94.5	88.5	74.1	14.1	---	NP	A-2-4	SP-SM

* Analysis according to AASHTO designation T88. Results by this procedure differ somewhat from those obtained by the soil survey procedure of the Natural Resources Conservation Service.

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