Soil Survey of Woodbury County, Iowa

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

Iowa Department of Agriculture and Land Stewardship

Iowa State University
Iowa Agriculture and Home Economics Experiment Station

Iowa State University
University Extension

In cooperation with Iowa Agriculture and Home Economics Experiment Station and Cooperative Extension Service, Iowa State University; Division of Soil Conservation, Iowa Department of Agriculture and Land Stewardship; and Woodbury County Board of Supervisors

NRCS Accessibility Statement

The Natural Resources Conservation Service (NRCS) is committed to making its information accessible to all of its customers and employees. If you are experiencing accessibility issues and need assistance, please contact our Helpdesk by phone at 1-800-457-3642 or by e-mail at ServiceDesk-FTC@ftc.usda.gov. For assistance with publications that include maps, graphs, or similar forms of information, you may also wish to contact our State or local office. You can locate the correct office and phone number at http://offices.sc.egov.usda.gov/locator/app.

How To Use This Soil Survey

General Soil Map

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

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

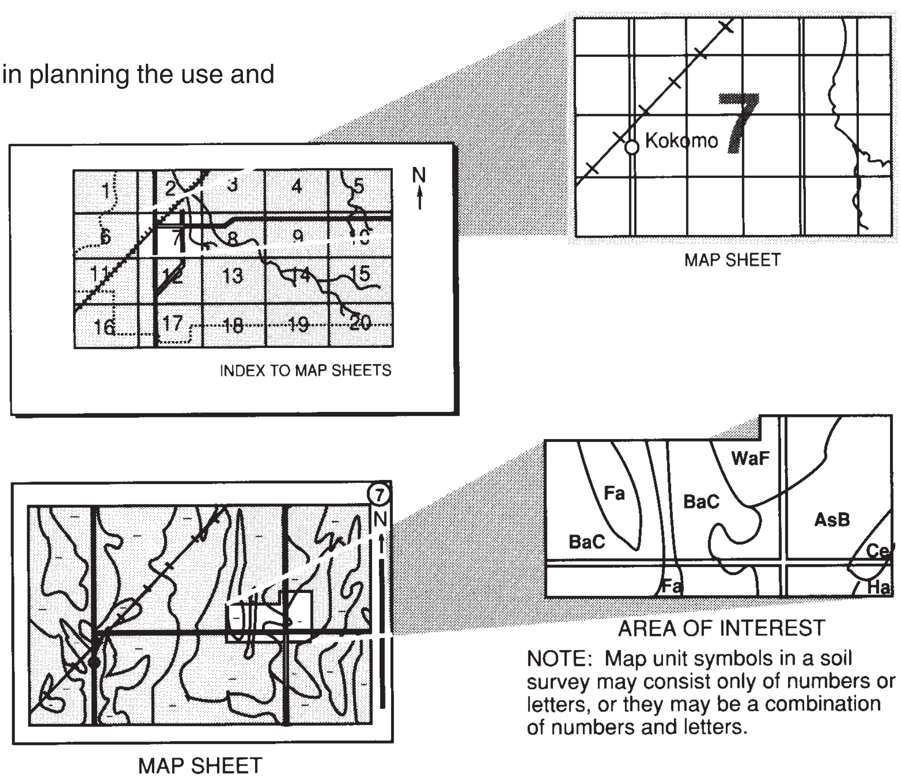
Detailed Soil Maps

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

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

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

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



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

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

Major fieldwork for this soil survey was completed in 2000. Soil names and descriptions were approved in 2003. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2000. This survey was made cooperatively by the Natural Resources Conservation Service; the Iowa Agriculture and Home Economics Experiment Station and the Cooperative Extension Service, Iowa State University; the Division of Soil Conservation, Iowa Department of Agriculture and Land Stewardship; and the Woodbury County Board of Supervisors. The survey is part of the technical assistance furnished to the Woodbury County Soil and Water Conservation District. Funds appropriated by Woodbury County were used to defray part of the cost of the survey.

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.

Cover: *Upper left*—An area of Hamburg silt loam, 40 to 75 percent slopes, in the Ida-Napier-Monona association. The soils in this association still support the native vegetation. This area is a unique geological feature of the loess bluffs along the Missouri River Valley. *Upper right*—An area of Galva silty clay loam, 2 to 5 percent slopes, in the Galva association in the northwestern part of the county. The soils in this association are used intensively for row crops. *Lower left*—Calcareous overwash in an area of the Luton-Tieville association. The recent deposition is from the adjacent uplands. *Lower right*—Terraces and contour farming in an area of the Monona-Ida-Judson association. Controlling erosion is important for maintaining productivity in areas of this association.

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

Contents

Issued 2006

Foreword

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

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

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

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

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described, 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.

Richard Van Klaveren
State Conservationist
Natural Resources Conservation Service

Soil Survey of
Woodbury County, Iowa

By Richard A. Lensch, Natural Resources Conservation Service

Fieldwork by Bennie Clark, Jr., Patrick T. Cowsert, James M. Gertsma, Richard A. Lensch, Gary W. Medlyn, Sam R. Steckly, and Allan W. Younk, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
the Iowa Agriculture and Home Economics Experiment Station and Cooperative Extension Service, Iowa State University, and the Division of Soil Conservation, Iowa Department of Agriculture and Land Stewardship

Woodbury County is in west-central Iowa (fig. 1). It has an area of 561,500 acres, or 877 square miles. It is bounded on the west by the Missouri River, on the east by Ida County, on the north by Plymouth County, and on the south by Monona County. Sioux City is the county seat.

This soil survey updates the survey of Woodbury County published in 1972 (Worster and others, 1972). It provides additional information and has larger maps, which show the soils in greater detail.

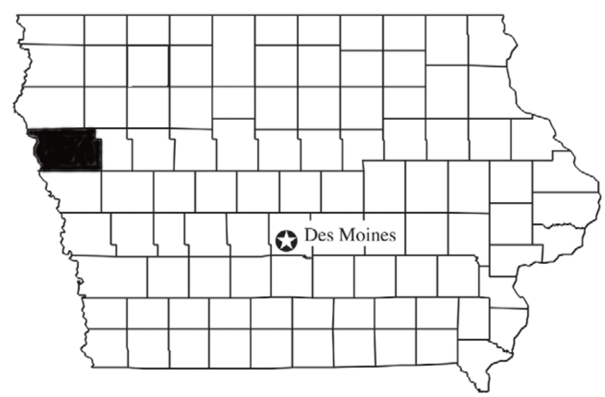


Figure 1.—Location of Woodbury County in Iowa.

General Nature of the Survey Area

This section provides general information about the survey area. It describes history; natural resources, transportation facilities, and recreation; physiography; and climate.

History

The first historical report of the survey area was made by the Lewis and Clark expedition in 1804, 48 years before the first European settlers arrived (Warner and Company, 1891). Lewis and Clark navigated up the Missouri River past the area that is now Woodbury County. One man, Sergeant Charles Floyd, died on the expedition and was buried at the top of the loess bluffs, overlooking the presentday site of Sioux City.

The Native people who frequented the area at the time were the Oto, Omaha, Missouri, and Sioux. The Missouri River was a major route of commerce and travel used by Native, trader, and settler alike.

Woodbury County was established in 1852 by an act of the Iowa General Assembly. Two years later, in the spring of 1854, a Harrison County court took steps toward the organization of Woodbury County. County boundaries were fixed in 1865.

By the time the county was established, the population had grown from 3 to 950 settlers in only a few years. Over the next 30 years, the population grew to 12,147. The population of the county reached a peak in 1940, when it was recorded as 18,238 (USDA, 1997).

The first non-Native settlers in Woodbury County are believed to be William Thompson and his brother Charles (Warner and Company, 1891). The Thompsons spent the winter of 1848 in the area. The first settler of Sioux City was Joseph Leonais in 1852. Leonais lived where 2nd Street is now located. In 1853, the town of Floyd's Bluff was established and was chosen as the county seat (Warner and Company, 1891).

Early enterprises in the county were trapping, hunting, and trading with the Indians. As settlement increased, agriculture quickly became the predominant occupation in the county.

The first railway came to Woodbury County in 1868. Within 20 years, eight railways were operating in the county, and the area became the railroad center of the Midwest. The railroad greatly improved transportation and access to markets, which led to the settlement and development of the county.

Natural Resources, Transportation Facilities, and Recreation

The most valuable natural resources in Woodbury County are the soils on agricultural lands. Bottom land in the Missouri River Valley is generally ideal for the production of row crops. The uplands in the county (in areas where the slope is not too severe) are excellent for row crops, forage, and pasture.

Sand and gravel occur in many parts of the county, typically in association with major streams and rivers.

Wildlife is abundant in Woodbury County. Deer, pheasant, turkey, quail, and small furbearers are common because of the good habitat and food supply. Fish are plentiful in the rivers, ditches, and impoundments throughout the county. There is sufficient ground water in the bottom-land areas along the Missouri River for irrigation, which is used in the seed production industry.

A good farm-to-market road system is supported throughout the county. Federal, State, and county highways provide good access to all parts of the county. Interstate 29 runs north and south through Salix, Sloan, and Sergeant Bluff and into Sioux City. State Highway 20 runs east and west from Sioux City through Lawton, Moville, and Correctionville. State Highway 31 runs north and south from Smithland, through Oto and Anthon, and on to Correctionville. State Highway 141 runs east and west from Sloan through Hornick and Smithland. Paved county roads and other gravel roads increase the accessibility of the communities in the county.

Railroad service is provided to Sloan, Salix, Sergeant Bluff, and Sioux City. Truck service is available to all communities. Bus service is available in Sioux City. Small aircraft and commercial flights are flown out of Sioux City. There are barge facilities on the Missouri River within the county.

Recreational opportunities in Woodbury County are many. State and county parks provide facilities for camping, fishing, boating, hunting, picnicking, hiking, and sightseeing. Many of the towns in the county have well furnished city parks.

Southwood County Park provides boating, fishing, swimming, camping, and picnic opportunities. Stone State Park and Little Sioux County Park offer camping, hiking, and picnic facilities.

The Loess Ridge Nature Center is devoted to Iowa's loess hills. It offers hiking and exhibits and a scenic view of the Missouri River flood plain from atop the loess bluffs.

The Loess Hills Scenic Byway is a system of scenic routes through the beautiful and unique loess hills of Woodbury County. The Loess Hills Scenic Byway links the counties adjacent to the Missouri River.

Physiography

The Missouri River Valley in Woodbury County consists of three distinct geomorphic regions. These are the Bar Area, Young Bottom Land, and Old Bottom Land (fig. 2).

The Bar Area is in the area adjacent to the Missouri River. It is nearly continuous from north to south in Woodbury County. It includes the area thought to have been occupied by the Missouri River within about the last 100 years. This area was frequently flooded with 8 to 10 feet of water before the construction of dams on the Missouri River.

The Army Corps of Engineers built dams upstream on the Missouri River in South Dakota and North Dakota to control downstream flooding. These dams were completed in 1955. Since that time, the only remaining frequently flooded areas are chutes, low swales, and low areas next to the Missouri River. Because of these dams, the Bar Area has not been flooded since 1952 and the frequency of flooding in the area is now estimated as occasional.

There are no farmsteads in the Bar Area, but a few cabins have been built in recent years for recreational purposes. Some of the soils in the Bar Area are the occasionally flooded Albaton and Percival soils and Morconick and Scroll soils.

The Young Bottom Land is in the area between the Bar Area and the Old Bottom Land. The Missouri River occupied channels in this area within the past 100 to 300 years. As the river meandered, meander loops and channels were abandoned. Some of the loops and

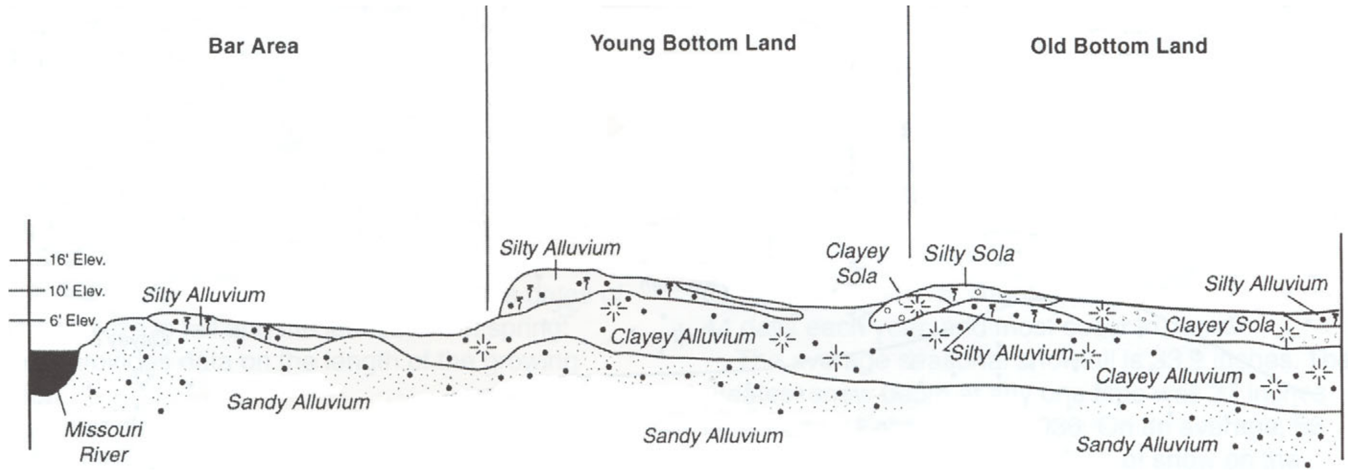


Figure 2.—An overview of the relationship between parent materials and position on the Missouri River flood plain.

channels were partly filled by deposition during later flooding. Most of the Young Bottom Land was covered with floodwater during the flood of 1952. Some areas of Blake, Haynie, and Modale soils were not flooded because they are in the highest elevations. The frequency of flooding in the Young Bottom Land area is now estimated as rare because of the dams on the Missouri River.

Many of the same soils are mapped in both the Bar Area and the Young Bottom Land region. These soils are identified on the soil maps with different map unit symbols because of the differences in flooding frequency in the two regions. Also, the soil map units in the Young Bottom Land region are generally somewhat less stratified than the corresponding soil map units in the Bar Area. Some of the soils in the Young Bottom Land region are Blend soils and the rarely flooded Albaton and Sarpy soils.

The Old Bottom Land is in the area between the rarely flooded Young Bottom Land and the loess hills in the uplands. The Old Bottom Land region has fewer surface features than either the Bar Area or the Young Bottom Land, mainly because it does not have meander scars and oxbows left behind from the meandering Missouri River.

The Missouri River channel has not occupied the Old Bottom Land region for a very long period of time; therefore, the soils are much older (in geologic time) than those in the Young Bottom Land region and in the Bar Area. Typical soils closest to the river in the Old Bottom Land region are the rarely flooded Blencoe and Lakeport soils.

Floodwaters have not crested this natural levee and allowed the Missouri River to reoccupy this area for hundreds to perhaps thousands of years. Therefore, the soils are more developed because they are much older than those in the Young Bottom Land region and in the Bar Area. If flooding occurs in the Old Bottom Land region, it is mainly from the flooded tributary rivers and streams.

Poorly drained, clayey soils are dominant in the part of the Old Bottom Land that is farther from the river channel. Examples are the rarely flooded Luton and Woodbury soils.

Much of the Old Bottom Land is at a lower elevation than the Young Bottom Land but has been flooded less frequently. At the conjunction of the Young Bottom Land and the Old Bottom Land, the Young Bottom Land is cut deeper into the Missouri River Valley and leaves behind an area that acts as a natural levee that is higher in elevation than the remaining areas of the Young Bottom Land or Old Bottom Land regions. Keg and Salix soils are examples of soils mapped on this natural levee.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Sioux City 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 22.1 degrees F and the average daily minimum temperature is 12.8 degrees. The lowest temperature on record, which occurred at Sioux City on January 19, 1970, was -26 degrees. In summer, the average temperature is 72.7 degrees and the average daily maximum temperature is 83.8 degrees. The highest temperature, which occurred at Sioux City on July 12, 1995, was 108 degrees.

Growing degree days are shown in table 1. They are equivalent to “heat units.” During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (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 25.99 inches. Of this total, 15.98 inches, or about 61 percent, usually falls in May through September. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 5.5 inches at Sioux City on July 17, 1972. Thunderstorms occur on about 44 days each year, and most occur between May and August.

The average seasonal snowfall is 30.8 inches. The greatest snow depth at any one time was 28 inches recorded on March 13, 1962. On average, 59 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 17.4 inches recorded on January 22, 1982.

The average relative humidity in midafternoon is about 45 percent in April and May and 70 percent in December and January. Humidity is higher at night, and the average at dawn is about 80 percent for much of the year, except in midsummer, when it is nearly 90 percent. The sun shines 70 percent of the time possible in summer and 55 percent in winter. The prevailing wind is from the northwest from November to April and from the south for the rest of the year. Average windspeed is highest, around 13 miles per hour, in April.

How This Survey Was Made

This soil survey was a pilot project designed to obtain statistically valid estimates for the composition of map units in Woodbury County, Iowa. The specific objective of this project was to provide better information about the distribution of soil characteristics for every map unit in the survey area (Abbot and others, 1999).

In order to obtain statistically valid estimates of the map units, a multiphase sample design was created. Global Positioning System and Geographical Information System technologies were used to develop a method for selecting random sample points throughout the county. This study was based on a realistic sample size and with the advantage of existing knowledge of the soils and their characteristics. This type of statistical sampling was applied to all parts of the county consisting of different soils and classifications (Abbot and others, 1999).

A major contribution of this approach is that data collected under this design can be further used for a broader suite of statistical analyses than in the more traditional soil update. For instance, the data can be used to obtain alternative estimates of representative values and ranges that are statistically defensible. In addition, other measures, such as means, percentiles, and parametric distributions, can be generated along with estimated standard errors. Furthermore, the data resulting from this approach can support geographically linked modeling efforts (Abbot and others, 1999).

This survey was made to provide updated information about the soils and miscellaneous areas in the survey area, which is in Major Land Resource Area 107. Major land resource areas (MLRAs) are geographically associated land resource units that share a common land use, elevation, topography, climate, water, soils, and vegetation (USDA, 1981). Woodbury County is a subset of MLRA 107. Map unit design is based on documentation of the occurrence of the soils throughout the MLRA.

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

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

Individual soils on the landscape commonly merge into one another as their characteristics gradually change. To construct an accurate 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 observed from statistical points selected throughout the county, from other borings, and from soil characterization pits (Abbot and others, 1999). The maximum depth of observation was about 80 inches (6.7 feet). Soil scientists noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, soil 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. Interpretations are modified as necessary 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 water table within certain depths in most years, but they cannot predict that the water table will always be at a specific level in the soil on a specific date.

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

The descriptions, names, and delineations of the soils in this survey area may not fully agree with those of the soils in adjacent survey areas. Differences are the result of an improved knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

General Soil Map Units

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

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

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one association differ from place to place in slope, depth, drainage, and other characteristics that affect management.

1. Albaton-Haynie Association

Extent of the association in the survey area: 10 percent

Component Descriptions

Albaton

Extent: 33 to 43 percent of the association
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Silty alluvium
Frequency of flooding: Rare
Seasonal high water table (in undrained areas): At the surface to 1 foot below the surface
Available water capacity to a depth of 60 inches: 7.2 inches
Content of organic matter in the upper 10 inches: 1.9 percent

Haynie

Extent: 12 to 22 percent of the association
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Calcareous alluvium
Frequency of flooding: Rare
Depth to seasonal high water table (in undrained areas): 4 to 6 feet
Available water capacity to a depth of 60 inches: 12.6 inches
Content of organic matter in the upper 10 inches: 1.6 percent

Additional Components

Blake soils: 8 to 20 percent of the association
Modale soils: 8 to 20 percent of the association
Onawa soils: 5 to 15 percent of the association

Native Plants and Major Uses

Native plant cover: Water-tolerant grasses
Major uses: Cropland

2. Galva Association (fig. 3)

Extent of the association in the survey area: 9 percent

Component Descriptions

Galva

Extent: 45 to 80 percent of the association
Geomorphic setting: Stream terraces and loess hills
Position on the landform: Shoulders, backslopes, and summits
Geomorphic component: Interfluves, head slopes, nose slopes, side slopes, treads, risers
Slope range: 2 to 9 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)

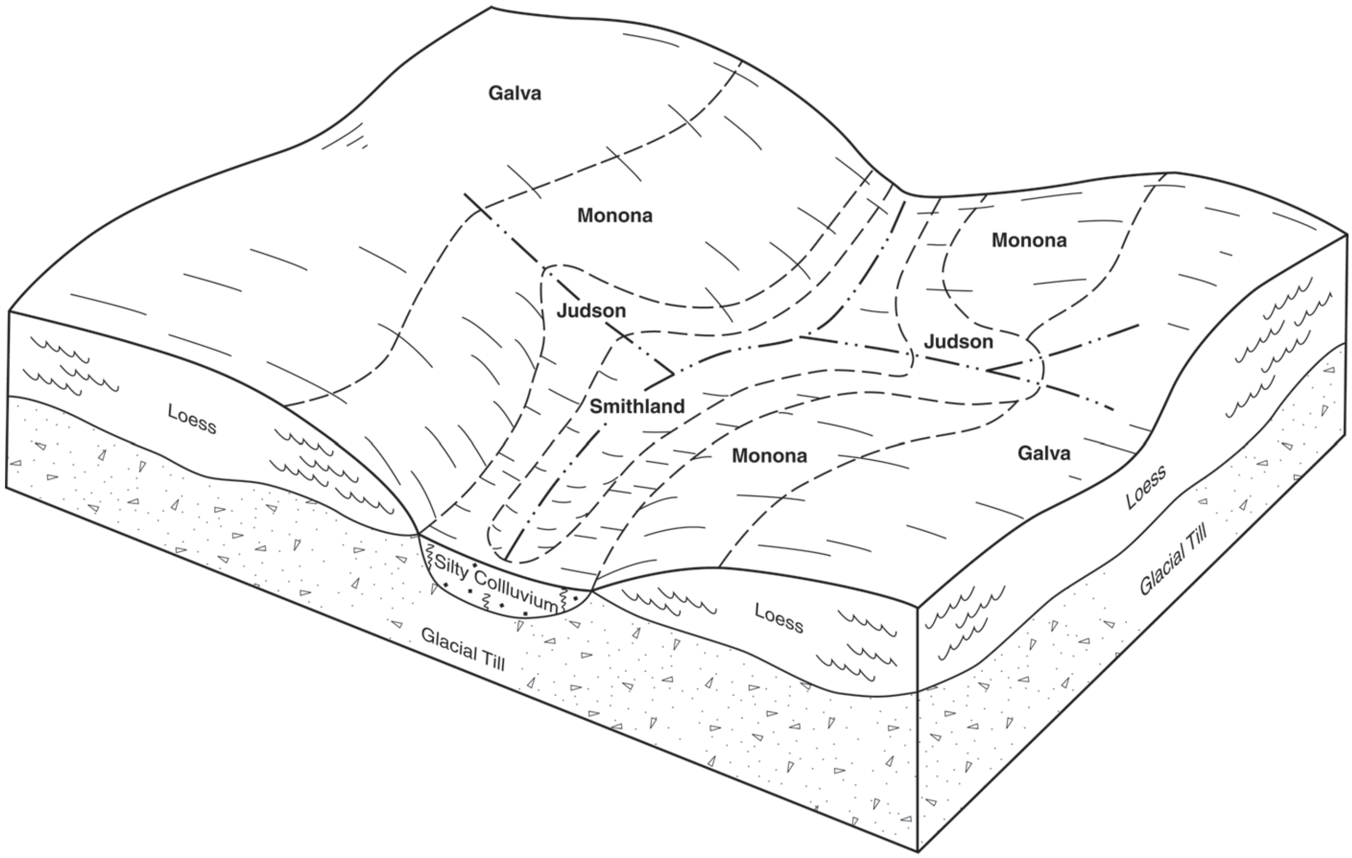


Figure 3.—Typical pattern of soils and underlying material in the Galva association.

Drainage class: Well drained
Parent material: Loess
Flooding: None
Depth to seasonal high water table (in undrained areas): More than 6 feet
Available water capacity to a depth of 60 inches: 12 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Additional Components

Judson soils: 10 to 15 percent of the association
Monona soils: 5 to 15 percent of the association
Ida soils that are severely eroded: 5 to 10 percent of the association
Danbury soils: 0 to 5 percent of the association
Smithland soils: 0 to 5 percent of the association
Burchard soils: 0 to 5 percent of the association

Native Plants and Major Uses

Native plant cover: Prairie grasses
Major uses: Cropland

3. Ida-Napier-Monona Association (fig. 4)

Extent of the association in the survey area: 25 percent

Component Descriptions

Ida, severely eroded

Extent: 48 to 58 percent of the association
Geomorphic setting: Loess hills
Position on the landform: Summits, shoulders, and backslopes
Geomorphic component: Interfluves, head slopes, nose slopes, side slopes
Slope range: 2 to 40 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous loess
Flooding: None
Depth to seasonal high water table (in undrained areas): More than 6 feet

Available water capacity to a depth of 60 inches: 12.6 inches
Content of organic matter in the upper 10 inches: 1 percent

Napier

Extent: 17 to 27 percent of the association
Geomorphic setting: Alluvial fans and drainageways
Position on the landform: Footslopes and toeslopes
Geomorphic component: Base slopes
Slope range: 2 to 20 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Local alluvium
Flooding: None
Depth to seasonal high water table (in undrained areas): More than 6 feet
Available water capacity to a depth of 60 inches: 13.1 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Monona, moderately eroded

Extent: 14 to 24 percent of the association
Geomorphic setting: Loess hills and stream terraces
Position on the landform: Summits, backslopes, and shoulders
Geomorphic component: Interfluves, head slopes, nose slopes, side slopes, treads, risers
Slope range: 0 to 30 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Depth to seasonal high water table (in undrained areas): More than 6 feet
Available water capacity to a depth of 60 inches: 12.7 inches

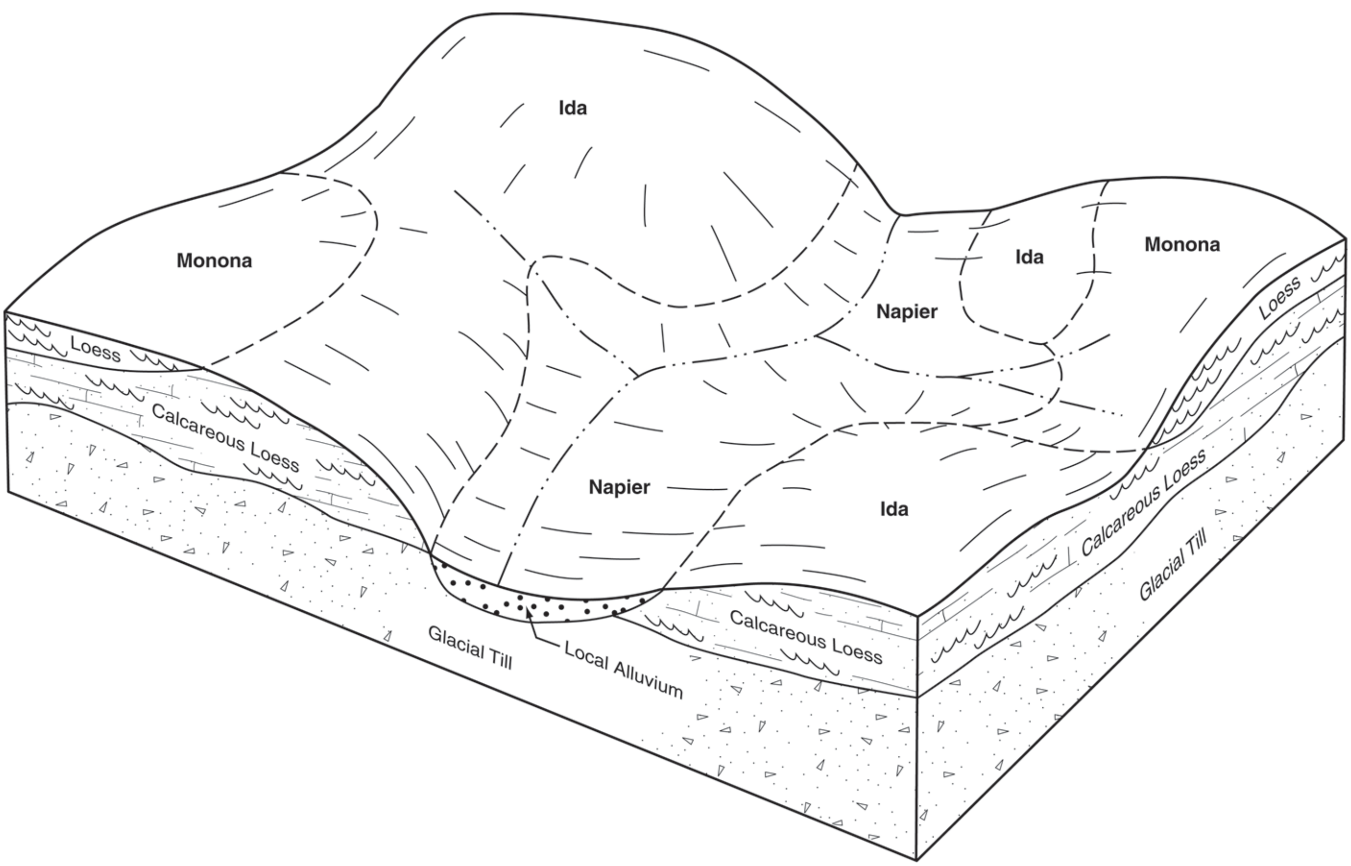


Figure 4.—Typical pattern of soils and underlying material in the Ida-Napier-Monona association.

Content of organic matter in the upper 10 inches: 2.1 percent

Additional Components

Rawles soils: 0 to 10 percent of the association

Native Plants and Major Uses

Native plant cover: Prairie grasses
Major uses: Cropland

4. Monona-Ida-Judson Association (fig. 5)

Extent of the association in the survey area: 28 percent

Component Descriptions

Monona, moderately eroded

Extent: 37 to 47 percent of the association
Geomorphic setting: Stream terraces and loess hills
Position on the landform: Backslopes, shoulders, and summits
Geomorphic component: Interfluves, head slopes, nose slopes, side slopes, treads, risers
Slope range: 0 to 20 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Depth to seasonal high water table (in undrained areas): More than 6 feet
Available water capacity to a depth of 60 inches: 12.7 inches
Content of organic matter in the upper 10 inches: 2.2 percent

Ida, severely eroded

Extent: 27 to 37 percent of the association
Geomorphic setting: Loess hills
Position on the landform: Shoulders, backslopes, and summits
Geomorphic component: Side slopes, interfluves, head slopes, nose slopes

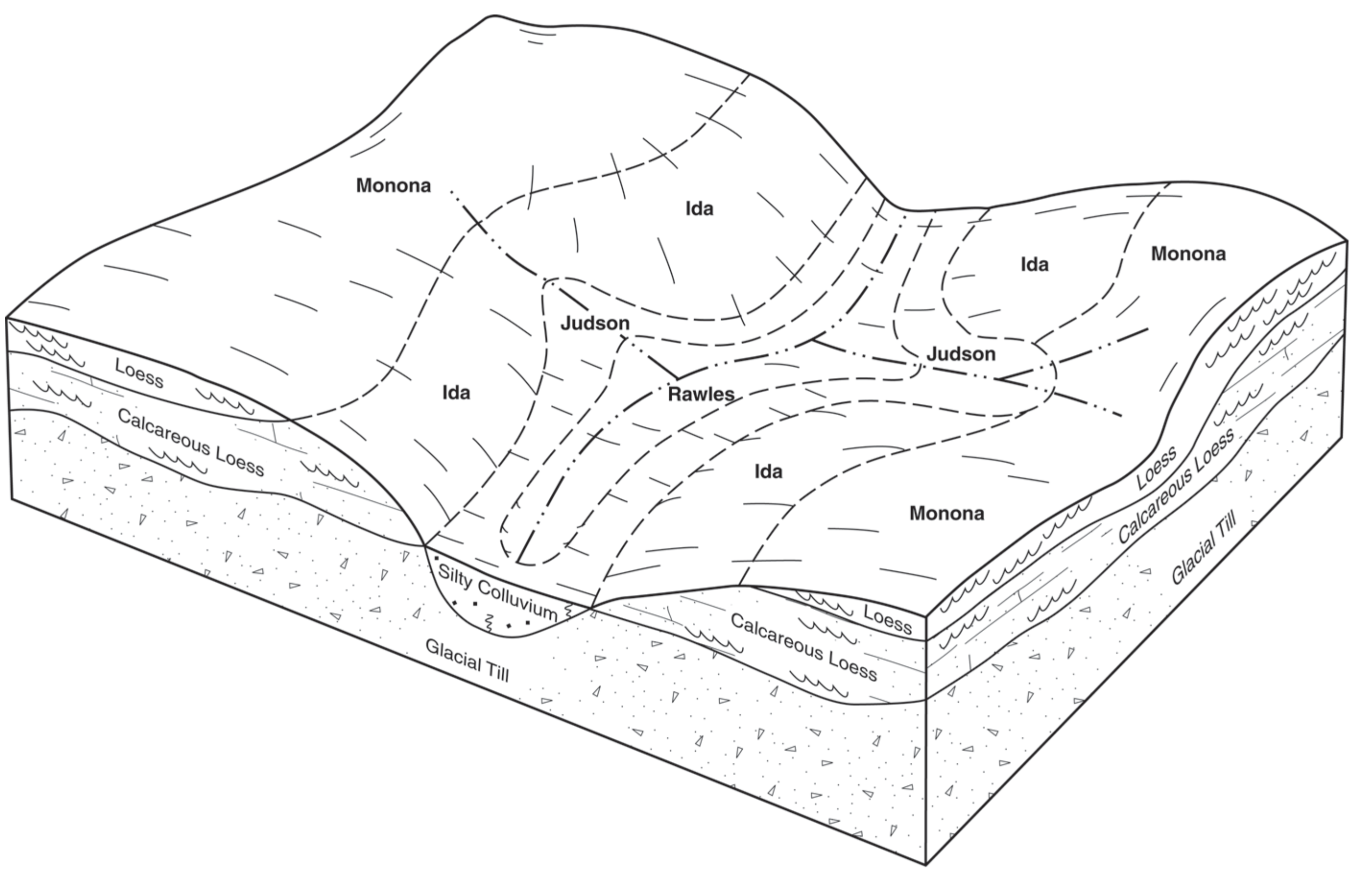


Figure 5.—Typical pattern of soils and underlying material in the Monona-Ida-Judson association.

Slope range: 2 to 40 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous loess
Flooding: None
Depth to seasonal high water table (in undrained areas): More than 6 feet
Available water capacity to a depth of 60 inches: 12.6 inches
Content of organic matter in the upper 10 inches: 1 percent

Judson

Extent: 15 to 25 percent of the association
Geomorphic setting: Drainageways
Slope range: 2 to 9 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Silty colluvium
Flooding: None
Depth to seasonal high water table (in undrained areas): More than 6 feet
Available water capacity to a depth of 60 inches: 13.2 inches
Content of organic matter in the upper 10 inches: 3.5 percent

Additional Components

Rawles soils: 0 to 10 percent of the association

Native Plants and Major Uses

Native plant cover: Prairie grasses
Major uses: Cropland, hayland, pasture

5. Luton-Tieville Association (fig. 6)

Extent of the association in the survey area: 16 percent

Component Descriptions

Luton

Extent: 30 to 60 percent of the association
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Clayey alluvium
Frequency of flooding: Rare
Seasonal high water table (in undrained areas): At the surface to 1 foot below the surface
Available water capacity to a depth of 60 inches: 7.6 inches
Content of organic matter in the upper 10 inches: 4 percent

Tieville

Extent: 25 to 30 percent of the association
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Calcareous clayey alluvium
Frequency of flooding: Rare
Seasonal high water table (in undrained areas): At the surface to 1 foot below the surface
Available water capacity to a depth of 60 inches: 6.6 inches
Content of organic matter in the upper 10 inches: 3.1 percent

Additional Components

Woodbury soils: 10 to 15 percent of the association
Blencoe soils: 5 to 10 percent of the association
Lakeport soils: 0 to 5 percent of the association
Moville soils: 0 to 5 percent of the association
Salix soils: 0 to 5 percent of the association

Native Plants and Major Uses

Native plant cover: Water-tolerant grasses
Major uses: Cropland

6. Rawles-Kennebec Association

Extent of the association in the survey area: 10 percent

Component Descriptions

Rawles

Extent: 39 to 49 percent of the association
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Alluvium

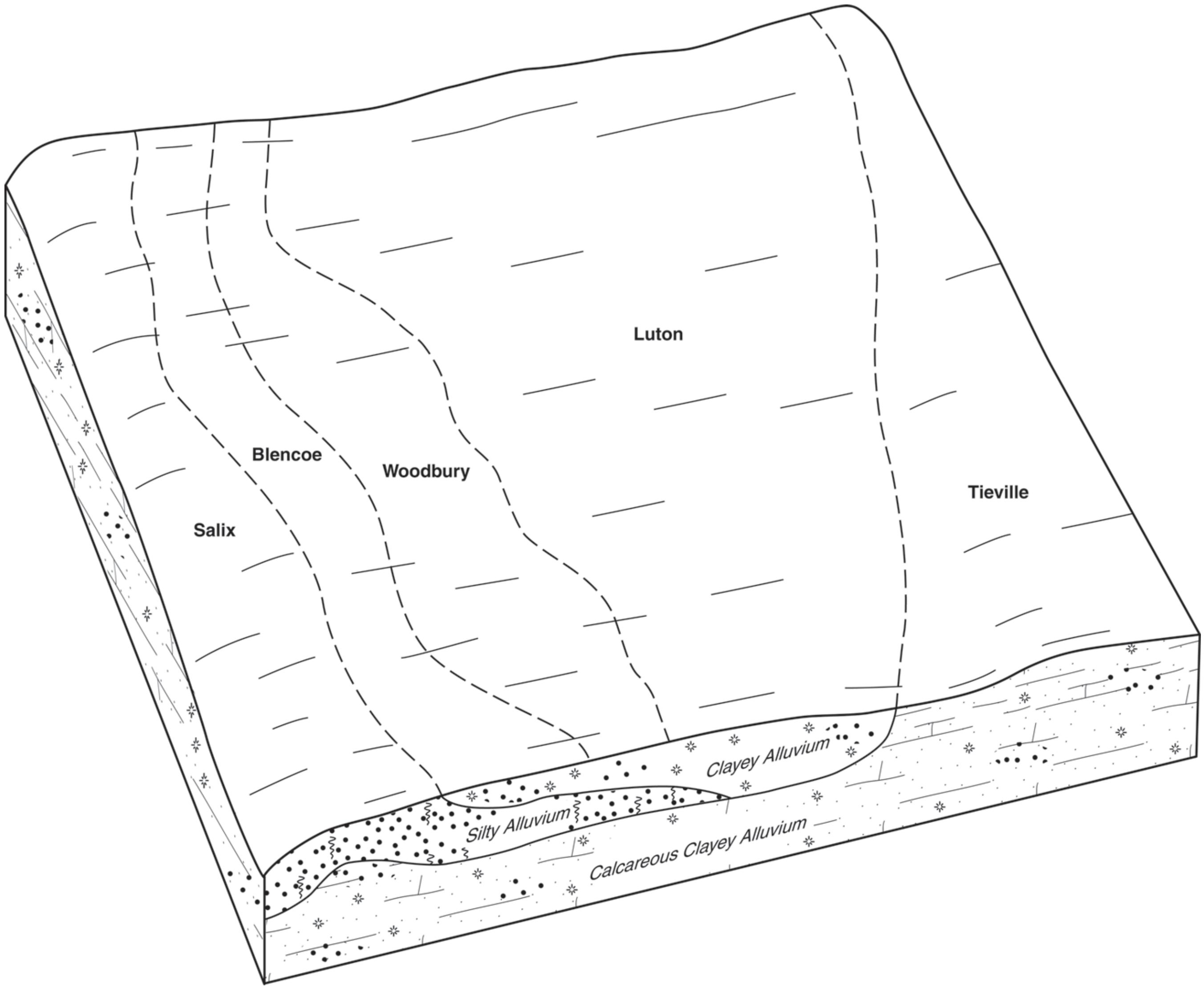


Figure 6.—Typical pattern of soils and underlying material in the Luton-Tieville association.

Frequency of flooding: Occasional
Depth to seasonal high water table (in undrained areas): 2 to 4 feet
Available water capacity to a depth of 60 inches: 12.5 inches
Content of organic matter in the upper 10 inches: 2 percent

Kennebec

Extent: 19 to 29 percent of the association
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Silty alluvium
Frequency of flooding: Rare
Depth to seasonal high water table (in undrained areas): 4 to 6 feet
Available water capacity to a depth of 60 inches: 9.1 inches
Content of organic matter in the upper 10 inches: 5.5 percent

Additional Components

Monona soils: 11 to 21 percent of the association
Napier soils: 2 to 12 percent of the association
Anthon soils: 0 to 10 percent of the association

Fairhaven soils that are 32 to 40 inches to sand and gravel: 0 to 9 percent of the association

Native Plants and Major Uses

Native plant cover: Prairie grasses
Major uses: Cropland

7. Sarpy-Percival Association

Extent of the association in the survey area: 2 percent

Component Descriptions

Sarpy

Extent: 51 to 61 percent of the association
Geomorphic setting: Flood plains
Slope range: 0 to 9 percent
Texture of the surface layer: Loamy fine sand
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Excessively drained
Parent material: Sandy alluvium
Frequency of flooding: Occasional
Depth to seasonal high water table (in undrained areas): More than 6 feet
Available water capacity to a depth of 60 inches: 4.2 inches
Content of organic matter in the upper 10 inches: 0.6 percent

Percival

Extent: 21 to 31 percent of the association
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Clayey alluvium over sandy alluvium
Frequency of flooding: Occasional
Depth to seasonal high water table (in undrained areas): 1.0 to 3.5 feet
Available water capacity to a depth of 60 inches: 3.7 inches
Content of organic matter in the upper 10 inches: 1.8 percent

Additional Components

Albaton soils: 8 to 18 percent of the association
Modale soils: 0 to 10 percent of the association

Native Plants and Major Uses

Native plant cover: Trees and prairie grasses
Major uses: Cropland and pasture

Detailed Soil Map Units

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

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

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

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

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, Monona silt loam, 9 to 14 percent slopes, severely eroded, is a phase of the Monona 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. Napier-Castana silt loams, 9 to 20 percent slopes, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Map unit 5010 (Pits, sand and gravel) is an example.

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

1B3—Ida silt loam, 2 to 5 percent slopes, severely eroded

Component Description

Ida, severely eroded, and similar soils

Extent: 100 percent of the map unit
Geomorphic setting: Loess hills
Position on the landform: Summits and shoulders
Geomorphic component: Interfluves
Slope range: 2 to 5 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.6 inches
Content of organic matter in the upper 10 inches: 1.0 percent

1C—Ida silt loam, 5 to 9 percent slopes

Component Description

Ida and similar soils

Extent: 90 to 100 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Summits and shoulders
Geomorphic component: Head slopes, nose slopes, side slopes, interfluves
Slope range: 5 to 9 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.6 inches
Content of organic matter in the upper 10 inches: 2.0 percent

Minor Dissimilar Components

Monona soils

Extent: 0 to 10 percent of the mapped areas

1C3—Ida silt loam, 5 to 9 percent slopes, severely eroded

Component Description

Ida, severely eroded, and similar soils

Extent: 70 to 90 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Shoulders and summits
Geomorphic component: Interfluves, head slopes, nose slopes, side slopes
Slope range: 5 to 9 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.6 inches
Content of organic matter in the upper 10 inches: 1.0 percent

Minor Dissimilar Components

Monona silt loam, moderately eroded

Extent: 0 to 20 percent of the mapped areas

Monona silty clay loam, moderately eroded

Extent: 0 to 20 percent of the mapped areas

1D3—Ida silt loam, 9 to 14 percent slopes, severely eroded

Component Description

Ida, severely eroded, and similar soils

Extent: 60 to 90 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Backslopes and shoulders
Geomorphic component: Side slopes, nose slopes, head slopes
Slope range: 9 to 14 percent
Texture of the surface layer: Silt loam

Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.6 inches
Content of organic matter in the upper 10 inches: 1.0 percent

Minor Dissimilar Components

Monona silt loam, moderately eroded

Extent: 5 to 20 percent of the mapped areas

Monona silty clay loam, moderately eroded

Extent: 5 to 20 percent of the mapped areas

1E3—Ida silt loam, 14 to 20 percent slopes, severely eroded

Component Description

Ida, severely eroded, and similar soils

Extent: 55 to 90 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Backslopes
Geomorphic component: Head slopes, nose slopes, side slopes
Slope range: 14 to 20 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.6 inches
Content of organic matter in the upper 10 inches: 1.0 percent

Minor Dissimilar Components

Monona silt loam, severely eroded

Extent: 5 to 15 percent of the mapped areas

Monona silty clay loam, moderately eroded

Extent: 0 to 15 percent of the mapped areas

Monona silt loam, slightly eroded

Extent: 5 to 15 percent of the mapped areas

1F—Ida silt loam, 20 to 30 percent slopes

Component Description

Ida and similar soils

Extent: 80 to 95 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Backslopes
Geomorphic component: Side slopes, head slopes, nose slopes
Slope range: 20 to 30 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.6 inches
Content of organic matter in the upper 10 inches: 2.0 percent

Minor Dissimilar Components

Liston soils

Extent: 0 to 10 percent of the mapped areas

Monona silt loam

Extent: 0 to 10 percent of the mapped areas

1F3—Ida silt loam, 20 to 30 percent slopes, severely eroded

Component Description

Ida, severely eroded, and similar soils

Extent: 55 to 90 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Backslopes
Geomorphic component: Side slopes, nose slopes, head slopes
Slope range: 20 to 30 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.6 inches

Content of organic matter in the upper 10 inches: 1.0 percent

Minor Dissimilar Components

Monona silt loam, moderately eroded

Extent: 5 to 15 percent of the mapped areas

Burchard clay loam, moderately eroded

Extent: 0 to 10 percent of the mapped areas

Monona silty clay loam, moderately eroded

Extent: 0 to 10 percent of the mapped areas

Monona silt loam, slightly eroded

Extent: 0 to 10 percent of the mapped areas

1G—Ida silt loam, 30 to 40 percent slopes

Component Description

Ida and similar soils

Extent: 40 to 80 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Backslopes
Geomorphic component: Head slopes, nose slopes, side slopes
Slope range: 30 to 40 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.6 inches
Content of organic matter in the upper 10 inches: 2.0 percent

Minor Dissimilar Components

Monona soils

Extent: 10 to 50 percent of the mapped areas

Ida soils that are severely eroded

Extent: 0 to 10 percent of the mapped areas

2G—Hamburg silt loam, 40 to 75 percent slopes

Component Description

Hamburg and similar soils

Extent: 90 to 100 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Backslopes
Geomorphic component: Side slopes, head slopes, nose slopes
Slope range: 40 to 75 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat excessively drained
Parent material: Calcareous loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.0 inches
Content of organic matter in the upper 10 inches: 0.9 percent

Minor Dissimilar Components

Liston soils

Extent: 0 to 10 percent of the mapped areas

3D—Castana silt loam, 9 to 14 percent slopes

Component Description

Castana and similar soils

Extent: 100 percent of the map unit
Geomorphic setting: Loess hills
Position on the landform: Footslopes
Slope range: 9 to 14 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Silty local alluvium and colluvium
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.7 inches
Content of organic matter in the upper 10 inches: 2.5 percent

3E—Castana silt loam, 14 to 20 percent slopes

Component Description

Castana and similar soils

Extent: 60 to 90 percent of the mapped areas
Geomorphic setting: Drainageways
Position on the landform: Footslopes
Slope range: 14 to 20 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Silty local alluvium and colluvium
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.7 inches
Content of organic matter in the upper 10 inches: 2.5 percent

Minor Dissimilar Components

Dow soils that are severely eroded

Extent: 5 to 15 percent of the mapped areas

Napier soils

Extent: 5 to 15 percent of the mapped areas

Monona soils

Extent: 0 to 10 percent of the mapped areas

8B—Judson silty clay loam, 2 to 5 percent slopes

Component Description

Judson and similar soils

Extent: 55 to 95 percent of the mapped areas
Geomorphic setting: Drainageways
Position on the landform: Footslopes
Slope range: 2 to 5 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Silty alluvium and colluvium
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 13.2 inches
Content of organic matter in the upper 10 inches: 3.5 percent

Minor Dissimilar Components

Rawles soils

Extent: 5 to 15 percent of the mapped areas

Deloit soils

Extent: 0 to 10 percent of the mapped areas

Wilsey soils

Extent: 0 to 10 percent of the mapped areas

Kennebec soils

Extent: 0 to 5 percent of the mapped areas

Smithland soils

Extent: 0 to 5 percent of the mapped areas

8C—Judson silty clay loam, 5 to 9 percent slopes

Component Description

Judson and similar soils

Extent: 90 to 100 percent of the mapped areas
Geomorphic setting: Drainageways
Position on the landform: Footslopes
Slope range: 5 to 9 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Silty alluvium and colluvium
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 13.2 inches
Content of organic matter in the upper 10 inches: 3.5 percent

Minor Dissimilar Components

Liston soils

Extent: 0 to 10 percent of the mapped areas

10B—Monona silt loam, 2 to 5 percent slopes

Component Description

Monona and similar soils

Extent: 100 percent of the map unit
Geomorphic setting: Loess hills
Position on the landform: Shoulders and summits
Geomorphic component: Interfluves

Slope range: 2 to 5 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.9 inches
Content of organic matter in the upper 10 inches: 3.4 percent

10B2—Monona silt loam, 2 to 5 percent slopes, moderately eroded

Component Description

Monona, moderately eroded, and similar soils

Extent: 70 to 90 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Shoulders and summits
Geomorphic component: Interfluves
Slope range: 2 to 5 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.7 inches
Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Monona silt loam, slightly eroded

Extent: 10 to 20 percent of the mapped areas

Ida soils

Extent: 0 to 10 percent of the mapped areas

10C2—Monona silt loam, 5 to 9 percent slopes, moderately eroded

Component Description

Monona, moderately eroded, and similar soils

Extent: 65 to 85 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Summits, backslopes, and shoulders
Geomorphic component: Side slopes, nose slopes, head slopes, interfluves
Slope range: 5 to 9 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.7 inches
Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Monona silt loam, slightly eroded

Extent: 15 to 25 percent of the mapped areas

Ida silt loam, severely eroded

Extent: 0 to 10 percent of the mapped areas

10D2—Monona silt loam, 9 to 14 percent slopes, moderately eroded

Component Description

Monona, moderately eroded, and similar soils

Extent: 40 to 80 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Backslopes and shoulders
Geomorphic component: Nose slopes, head slopes, side slopes
Slope range: 9 to 14 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.7 inches
Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Ida silt loam, severely eroded

Extent: 5 to 15 percent of the mapped areas

Monona silt loam, severely eroded

Extent: 15 to 25 percent of the mapped areas

Monona silt loam, slightly eroded

Extent: 0 to 10 percent of the mapped areas

Napier silt loam

Extent: 0 to 10 percent of the mapped areas

10D3—Monona silt loam, 9 to 14 percent slopes, severely eroded

Component Description

Monona, severely eroded, and similar soils

Extent: 90 to 100 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Backslopes and shoulders
Geomorphic component: Head slopes, nose slopes, side slopes
Slope range: 9 to 14 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.7 inches
Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Ida soils that are severely eroded

Extent: 0 to 10 percent of the mapped areas

10E—Monona silt loam, 14 to 20 percent slopes

Component Description

Monona and similar soils

Extent: 90 to 100 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Backslopes
Geomorphic component: Side slopes, nose slopes, head slopes
Slope range: 14 to 20 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.9 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Minor Dissimilar Components

Ida soils

Extent: 0 to 10 percent of the mapped areas

10E3—Monona silt loam, 14 to 20 percent slopes, severely eroded

Component Description

Monona, severely eroded, and similar soils

Extent: 90 to 100 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Backslopes
Geomorphic component: Nose slopes, side slopes, head slopes
Slope range: 14 to 20 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.7 inches
Content of organic matter in the upper 10 inches: 1.2 percent

Minor Dissimilar Components

Ida soils that are severely eroded

Extent: 0 to 10 percent of the mapped areas

10F—Monona silt loam, 20 to 30 percent slopes

Component Description

Monona and similar soils

Extent: 65 to 95 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Backslopes
Geomorphic component: Side slopes, nose slopes, head slopes
Slope range: 20 to 30 percent

Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.9 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Minor Dissimilar Components

Monona soils that are severely eroded

Extent: 5 to 15 percent of the mapped areas

Ida soils that are severely eroded

Extent: 0 to 10 percent of the mapped areas

Napier soils

Extent: 0 to 10 percent of the mapped areas

12B—Napier silt loam, 2 to 5 percent slopes

Component Description

Napier and similar soils

Extent: 70 to 100 percent of the mapped areas
Geomorphic setting: Drainageways
Position on the landform: Toeslopes and footslopes
Slope range: 2 to 5 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Local alluvium
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 13.1 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Minor Dissimilar Components

Monona soils

Extent: 0 to 10 percent of the mapped areas

Rawles soils

Extent: 0 to 10 percent of the mapped areas

Smithland soils

Extent: 0 to 10 percent of the mapped areas

12C—Napier silt loam, 5 to 9 percent slopes

Component Description

Napier and similar soils

Extent: 80 to 100 percent of the mapped areas
Geomorphic setting: Drainageways
Position on the landform: Toeslopes and footslopes
Slope range: 5 to 9 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Local alluvium
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 13.1 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Minor Dissimilar Components

Monona soils

Extent: 0 to 5 percent of the mapped areas

Rawles soils

Extent: 0 to 5 percent of the mapped areas

Monona soils that are moderately eroded

Extent: 0 to 2 percent of the mapped areas

17B—Napier-Kennebec-Colo complex, 0 to 5 percent slopes

Component Description

Napier and similar soils

Extent: 25 to 60 percent of the mapped areas
Geomorphic setting: Drainageways
Position on the landform: Footslopes and toeslopes
Slope range: 2 to 5 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Local alluvium
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 13.1 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Kennebec and similar soils

Extent: 20 to 40 percent of the mapped areas
Geomorphic setting: Drainageways
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Silty alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Frequent (February, March, April, May, June, July, August, September, October, November)
Depth to wet zone: 5.0 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 13.4 inches
Content of organic matter in the upper 10 inches: 5.5 percent

Colo and similar soils

Extent: 20 to 40 percent of the mapped areas
Geomorphic setting: Drainageways
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Frequent (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 0.5 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 12.4 inches
Content of organic matter in the upper 10 inches: 6.0 percent

26—Kennebec silty clay loam, 0 to 2 percent slopes, occasionally flooded

Component Description

Kennebec and similar soils

Extent: 90 to 100 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Silty alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Depth to wet zone: 5.0 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 9.1 inches
Content of organic matter in the upper 10 inches: 5.5 percent

Minor Dissimilar Components

Kennebec soils that have overwash

Extent: 0 to 10 percent of the mapped areas

35F—Liston-Burchard complex, 18 to 25 percent slopes

Component Description

Liston and similar soils

Extent: 30 to 40 percent of the mapped areas
Geomorphic setting: Hills
Position on the landform: Shoulders and backslopes
Geomorphic component: Side slopes, head slopes
Slope range: 18 to 25 percent
Texture of the surface layer: Clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous glacial till
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 9.9 inches
Content of organic matter in the upper 10 inches: 1.8 percent

Burchard and similar soils

Extent: 20 to 30 percent of the mapped areas
Geomorphic setting: Hills
Position on the landform: Backslopes
Geomorphic component: Side slopes, nose slopes, head slopes
Slope range: 18 to 25 percent

Texture of the surface layer: Clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous glacial till
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 9.6 inches
Content of organic matter in the upper 10 inches: 3.0 percent

Minor Dissimilar Components

Burchard soils that are moderately eroded

Extent: 15 to 25 percent of the mapped areas

Deloit soils

Extent: 5 to 15 percent of the mapped areas

Monona soils that are moderately eroded

Extent: 5 to 15 percent of the mapped areas

35G—Liston-Burchard complex, 25 to 40 percent slopes

Component Description

Liston and similar soils

Extent: 30 to 40 percent of the mapped areas
Geomorphic setting: Hills
Position on the landform: Backslopes and shoulders
Geomorphic component: Side slopes, nose slopes, head slopes
Slope range: 25 to 40 percent
Texture of the surface layer: Clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous glacial till
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 9.9 inches
Content of organic matter in the upper 10 inches: 1.8 percent

Burchard and similar soils

Extent: 20 to 30 percent of the mapped areas
Geomorphic setting: Hills
Position on the landform: Backslopes
Geomorphic component: Side slopes, nose slopes, head slopes
Slope range: 25 to 40 percent
Texture of the surface layer: Clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous glacial till
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 9.6 inches
Content of organic matter in the upper 10 inches: 3.0 percent

Minor Dissimilar Components

Liston soils that are moderately eroded

Extent: 10 to 20 percent of the mapped areas

Burchard soils that are moderately eroded

Extent: 5 to 15 percent of the mapped areas

Deloit soils

Extent: 5 to 15 percent of the mapped areas

Monona soils

Extent: 5 to 10 percent of the mapped areas

36—Salix silt loam, 0 to 2 percent slopes, rarely flooded

Component Description

Salix and similar soils

Extent: 60 to 90 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Silty alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Depth to wet zone: 5.0 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 12.5 inches

Content of organic matter in the upper 10 inches: 3.4 percent

Minor Dissimilar Components

Keg soils

Extent: 5 to 25 percent of the mapped areas

Cooper soils

Extent: 0 to 10 percent of the mapped areas

Luton soils

Extent: 0 to 10 percent of the mapped areas

Owego soils

Extent: 0 to 10 percent of the mapped areas

46—Keg loam, 0 to 2 percent slopes, rarely flooded

Component Description

Keg and similar soils

Extent: 80 to 100 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Silty alluvium
Lowest frequency of flooding (if it occurs): Very rare (January, December)
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Ponding: None
Available water capacity to a depth of 60 inches: 12.9 inches
Content of organic matter in the upper 10 inches: 3.6 percent

Minor Dissimilar Components

Blencoe soils

Extent: 0 to 10 percent of the mapped areas

Salix soils

Extent: 0 to 10 percent of the mapped areas

47B—Napier-Rawles complex, 2 to 5 percent slopes

Component Description

Napier and similar soils

Extent: 20 to 60 percent of the mapped areas
Geomorphic setting: Drainageways
Position on the landform: Toeslopes and footslopes
Slope range: 2 to 5 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Local alluvium
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 13.1 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Rawles and similar soils

Extent: 35 to 45 percent of the mapped areas
Geomorphic setting: Drainageways
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Calcareous alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Frequent (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 3.0 feet (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 5.0 feet (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 12.5 inches
Content of organic matter in the upper 10 inches: 2.0 percent

Minor Dissimilar Components

Danbury soils

Extent: 5 to 15 percent of the mapped areas

Calco soils that have overwash

Extent: 0 to 10 percent of the mapped areas

Wilsey soils

Extent: 0 to 5 percent of the mapped areas

Smithland soils

Extent: 0 to 5 percent of the mapped areas

54—Zook silty clay loam, 0 to 2 percent slopes, occasionally flooded

Component Description

Zook and similar soils

Extent: 85 to 95 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: At the surface (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 9.6 inches
Content of organic matter in the upper 10 inches: 5.9 percent

Minor Dissimilar Components

Zook soils that have overwash

Extent: 5 to 15 percent of the mapped areas

59E—Burchard clay loam, 9 to 18 percent slopes

Component Description

Burchard and similar soils

Extent: 50 to 60 percent of the mapped areas
Geomorphic setting: Hills
Position on the landform: Backslopes
Slope range: 9 to 18 percent
Texture of the surface layer: Clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous glacial till
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 9.6 inches
Content of organic matter in the upper 10 inches: 3.0 percent

Minor Dissimilar Components

Burchard soils that are moderately eroded

Extent: 15 to 25 percent of the mapped areas

Liston soils that are slightly eroded

Extent: 5 to 15 percent of the mapped areas

Liston soils that are moderately eroded

Extent: 5 to 15 percent of the mapped areas

Deloit soils

Extent: 0 to 10 percent of the mapped areas

66—Luton silty clay, 0 to 2 percent slopes, rarely flooded

Component Description

Luton and similar soils

Extent: 90 to 100 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Clayey alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: At the surface (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None

Available water capacity to a depth of 60 inches: 7.6 inches
Content of organic matter in the upper 10 inches: 4.0 percent

Minor Dissimilar Components

Tieville soils

Extent: 0 to 5 percent of the mapped areas

Blend soils

Extent: 0 to 5 percent of the mapped areas

67—Woodbury silty clay, 0 to 2 percent slopes, rarely flooded

Component Description

Woodbury and similar soils

Extent: 75 to 95 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Clayey alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: At the surface (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 9.1 inches
Content of organic matter in the upper 10 inches: 5.9 percent

Minor Dissimilar Components

Blencoe soils

Extent: 5 to 15 percent of the mapped areas

Salix soils

Extent: 0 to 5 percent of the mapped areas

Lakeport soils

Extent: 0 to 5 percent of the mapped areas

100B—Monona silty clay loam, 2 to 5 percent slopes

Component Description

Monona and similar soils

Extent: 45 to 85 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Summits and shoulders
Geomorphic component: Interfluves
Slope range: 2 to 5 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 13.0 inches
Content of organic matter in the upper 10 inches: 2.7 percent

Minor Dissimilar Components

Monona silty clay loam, moderately eroded

Extent: 10 to 30 percent of the mapped areas

100C2—Monona silty clay loam, 5 to 9 percent slopes, moderately eroded

Component Description

Monona, moderately eroded, and similar soils

Extent: 40 to 60 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Summits, shoulders, and backslopes
Geomorphic component: Side slopes, head slopes, nose slopes, interfluves
Slope range: 5 to 9 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.7 inches
Content of organic matter in the upper 10 inches: 1.9 percent

Minor Dissimilar Components

Monona silty clay loam, slightly eroded

Extent: 10 to 50 percent of the mapped areas

Ida silt loam, severely eroded

Extent: 0 to 10 percent of the mapped areas

Monona silty clay loam, severely eroded

Extent: 0 to 40 percent of the mapped areas

100D2—Monona silty clay loam, 9 to 14 percent slopes, moderately eroded

Component Description

Monona, moderately eroded, and similar soils

Extent: 15 to 55 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Shoulders and backslopes
Geomorphic component: Side slopes, head slopes, nose slopes
Slope range: 9 to 14 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.7 inches
Content of organic matter in the upper 10 inches: 1.9 percent

Minor Dissimilar Components

Monona silty clay loam, severely eroded

Extent: 10 to 30 percent of the mapped areas

Ida silt loam, severely eroded

Extent: 5 to 15 percent of the mapped areas

Monona silty clay loam, slightly eroded

Extent: 10 to 30 percent of the mapped areas

Judson soils

Extent: 0 to 10 percent of the mapped areas

100E2—Monona silty clay loam, 14 to 20 percent slopes, moderately eroded

Component Description

Monona, moderately eroded, and similar soils

Extent: 55 to 75 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Shoulders and backslopes
Geomorphic component: Side slopes, head slopes, nose slopes
Slope range: 14 to 20 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.7 inches
Content of organic matter in the upper 10 inches: 1.9 percent

Minor Dissimilar Components

Monona soils that are slightly eroded

Extent: 10 to 35 percent of the mapped areas

Ida soils

Extent: 0 to 15 percent of the mapped areas

101E2—Monona-Ida silt loams, 14 to 20 percent slopes, moderately eroded

Component Description

Monona, moderately eroded, and similar soils

Extent: 25 to 55 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Backslopes
Geomorphic component: Nose slopes, head slopes, side slopes
Slope range: 14 to 20 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None

Available water capacity to a depth of 60 inches: 12.7 inches
Content of organic matter in the upper 10 inches: 1.9 percent

Ida, moderately eroded, and similar soils

Extent: 15 to 25 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Backslopes
Geomorphic component: Nose slopes, head slopes, side slopes
Slope range: 14 to 20 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.6 inches
Content of organic matter in the upper 10 inches: 1.0 percent

Minor Dissimilar Components

Monona silt loam, severely eroded

Extent: 15 to 25 percent of the mapped areas

Monona silt loam, slightly eroded

Extent: 15 to 25 percent of the mapped areas

123—Grantcenter silty clay loam, 0 to 2 percent slopes, rarely flooded

Component Description

Grantcenter and similar soils

Extent: 90 to 100 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 1.0 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 13.0 inches
Content of organic matter in the upper 10 inches: 5.4 percent

Minor Dissimilar Components

Luton soils

Extent: 0 to 10 percent of the mapped areas

137—Haynie silt loam, 0 to 2 percent slopes, rarely flooded

Component Description

Haynie and similar soils

Extent: 65 to 85 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Calcareous alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Depth to wet zone: 5.0 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 12.6 inches
Content of organic matter in the upper 10 inches: 1.6 percent

Minor Dissimilar Components

Modale silty clay loam

Extent: 5 to 15 percent of the mapped areas

Modale loam

Extent: 2 to 10 percent of the mapped areas

Percival soils

Extent: 2 to 10 percent of the mapped areas

Morconick soils

Extent: 0 to 5 percent of the mapped areas

Owego soils

Extent: 0 to 5 percent of the mapped areas

144—Blake silty clay loam, 0 to 2 percent slopes, rarely flooded

Component Description

Blake and similar soils

Extent: 60 to 80 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Calcareous silty alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 1.0 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 12.6 inches
Content of organic matter in the upper 10 inches: 1.6 percent

Minor Dissimilar Components

Onawa soils

Extent: 10 to 20 percent of the mapped areas

Albaton soils

Extent: 0 to 10 percent of the mapped areas

Haynie soils

Extent: 0 to 10 percent of the mapped areas

Owego soils

Extent: 0 to 5 percent of the mapped areas

156—Albaton silty clay, 0 to 2 percent slopes, rarely flooded

Component Description

Albaton and similar soils

Extent: 70 to 90 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Clayey alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: At the surface (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 7.2 inches
Content of organic matter in the upper 10 inches: 1.9 percent

Minor Dissimilar Components

Onawa soils

Extent: 5 to 15 percent of the mapped areas

Albaton silty clay loam

Extent: 0 to 5 percent of the mapped areas

Modale soils

Extent: 2 to 5 percent of the mapped areas

Albaton soils that are depressional and undrained

Extent: 0 to 2 percent of the mapped areas

Albaton silt loam

Extent: 0 to 2 percent of the mapped areas

Blake soils

Extent: 0 to 2 percent of the mapped areas

Cooper soils

Extent: 0 to 2 percent of the mapped areas

170E—Napier-Castana silt loams, 9 to 20 percent slopes

Component Description

Napier and similar soils

Extent: 50 to 80 percent of the mapped areas
Geomorphic setting: Drainageways
Position on the landform: Toeslopes and footslopes
Slope range: 9 to 14 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Local alluvium
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 13.1 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Castana and similar soils

Extent: 15 to 35 percent of the mapped areas
Geomorphic setting: Drainageways
Position on the landform: Footslopes
Slope range: 14 to 20 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Silty local alluvium and colluvium
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.7 inches
Content of organic matter in the upper 10 inches: 2.5 percent

Minor Dissimilar Components

Monona soils

Extent: 0 to 5 percent of the mapped areas

Monona soils that are moderately eroded

Extent: 0 to 5 percent of the mapped areas

Smithland soils

Extent: 0 to 5 percent of the mapped areas

212—Kennebec silt loam, 0 to 2 percent slopes, occasionally flooded

Component Description

Kennebec and similar soils

Extent: 80 to 100 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Silty alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Depth to wet zone: 5.0 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 13.4 inches
Content of organic matter in the upper 10 inches: 5.5 percent

Minor Dissimilar Components

Smithland soils

Extent: 0 to 5 percent of the mapped areas

Danbury soils

Extent: 0 to 5 percent of the mapped areas

Rawles soils

Extent: 0 to 5 percent of the mapped areas

212+—Kennebec silt loam, 0 to 2 percent slopes, occasionally flooded, overwash

Component Description

Kennebec, overwash, and similar soils

Extent: 60 to 90 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)

Drainage class: Moderately well drained
Parent material: Silty alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Depth to wet zone: 5.0 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 13.4 inches
Content of organic matter in the upper 10 inches: 4.5 percent

Minor Dissimilar Components

Danbury soils

Extent: 10 to 20 percent of the mapped areas

Rawles soils

Extent: 0 to 10 percent of the mapped areas

Wilsey soils

Extent: 0 to 10 percent of the mapped areas

220—Nodaway silty clay loam, 0 to 2 percent slopes, occasionally flooded

Component Description

Nodaway and similar soils

Extent: 85 to 95 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Silty alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Depth to wet zone: 5.0 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 13.2 inches
Content of organic matter in the upper 10 inches: 1.9 percent

Minor Dissimilar Components

Danbury soils

Extent: 5 to 15 percent of the mapped areas

237—Sarpy loamy fine sand, 0 to 2 percent slopes, rarely flooded

Component Description

Sarpy and similar soils

Extent: 90 to 100 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Loamy fine sand
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Excessively drained
Parent material: Sandy alluvium
Lowest frequency of flooding (if it occurs): Very rare (January, December)
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Ponding: None
Available water capacity to a depth of 60 inches: 4.2 inches
Content of organic matter in the upper 10 inches: 0.6 percent

Minor Dissimilar Components

Haynie soils

Extent: 0 to 10 percent of the mapped areas

237B—Sarpy loamy fine sand, 2 to 5 percent slopes, rarely flooded

Component Description

Sarpy and similar soils

Extent: 70 to 90 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 2 to 5 percent
Texture of the surface layer: Loamy fine sand
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Excessively drained
Parent material: Sandy alluvium
Lowest frequency of flooding (if it occurs): Very rare (January, December)
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Ponding: None
Available water capacity to a depth of 60 inches: 4.2 inches
Content of organic matter in the upper 10 inches: 0.6 percent

Minor Dissimilar Components

Onawa soils

Extent: 5 to 15 percent of the mapped areas

Ticonic soils

Extent: 5 to 15 percent of the mapped areas

244—Blend silty clay, 0 to 2 percent slopes, rarely flooded

Component Description

Blend and similar soils

Extent: 75 to 95 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: At the surface (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 8.6 inches
Content of organic matter in the upper 10 inches: 3.9 percent

Minor Dissimilar Components

Blend silty clay loam

Extent: 5 to 10 percent of the mapped areas

Cooper soils

Extent: 0 to 5 percent of the mapped areas

Blencoe soils

Extent: 0 to 5 percent of the mapped areas

Tieville soils

Extent: 0 to 5 percent of the mapped areas

Onawa soils

Extent: 0 to 2 percent of the mapped areas

255—Cooper silty clay loam, 0 to 2 percent slopes, rarely flooded

Component Description

Cooper and similar soils

Extent: 75 to 95 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Silty alluvium over clayey alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 1.0 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 9.0 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Minor Dissimilar Components

Salix soils that have overwash

Extent: 5 to 15 percent of the mapped areas

Owego soils

Extent: 0 to 10 percent of the mapped areas

266—Smithland silty clay loam, 0 to 2 percent slopes, occasionally flooded

Component Description

Smithland and similar soils

Extent: 75 to 95 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Alluvium
Months in which flooding does not occur: January, December

Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 1.0 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 12.4 inches
Content of organic matter in the upper 10 inches: 6.0 percent

Minor Dissimilar Components

Grantcenter soils

Extent: 1 to 10 percent of the mapped areas

Kennebec soils

Extent: 2 to 10 percent of the mapped areas

Smithland silt loam, overwash

Extent: 2 to 10 percent of the mapped areas

266+—Smithland silt loam, 0 to 2 percent slopes, occasionally flooded, overwash

Component Description

Smithland, overwash, and similar soils

Extent: 60 to 90 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 1.0 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 12.4 inches
Content of organic matter in the upper 10 inches: 5.2 percent

Minor Dissimilar Components

Rawles soils

Extent: 5 to 15 percent of the mapped areas

Smithland silty clay loam

Extent: 5 to 15 percent of the mapped areas

Kennebec soils

Extent: 0 to 10 percent of the mapped areas

277B—Deloit loam, 2 to 5 percent slopes

Component Description

Deloit and similar soils

Extent: 85 to 95 percent of the mapped areas
Geomorphic setting: Alluvial fans; drainageways
Position on the landform: Footslopes
Geomorphic component: Base slopes
Slope range: 2 to 5 percent
Texture of the surface layer: Loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loamy local alluvium or colluvium
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 10.7 inches
Content of organic matter in the upper 10 inches: 3.9 percent

Minor Dissimilar Components

Judson soils

Extent: 5 to 15 percent of the mapped areas

277C—Deloit loam, 5 to 9 percent slopes

Component Description

Deloit and similar soils

Extent: 100 percent of the map unit
Geomorphic setting: Alluvial fans
Position on the landform: Footslopes
Geomorphic component: Base slopes
Slope range: 5 to 9 percent
Texture of the surface layer: Loam
Depth to restrictive layer(s): Very deep (more than 60 inches)

Drainage class: Well drained
Parent material: Loamy local alluvium or colluvium
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 10.7 inches
Content of organic matter in the upper 10 inches: 3.9 percent

277E—Deloit loam, 9 to 18 percent slopes

Component Description

Deloit and similar soils

Extent: 100 percent of the map unit
Geomorphic setting: Alluvial fans
Position on the landform: Footslopes
Geomorphic component: Base slopes
Slope range: 9 to 18 percent
Texture of the surface layer: Loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loamy local alluvium or colluvium
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 10.7 inches
Content of organic matter in the upper 10 inches: 3.9 percent

310B—Galva silty clay loam, 2 to 5 percent slopes

Component Description

Galva and similar soils

Extent: 75 to 95 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Summits
Geomorphic component: Interfluves
Slope range: 2 to 5 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.0 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Minor Dissimilar Components

Galva soils that are moderately eroded

Extent: 5 to 15 percent of the mapped areas

Judson soils

Extent: 0 to 8 percent of the mapped areas

Ida soils

Extent: 0 to 2 percent of the mapped areas

310C2—Galva silty clay loam, 5 to 9 percent slopes, moderately eroded

Component Description

Galva, moderately eroded, and similar soils

Extent: 45 to 75 percent of the mapped areas
Geomorphic setting: Loess hills
Position on the landform: Backslopes
Geomorphic component: Nose slopes, head slopes, side slopes
Slope range: 5 to 9 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.0 inches
Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Galva soils that are slightly eroded

Extent: 20 to 30 percent of the mapped areas

Judson soils

Extent: 5 to 15 percent of the mapped areas

Galva soils that are severely eroded

Extent: 0 to 10 percent of the mapped areas

366—Luton silty clay loam, 0 to 2 percent slopes, rarely flooded

Component Description

Luton and similar soils

Extent: 70 to 100 percent of the mapped areas
Geomorphic setting: Flood plains

Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Clayey alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: At the surface (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 9.8 inches
Content of organic matter in the upper 10 inches: 4.0 percent

Minor Dissimilar Components

Blend soils

Extent: 0 to 10 percent of the mapped areas

Holly Springs soils

Extent: 0 to 10 percent of the mapped areas

Tieville soils

Extent: 0 to 10 percent of the mapped areas

436—Lakeport silty clay loam, 0 to 2 percent slopes, rarely flooded

Component Description

Lakeport and similar soils

Extent: 55 to 95 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Silty alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 1.0 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 9.4 inches
Content of organic matter in the upper 10 inches: 3.5 percent

Minor Dissimilar Components

Salix soils

Extent: 5 to 15 percent of the mapped areas

Salix soils that have overwash

Extent: 5 to 10 percent of the mapped areas

Owego soils

Extent: 0 to 10 percent of the mapped areas

446—Burcham silt loam, 0 to 2 percent slopes, rarely flooded

Component Description

Burcham and similar soils

Extent: 100 percent of the map unit
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Silty alluvium over clayey alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 1.0 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 9.8 inches
Content of organic matter in the upper 10 inches: 4.0 percent

465—Tieville silty clay, 0 to 2 percent slopes, rarely flooded

Component Description

Tieville and similar soils

Extent: 85 to 95 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Calcareous clayey alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: At the surface (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 6.6 inches
Content of organic matter in the upper 10 inches: 3.1 percent

Minor Dissimilar Components

Luton soils

Extent: 5 to 10 percent of the mapped areas

Blencoe soils

Extent: 0 to 5 percent of the mapped areas

485—Spillville loam, 0 to 2 percent slopes, occasionally flooded

Component Description

Spillville and similar soils

Extent: 100 percent of the map unit
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 2.0 feet (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 11.8 inches
Content of organic matter in the upper 10 inches: 4.5 percent

510—Monona silt loam, bench, 0 to 2 percent slopes

Component Description

Monona, bench, and similar soils

Extent: 100 percent of the map unit
Geomorphic setting: Stream terraces
Geomorphic component: Treads
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.9 inches
Content of organic matter in the upper 10 inches: 3.4 percent

510B—Monona silt loam, bench, 2 to 5 percent slopes

Component Description

Monona, bench, and similar soils

Extent: 50 to 75 percent of the mapped areas
Geomorphic setting: Stream terraces
Geomorphic component: Treads
Slope range: 2 to 5 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None

Available water capacity to a depth of 60 inches: 12.9 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Minor Dissimilar Components

Monona, bench, moderately eroded

Extent: 25 to 50 percent of the mapped areas

510B2—Monona silt loam, bench, 2 to 5 percent slopes, moderately eroded

Component Description

Monona, bench, moderately eroded, and similar soils

Extent: 100 percent of the map unit
Geomorphic setting: Stream terraces
Geomorphic component: Treads
Slope range: 2 to 5 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.7 inches
Content of organic matter in the upper 10 inches: 2.1 percent

510C2—Monona silt loam, bench, 5 to 9 percent slopes, moderately eroded

Component Description

Monona, bench, moderately eroded, and similar soils

Extent: 65 to 85 percent of the mapped areas
Geomorphic setting: Stream terraces
Geomorphic component: Risers
Slope range: 5 to 9 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 13.5 inches
Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Monona, bench, severely eroded

Extent: 10 to 20 percent of the mapped areas

Napier soils

Extent: 5 to 15 percent of the mapped areas

515—Percival silty clay, 0 to 2 percent slopes, rarely flooded

Component Description

Percival and similar soils

Extent: 60 to 90 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Clayey alluvium over sandy alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 1.0 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 3.7 inches
Content of organic matter in the upper 10 inches: 1.8 percent

Minor Dissimilar Components

Morconick soils

Extent: 5 to 15 percent of the mapped areas

Sarpy soils

Extent: 5 to 15 percent of the mapped areas

Albaton soils

Extent: 0 to 10 percent of the mapped areas

518—Morconick fine sandy loam, 0 to 2 percent slopes, rarely flooded

Component Description

Morconick and similar soils

Extent: 100 percent of the map unit
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Fine sandy loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loamy over sandy alluvium
Lowest frequency of flooding (if it occurs): Very rare (January, December)
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Ponding: None
Available water capacity to a depth of 60 inches: 5.1 inches
Content of organic matter in the upper 10 inches: 1.6 percent

527—Anthon silty clay loam, 0 to 2 percent slopes

Component Description

Anthon and similar soils

Extent: 75 to 95 percent of the mapped areas
Geomorphic setting: Stream terraces
Geomorphic component: Treads
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess or silty alluvium over sand and gravel
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.8 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Minor Dissimilar Components

Fairhaven soils

Extent: 2 to 5 percent of the mapped areas

Kennebec silt loam, occasionally flooded

Extent: 2 to 10 percent of the mapped areas

Kennebec soils that are not subject to flooding

Extent: 1 to 5 percent of the mapped areas

Hawick soils

Extent: 0 to 5 percent of the mapped areas

527B—Anthon silty clay loam, 2 to 5 percent slopes

Component Description

Anthon and similar soils

Extent: 85 to 100 percent of the mapped areas
Geomorphic setting: Stream terraces
Geomorphic component: Treads
Slope range: 2 to 5 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess or silty alluvium over sand and gravel
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.8 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Minor Dissimilar Components

Kennebec silty clay loam

Extent: 0 to 15 percent of the mapped areas

549—Modale complex, 0 to 2 percent slopes, occasionally flooded

Component Description

Modale silt loam and similar soils

Extent: 65 to 75 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Silty alluvium over clayey alluvium

Months in which flooding does not occur: January, December
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 2.0 feet (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 9.6 inches
Content of organic matter in the upper 10 inches: 2.0 percent

Modale silty clay loam and similar soils

Extent: 25 to 35 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Months in which flooding does not occur: January, December
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 2.0 feet (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 9.5 inches
Content of organic matter in the upper 10 inches: 1.5 percent

552—Owego silty clay, 0 to 2 percent slopes, rarely flooded

Component Description

Owego and similar soils

Extent: 90 to 100 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Clayey and silty alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: At the surface (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 8.9 inches
Content of organic matter in the upper 10 inches: 2.6 percent

Minor Dissimilar Components

Cooper soils

Extent: 0 to 5 percent of the mapped areas

Percival soils

Extent: 0 to 5 percent of the mapped areas

630—Danbury silt loam, 0 to 2 percent slopes, occasionally flooded

Component Description

Danbury and similar soils

Extent: 75 to 95 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 3.0 feet (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 5.0 feet (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 12.3 inches
Content of organic matter in the upper 10 inches: 2.7 percent

Minor Dissimilar Components

Rawles soils

Extent: 5 to 15 percent of the mapped areas

Kennebec silty clay loam

Extent: 0 to 10 percent of the mapped areas

666B—Smithland-Danbury-Judson complex, 2 to 5 percent slopes

Component Description

Smithland and similar soils

Extent: 20 to 50 percent of the mapped areas
Geomorphic setting: Drainageways
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 1.0 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 12.4 inches
Content of organic matter in the upper 10 inches: 6.0 percent

Danbury and similar soils

Extent: 20 to 40 percent of the mapped areas
Geomorphic setting: Drainageways
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Silty alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 3.0 feet (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 5.0 feet (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 12.3 inches
Content of organic matter in the upper 10 inches: 2.7 percent

Judson and similar soils

Extent: 20 to 40 percent of the mapped areas
Geomorphic setting: Drainageways
Slope range: 2 to 5 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Silty alluvium and colluvium
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 13.2 inches
Content of organic matter in the upper 10 inches: 3.5 percent

Minor Dissimilar Components

Smithland soils that have overwash

Extent: 0 to 10 percent of the mapped areas

670—Rawles silt loam, 0 to 2 percent slopes, occasionally flooded

Component Description

Rawles and similar soils

Extent: 65 to 95 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Calcareous alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 3.0 feet (January,

February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 5.0 feet (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 12.5 inches
Content of organic matter in the upper 10 inches: 2.0 percent

Minor Dissimilar Components

Danbury soils

Extent: 5 to 15 percent of the mapped areas

Smithland soils that have overwash

Extent: 0 to 10 percent of the mapped areas

Wilsey soils

Extent: 0 to 10 percent of the mapped areas

700—Monona silty clay loam, bench, 0 to 2 percent slopes

Component Description

Monona, bench, and similar soils

Extent: 100 percent of the map unit
Geomorphic setting: Stream terraces
Geomorphic component: Treads
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.9 inches
Content of organic matter in the upper 10 inches: 3.4 percent

700B—Monona silty clay loam, bench, 2 to 5 percent slopes

Component Description

Monona, bench, and similar soils

Extent: 70 to 80 percent of the mapped areas
Geomorphic setting: Stream terraces
Geomorphic component: Treads
Slope range: 2 to 5 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.9 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Minor Dissimilar Components

Monona, bench, moderately eroded

Extent: 20 to 30 percent of the mapped areas

700C2—Monona silty clay loam, bench, 5 to 9 percent slopes, moderately eroded

Component Description

Monona, bench, moderately eroded, and similar soils

Extent: 30 to 70 percent of the mapped areas
Geomorphic setting: Stream terraces
Geomorphic component: Risers
Slope range: 5 to 9 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.7 inches
Content of organic matter in the upper 10 inches: 1.9 percent

Minor Dissimilar Components

Monona, bench, slightly eroded

Extent: 10 to 50 percent of the mapped areas

Monona, bench, severely eroded

Extent: 5 to 25 percent of the mapped areas

Judson soils

Extent: 0 to 10 percent of the mapped areas

700D2—Monona silty clay loam, bench, 9 to 14 percent slopes, moderately eroded

Component Description

Monona, bench, moderately eroded, and similar soils

Extent: 75 to 95 percent of the mapped areas
Geomorphic setting: Stream terraces
Geomorphic component: Risers
Slope range: 9 to 14 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.7 inches
Content of organic matter in the upper 10 inches: 1.9 percent

Minor Dissimilar Components

Monona, bench, slightly eroded

Extent: 5 to 15 percent of the mapped areas

Monona silt loam, bench, moderately eroded

Extent: 0 to 10 percent of the mapped areas

701—Wilsey silt loam, 0 to 2 percent slopes, occasionally flooded

Component Description

Wilsey and similar soils

Extent: 65 to 85 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous alluvium
Lowest frequency of flooding (if it occurs): Very rare (January, December)
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Ponding: None
Available water capacity to a depth of 60 inches: 13.2 inches
Content of organic matter in the upper 10 inches: 1.4 percent

Minor Dissimilar Components

Calco soils that have overwash

Extent: 5 to 15 percent of the mapped areas

Nodaway soils

Extent: 5 to 15 percent of the mapped areas

Fluvaquents

Extent: 0 to 5 percent of the mapped areas

Larpenteur soils

Extent: 0 to 5 percent of the mapped areas

709—Fairhaven silt loam, 32 to 40 inches to sand and gravel, 0 to 2 percent slopes

Component Description

Fairhaven, 32 to 40 inches to sand and gravel, and similar soils

Extent: 55 to 85 percent of the mapped areas
Geomorphic setting: Stream terraces
Geomorphic component: Treads
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loamy sediments and the underlying calcareous sand and gravel
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 7.6 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Minor Dissimilar Components

Fairhaven, 24 to 32 inches to sand and gravel

Extent: 15 to 35 percent of the mapped areas

Anthon soils

Extent: 0 to 10 percent of the mapped areas

709B—Fairhaven silt loam, 32 to 40 inches to sand and gravel, 2 to 5 percent slopes

Component Description

Fairhaven, 32 to 40 inches to sand and gravel, and similar soils

Extent: 35 to 75 percent of the mapped areas
Geomorphic setting: Stream terraces
Geomorphic component: Treads
Slope range: 2 to 5 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loamy sediments and the underlying calcareous sand and gravel
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 7.6 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Minor Dissimilar Components

Fairhaven, 24 to 32 inches to sand and gravel

Extent: 15 to 35 percent of the mapped areas

Pilot Grove soils

Extent: 10 to 20 percent of the mapped areas

Anthon soils

Extent: 0 to 10 percent of the mapped areas

717D—Napier-Gullied land complex, 5 to 14 percent slopes

Component Description

Napier and similar soils

Extent: 30 to 70 percent of the mapped areas
Geomorphic setting: Drainageways
Position on the landform: Footslopes and toeslopes
Slope range: 5 to 14 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Local alluvium
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 13.1 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Gullied land

Extent: 25 to 40 percent of the mapped areas
Geomorphic setting: Drainageways
Position on the landform: Toeslopes and footslopes
Slope range: 5 to 14 percent
Flooding: None
Ponding: None

Minor Dissimilar Components

Wilsey soils

Extent: 5 to 15 percent of the mapped areas

Dow soils

Extent: 0 to 5 percent of the mapped areas

Rawles soils

Extent: 0 to 5 percent of the mapped areas

733—Calco silty clay loam, 0 to 2 percent slopes, occasionally flooded

Component Description

Calco and similar soils

Extent: 80 to 100 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Calcareous alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 0.5 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 12.8 inches
Content of organic matter in the upper 10 inches: 6.0 percent

Minor Dissimilar Components

Judson soils

Extent: 0 to 10 percent of the mapped areas

Zook soils

Extent: 0 to 10 percent of the mapped areas

734—Holly Springs silty clay loam, 0 to 2 percent slopes, rarely flooded

Component Description

Holly Springs and similar soils

Extent: 75 to 95 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Calcareous alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 0.5 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 9.5 inches
Content of organic matter in the upper 10 inches: 5.9 percent

Minor Dissimilar Components

Holly Springs soils that have overwash

Extent: 5 to 15 percent of the mapped areas

Tieville soils

Extent: 0 to 5 percent of the mapped areas

Grantcenter soils

Extent: 0 to 2 percent of the mapped areas

Larpenteur soils

Extent: 0 to 3 percent of the mapped areas

734+—Holly Springs silty clay loam, 0 to 2 percent slopes, rarely flooded, overwash

Component Description

Holly Springs, overwash, and similar soils

Extent: 80 to 100 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Calcareous alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 0.5 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 8.2 inches
Content of organic matter in the upper 10 inches: 5.9 percent

Minor Dissimilar Components

Tieville soils

Extent: 0 to 20 percent of the mapped areas

740C—Hawick sandy loam, 5 to 9 percent slopes

Component Description

Hawick and similar soils

Extent: 65 to 85 percent of the mapped areas
Geomorphic setting: Stream terraces
Position on the landform: Backslopes
Geomorphic component: Risers
Slope range: 5 to 9 percent
Texture of the surface layer: Sandy loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Excessively drained

Parent material: Sandy outwash sediments
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 3.1 inches
Content of organic matter in the upper 10 inches: 1.4 percent

Minor Dissimilar Components

Pilot Grove soils

Extent: 10 to 20 percent of the mapped areas

Fairhaven, 32 to 40 inches to sand and gravel

Extent: 5 to 15 percent of the mapped areas

740D—Hawick sandy loam, 9 to 14 percent slopes

Component Description

Hawick and similar soils

Extent: 75 to 95 percent of the mapped areas
Geomorphic setting: Stream terraces
Position on the landform: Backslopes
Geomorphic component: Risers
Slope range: 9 to 14 percent
Texture of the surface layer: Sandy loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Excessively drained
Parent material: Sandy outwash sediments
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 3.1 inches
Content of organic matter in the upper 10 inches: 1.4 percent

Minor Dissimilar Components

Deloit soils

Extent: 5 to 25 percent of the mapped areas

740E—Hawick sandy loam, 14 to 18 percent slopes

Component Description

Hawick and similar soils

Extent: 65 to 85 percent of the mapped areas
Geomorphic setting: Stream terraces
Position on the landform: Backslopes
Geomorphic component: Risers
Slope range: 14 to 18 percent
Texture of the surface layer: Sandy loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Excessively drained
Parent material: Sandy outwash sediments
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 3.1 inches
Content of organic matter in the upper 10 inches: 1.4 percent

Minor Dissimilar Components

Pilot Grove soils

Extent: 10 to 20 percent of the mapped areas

Deloit soils

Extent: 2 to 10 percent of the mapped areas

Liston soils

Extent: 0 to 10 percent of the mapped areas

740F—Hawick sandy loam, 18 to 25 percent slopes

Component Description

Hawick and similar soils

Extent: 70 to 90 percent of the mapped areas
Geomorphic setting: Stream terraces
Position on the landform: Backslopes
Geomorphic component: Risers
Slope range: 18 to 25 percent
Texture of the surface layer: Sandy loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Excessively drained
Parent material: Sandy outwash sediments
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 3.1 inches
Content of organic matter in the upper 10 inches: 1.4 percent

Minor Dissimilar Components

Deloit soils

Extent: 5 to 15 percent of the mapped areas

Pilot Grove soils

Extent: 5 to 15 percent of the mapped areas

750—Ticonic very fine sandy loam, 0 to 2 percent slopes, rarely flooded

Component Description

Ticonic and similar soils

Extent: 60 to 90 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Very fine sandy loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Sandy alluvium over loamy alluvium
Lowest frequency of flooding (if it occurs): Very rare (January, December)
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Ponding: None
Available water capacity to a depth of 60 inches: 5.6 inches
Content of organic matter in the upper 10 inches: 0.7 percent

Minor Dissimilar Components

Modale soils

Extent: 5 to 15 percent of the mapped areas

Morconick soils

Extent: 5 to 15 percent of the mapped areas

Onawa soils

Extent: 0 to 10 percent of the mapped areas

754—Larpenteur loam, 0 to 2 percent slopes, rarely flooded

Component Description

Larpenteur and similar soils

Extent: 90 to 100 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Calcareous alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 1.0 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 12.4 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Minor Dissimilar Components

Larpenteur soils that have overwash

Extent: 0 to 10 percent of the mapped areas

810B—Galva silty clay loam, bench, 2 to 5 percent slopes

Component Description

Galva, bench, and similar soils

Extent: 65 to 85 percent of the mapped areas
Geomorphic setting: Stream terraces
Geomorphic component: Treads
Slope range: 2 to 5 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.0 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Minor Dissimilar Components

Galva, bench, moderately eroded

Extent: 10 to 20 percent of the mapped areas

Fairhaven, 32 to 40 inches to sand and gravel

Extent: 5 to 15 percent of the mapped areas

810C2—Galva silty clay loam, bench, 5 to 9 percent slopes, moderately eroded

Component Description

Galva, bench, moderately eroded, and similar soils

Extent: 75 to 95 percent of the mapped areas
Geomorphic setting: Stream terraces
Geomorphic component: Risers
Slope range: 5 to 9 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.0 inches
Content of organic matter in the upper 10 inches: 2.1 percent

Minor Dissimilar Components

Galva, bench, slightly eroded

Extent: 5 to 15 percent of the mapped areas

Fairhaven, 32 to 40 inches to sand and gravel

Extent: 0 to 10 percent of the mapped areas

847B—Judson-Rawles complex, 2 to 5 percent slopes

Component Description

Judson and similar soils

Extent: 40 to 60 percent of the mapped areas
Geomorphic setting: Drainageways
Slope range: 2 to 5 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Silty alluvium and colluvium
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 13.2 inches
Content of organic matter in the upper 10 inches: 3.5 percent

Rawles and similar soils

Extent: 40 to 50 percent of the mapped areas
Geomorphic setting: Drainageways
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Calcareous alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Frequent (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 3.0 feet (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 5.0 feet (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 12.5 inches
Content of organic matter in the upper 10 inches: 2.0 percent

Minor Dissimilar Components

Wilsey soils

Extent: 0 to 10 percent of the mapped areas

945—Albaton silty clay, depressional, drained, 0 to 1 percent slopes, frequently flooded

Component Description

Albaton, depressional, drained, and similar soils

Extent: 75 to 95 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 1 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Very poorly drained
Parent material: Clayey alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Frequent (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: At the surface (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Months in which ponding does not occur: January, December

Deepest ponding: 0.5 foot (February, March, April, May, June, July, August, September, October, November)
Available water capacity to a depth of 60 inches: 7.2 inches
Content of organic matter in the upper 10 inches: 1.9 percent

Minor Dissimilar Components

Percival soils

Extent: 5 to 15 percent of the mapped areas

Albaton soils that are depressional and undrained

Extent: 0 to 10 percent of the mapped areas

1137—Haynie silt loam, 0 to 2 percent slopes, occasionally flooded

Component Description

Haynie and similar soils

Extent: 90 to 100 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Calcareous alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Depth to wet zone: 5.0 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 12.6 inches
Content of organic matter in the upper 10 inches: 1.6 percent

Minor Dissimilar Components

Owego soils

Extent: 0 to 10 percent of the mapped areas

1144—Blake silty clay loam, 0 to 2 percent slopes, occasionally flooded

Component Description

Blake and similar soils

Extent: 80 to 100 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Calcareous silty alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 1.0 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 12.6 inches
Content of organic matter in the upper 10 inches: 1.6 percent

Minor Dissimilar Components

Onawa soils

Extent: 5 to 20 percent of the mapped areas

1146—Onawa silty clay, 0 to 2 percent slopes, occasionally flooded

Component Description

Onawa and similar soils

Extent: 60 to 90 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Clayey alluvium over medium textured alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 1.0 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None

Available water capacity to a depth of 60 inches: 9.7 inches
Content of organic matter in the upper 10 inches: 2.3 percent

Minor Dissimilar Components

Onawa silt loam

Extent: 5 to 15 percent of the mapped areas

Grable soils

Extent: 2 to 10 percent of the mapped areas

Morconick soils

Extent: 2 to 10 percent of the mapped areas

Owego soils

Extent: 1 to 10 percent of the mapped areas

1220—Nodaway silty clay loam, channeled, 0 to 2 percent slopes, frequently flooded

Component Description

Nodaway, channeled, and similar soils

Extent: 70 to 90 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Silty alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Frequent (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 5.0 feet (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: More than 6.0 feet (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 13.2 inches
Content of organic matter in the upper 10 inches: 1.9 percent

Minor Dissimilar Components

Danbury soils

Extent: 5 to 15 percent of the mapped areas

Fluvaquents

Extent: 5 to 15 percent of the mapped areas

1237B—Sarpy loamy fine sand, 2 to 5 percent slopes, occasionally flooded

Component Description

Sarpy and similar soils

Extent: 100 percent of the map unit
Geomorphic setting: Flood plains
Slope range: 2 to 5 percent
Texture of the surface layer: Loamy fine sand
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Excessively drained
Parent material: Sandy alluvium
Lowest frequency of flooding (if it occurs): Very rare (January, December)
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Ponding: None
Available water capacity to a depth of 60 inches: 4.2 inches
Content of organic matter in the upper 10 inches: 0.6 percent

1237C—Sarpy loamy fine sand, 5 to 9 percent slopes, occasionally flooded

Component Description

Sarpy and similar soils

Extent: 100 percent of the map unit
Geomorphic setting: Flood plains
Slope range: 5 to 9 percent
Texture of the surface layer: Loamy fine sand
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Excessively drained
Parent material: Sandy alluvium
Lowest frequency of flooding (if it occurs): Very rare (January, December)
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Ponding: None
Available water capacity to a depth of 60 inches: 4.2 inches

Content of organic matter in the upper 10 inches: 0.6 percent

1238—Sarpy-Morconick complex, 0 to 2 percent slopes, occasionally flooded

Component Description

Sarpy and similar soils

Extent: 45 to 75 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Loamy fine sand
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Excessively drained
Parent material: Sandy alluvium
Lowest frequency of flooding (if it occurs): Very rare (January, December)
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Ponding: None
Available water capacity to a depth of 60 inches: 4.2 inches
Content of organic matter in the upper 10 inches: 0.8 percent

Morconick and similar soils

Extent: 15 to 25 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Fine sandy loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loamy over sandy alluvium
Lowest frequency of flooding (if it occurs): Very rare (January, December)
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Ponding: None
Available water capacity to a depth of 60 inches: 5.1 inches
Content of organic matter in the upper 10 inches: 1.6 percent

Minor Dissimilar Components

Percival soils

Extent: 10 to 15 percent of the mapped areas

Modale soils

Extent: 0 to 10 percent of the mapped areas

Haynie soils

Extent: 0 to 5 percent of the mapped areas

1513—Grable-Morconick complex, 0 to 2 percent slopes, occasionally flooded

Component Description

Grable and similar soils

Extent: 60 to 80 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous silty alluvium over sandy alluvium
Lowest frequency of flooding (if it occurs): Very rare (January, December)
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Ponding: None
Available water capacity to a depth of 60 inches: 6.8 inches
Content of organic matter in the upper 10 inches: 1.4 percent

Morconick and similar soils

Extent: 15 to 25 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Fine sandy loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loamy over sandy alluvium
Lowest frequency of flooding (if it occurs): Very rare (January, December)
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Ponding: None
Available water capacity to a depth of 60 inches: 5.1 inches
Content of organic matter in the upper 10 inches: 1.6 percent

Minor Dissimilar Components

Percival soils

Extent: 5 to 15 percent of the mapped areas

1524—Morconick fine sandy loam, 0 to 2 percent slopes, occasionally flooded

Component Description

Morconick and similar soils

Extent: 75 to 95 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Fine sandy loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loamy over sandy alluvium
Lowest frequency of flooding (if it occurs): Very rare (January, December)
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Ponding: None
Available water capacity to a depth of 60 inches: 5.1 inches
Content of organic matter in the upper 10 inches: 1.6 percent

Minor Dissimilar Components

Percival soils

Extent: 5 to 15 percent of the mapped areas

Albaton soils that are depressional and undrained

Extent: 0 to 10 percent of the mapped areas

1525—Scroll silty clay, 0 to 2 percent slopes, occasionally flooded

Component Description

Scroll and similar soils

Extent: 75 to 95 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Clayey or silty alluvium over sandy alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 1.0 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 3.1 inches
Content of organic matter in the upper 10 inches: 1.6 percent

Minor Dissimilar Components

Scroll clay loam

Extent: 5 to 15 percent of the mapped areas

Grable soils

Extent: 0 to 10 percent of the mapped areas

2515—Percival-Albaton complex, 0 to 2 percent slopes, occasionally flooded

Component Description

Percival and similar soils

Extent: 35 to 75 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Clayey alluvium over sandy alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 1.0 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 3.7 inches
Content of organic matter in the upper 10 inches: 1.7 percent

Albaton and similar soils

Extent: 25 to 35 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Clayey alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: At the surface (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 7.2 inches
Content of organic matter in the upper 10 inches: 1.9 percent

Minor Dissimilar Components

Morconick soils

Extent: 0 to 10 percent of the mapped areas

Modale silty clay loam

Extent: 0 to 5 percent of the mapped areas

Modale silt loam

Extent: 0 to 5 percent of the mapped areas

Albaton silt loam

Extent: 0 to 5 percent of the mapped areas

Grable soils

Extent: 0 to 5 percent of the mapped areas

3146—Onawa-Albaton complex, 0 to 2 percent slopes, rarely flooded

Component Description

Onawa and similar soils

Extent: 50 to 60 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Clayey alluvium over medium textured alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 1.0 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 9.7 inches
Content of organic matter in the upper 10 inches: 2.3 percent

Albaton and similar soils

Extent: 20 to 30 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Clayey alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: At the surface (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 7.2 inches
Content of organic matter in the upper 10 inches: 1.9 percent

Minor Dissimilar Components

Modale soils

Extent: 5 to 15 percent of the mapped areas

Grable soils

Extent: 0 to 10 percent of the mapped areas

Onawa silt loam

Extent: 0 to 10 percent of the mapped areas

3275—Moville-Holly Springs, overwash, complex, 0 to 2 percent slopes, rarely flooded

Component Description

Moville and similar soils

Extent: 55 to 75 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Calcareous silty alluvium over clayey alluvium
Lowest frequency of flooding (if it occurs): Very rare (January, December)
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 1.0 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 10.0 inches
Content of organic matter in the upper 10 inches: 2.0 percent

Holly Springs, overwash, and similar soils

Extent: 20 to 30 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Calcareous alluvium
Lowest frequency of flooding (if it occurs): Very rare (January, December)
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 0.5 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 8.2 inches
Content of organic matter in the upper 10 inches: 5.9 percent

Minor Dissimilar Components

Wilsey soils

Extent: 5 to 15 percent of the mapped areas

3440—Blencoe-Woodbury silty clays, 0 to 2 percent slopes, rarely flooded

Component Description

Blencoe and similar soils

Extent: 45 to 75 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Clayey alluvium over silty alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 1.0 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 10.3 inches
Content of organic matter in the upper 10 inches: 4.0 percent

Woodbury and similar soils

Extent: 20 to 30 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Clayey alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March,

April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: At the surface (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 9.1 inches
Content of organic matter in the upper 10 inches: 5.9 percent

Minor Dissimilar Components

Cooper soils

Extent: 5 to 15 percent of the mapped areas

Salix soils

Extent: 0 to 10 percent of the mapped areas

3513—Grable-Morconick complex, 0 to 2 percent slopes, rarely flooded

Component Description

Grable and similar soils

Extent: 55 to 75 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous silty alluvium over sandy alluvium
Lowest frequency of flooding (if it occurs): Very rare (January, December)
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Ponding: None
Available water capacity to a depth of 60 inches: 6.8 inches
Content of organic matter in the upper 10 inches: 1.4 percent

Morconick and similar soils

Extent: 15 to 25 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Fine sandy loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loamy over sandy alluvium
Lowest frequency of flooding (if it occurs): Very rare (January, December)
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Ponding: None
Available water capacity to a depth of 60 inches: 5.1 inches
Content of organic matter in the upper 10 inches: 1.6 percent

Minor Dissimilar Components

Blake soils

Extent: 0 to 10 percent of the mapped areas

Modale loam

Extent: 0 to 10 percent of the mapped areas

Percival soils

Extent: 0 to 10 percent of the mapped areas

3549—Modale complex, 0 to 2 percent slopes, rarely flooded

Component Description

Modale silty clay loam and similar soils

Extent: 10 to 60 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 2.0 feet (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 9.6 inches
Content of organic matter in the upper 10 inches: 2.0 percent

Modale silt loam and similar soils

Extent: 25 to 35 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Silty alluvium over clayey alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 1.0 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 9.6 inches
Content of organic matter in the upper 10 inches: 2.0 percent

Minor Dissimilar Components

Onawa soils

Extent: 5 to 20 percent of the mapped areas

Owego soils

Extent: 5 to 15 percent of the mapped areas

3686—Napa-Luton-Tieville silty clays, 0 to 2 percent slopes, rarely flooded

Component Description

Napa and similar soils

Extent: 40 to 60 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Clayey alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: At the surface (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 9.5 inches
Content of organic matter in the upper 10 inches: 1.2 percent

Luton and similar soils

Extent: 30 to 40 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Clayey alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: At the surface (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 7.6 inches
Content of organic matter in the upper 10 inches: 4.0 percent

Tieville and similar soils

Extent: 10 to 20 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Calcareous clayey alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March,

April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: At the surface (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 6.6 inches
Content of organic matter in the upper 10 inches: 3.1 percent

4000—Urban land

• This map unit consists of areas that have been disturbed as a result of urban development. Most areas are covered by roads, buildings, or other structures. The original soils can no longer be identified.

4001C—Ida-Urban land complex, 5 to 9 percent slopes

Component Description

Ida and similar soils

Extent: 50 percent of the map unit
Geomorphic setting: Loess hills
Position on the landform: Shoulders and summits
Geomorphic component: Side slopes, interfluves, head slopes, nose slopes
Slope range: 5 to 9 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.6 inches
Content of organic matter in the upper 10 inches: 2.0 percent

Urban land

Extent: 50 percent of the map unit
Slope range: 5 to 9 percent
General definition: Urban land consists of areas that have been disturbed as a result of urban development. Most areas are covered by roads, buildings, or other structures. The original soils can no longer be identified.

4001D—Ida-Urban land complex, 9 to 14 percent slopes

Component Description

Ida and similar soils

Extent: 50 percent of the map unit
Geomorphic setting: Loess hills
Position on the landform: Backslopes, shoulders, and summits
Geomorphic component: Interfluves, side slopes, nose slopes, head slopes
Slope range: 9 to 14 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.6 inches
Content of organic matter in the upper 10 inches: 1.2 percent

Urban land

Extent: 50 percent of the map unit
Slope range: 9 to 14 percent
General definition: Urban land consists of areas that have been disturbed as a result of urban development. Most areas are covered by roads, buildings, or other structures. The original soils can no longer be identified.

4001E—Ida-Urban land complex, 14 to 20 percent slopes

Component Description

Ida and similar soils

Extent: 50 percent of the map unit
Geomorphic setting: Loess hills
Position on the landform: Backslopes
Geomorphic component: Side slopes, head slopes, nose slopes
Slope range: 14 to 20 percent

Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.6 inches
Content of organic matter in the upper 10 inches: 1.2 percent

Urban land

Extent: 50 percent of the map unit
Slope range: 14 to 20 percent
General definition: Urban land consists of areas that have been disturbed as a result of urban development. Most areas are covered by roads, buildings, or other structures. The original soils can no longer be identified.

4001F—Ida-Urban land complex, 20 to 30 percent slopes

Component Description

Ida and similar soils

Extent: 50 percent of the map unit
Geomorphic setting: Loess hills
Position on the landform: Backslopes
Geomorphic component: Side slopes, nose slopes, head slopes
Slope range: 20 to 30 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Calcareous loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.6 inches
Content of organic matter in the upper 10 inches: 2.0 percent

Urban land

Extent: 50 percent of the map unit
Slope range: 20 to 30 percent
General definition: Urban land consists of areas that have been disturbed as a result of urban development. Most areas are covered by roads, buildings, or other structures. The original soils can no longer be identified.

4010B—Monona-Urban land complex, 2 to 5 percent slopes

Component Description

Monona and similar soils

Extent: 50 percent of the map unit
Geomorphic setting: Loess hills
Position on the landform: Shoulders and summits
Geomorphic component: Interfluves
Slope range: 2 to 5 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.9 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Urban land

Extent: 50 percent of the map unit
Slope range: 2 to 5 percent
General definition: Urban land consists of areas that have been disturbed as a result of urban development. Most areas are covered by roads, buildings, or other structures. The original soils can no longer be identified.

4010C—Monona-Urban land complex, 5 to 9 percent slopes

Component Description

Monona and similar soils

Extent: 50 percent of the map unit
Geomorphic setting: Loess hills
Position on the landform: Summits, shoulders, and backslopes
Geomorphic component: Interfluves, nose slopes, head slopes, side slopes
Slope range: 5 to 9 percent

Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.9 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Urban land

Extent: 50 percent of the map unit
Slope range: 5 to 9 percent
General definition: Urban land consists of areas that have been disturbed as a result of urban development. Most areas are covered by roads, buildings, or other structures. The original soils can no longer be identified.

4010D—Monona-Urban land complex, 9 to 14 percent slopes

Component Description

Monona and similar soils

Extent: 50 percent of the map unit
Geomorphic setting: Loess hills
Position on the landform: Backslopes and shoulders
Geomorphic component: Interfluves, side slopes, head slopes, nose slopes
Slope range: 9 to 14 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.9 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Urban land

Extent: 50 percent of the map unit
Slope range: 9 to 14 percent
General definition: Urban land consists of areas that have been disturbed as a result of urban development. Most areas are covered by roads, buildings, or other structures. The original soils can no longer be identified.

4010E—Monona-Urban land complex, 14 to 20 percent slopes

Component Description

Monona and similar soils

Extent: 50 percent of the map unit
Geomorphic setting: Loess hills
Position on the landform: Backslopes
Geomorphic component: Head slopes, nose slopes, side slopes
Slope range: 14 to 20 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Loess
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.9 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Urban land

Extent: 50 percent of the map unit
Slope range: 14 to 20 percent
General definition: Urban land consists of areas that have been disturbed as a result of urban development. Most areas are covered by roads, buildings, or other structures. The original soils can no longer be identified.

4012B—Napier-Urban land complex, 2 to 5 percent slopes

Component Description

Napier and similar soils

Extent: 50 percent of the map unit
Geomorphic setting: Drainageways
Position on the landform: Footslopes and toeslopes
Slope range: 2 to 5 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)

Drainage class: Well drained
Parent material: Local alluvium
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 13.1 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Urban land

Extent: 50 percent of the map unit
Slope range: 2 to 5 percent
General definition: Urban land consists of areas that have been disturbed as a result of urban development. Most areas are covered by roads, buildings, or other structures. The original soils can no longer be identified.

4012C—Napier-Urban land complex, 5 to 9 percent slopes

Component Description

Napier and similar soils

Extent: 50 percent of the map unit
Geomorphic setting: Drainageways
Position on the landform: Footslopes and toeslopes
Slope range: 5 to 9 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Local alluvium
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 13.1 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Urban land

Extent: 50 percent of the map unit
Slope range: 5 to 9 percent
General definition: Urban land consists of areas that have been disturbed as a result of urban development. Most areas are covered by roads, buildings, or other structures. The original soils can no longer be identified.

4170D—Napier-Castana-Urban land complex, 9 to 14 percent slopes

Component Description

Napier and similar soils

Extent: 40 percent of the map unit
Geomorphic setting: Drainageways
Position on the landform: Footslopes and toeslopes
Slope range: 9 to 14 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Local alluvium
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 13.1 inches
Content of organic matter in the upper 10 inches: 3.4 percent

Castana and similar soils

Extent: 30 percent of the map unit
Geomorphic setting: Drainageways
Position on the landform: Footslopes
Slope range: 9 to 14 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Well drained
Parent material: Silty local alluvium and colluvium
Flooding: None
Ponding: None
Available water capacity to a depth of 60 inches: 12.7 inches
Content of organic matter in the upper 10 inches: 2.5 percent

Urban land

Extent: 30 percent of the mapped areas
Slope range: 9 to 14 percent
General definition: Urban land consists of areas that have been disturbed as a result of urban development. Most areas are covered by roads, buildings, or other structures. The original soils can no longer be identified.

4600—Percival-Haynie-Urban land complex, 0 to 2 percent slopes, rarely flooded

Component Description

Percival and similar soils

Extent: 30 to 50 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silty clay
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Somewhat poorly drained
Parent material: Clayey alluvium over sandy alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 1.0 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 3.7 inches
Content of organic matter in the upper 10 inches: 1.7 percent

Haynie and similar soils

Extent: 20 to 40 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Calcareous alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Rare (February, March, April, May, June, July, August, September, October, November)
Depth to wet zone: 5.0 feet all year
Ponding: None
Available water capacity to a depth of 60 inches: 12.6 inches
Content of organic matter in the upper 10 inches: 1.6 percent

Urban land

Extent: 20 to 40 percent of the mapped areas
Slope range: 0 to 2 percent
General definition: Urban land consists of areas that have been disturbed as a result of urban development. Most areas are covered by roads, buildings, or other structures. The original soils can no longer be identified.

4670—Rawles-Urban land complex, 0 to 2 percent slopes

Component Description

Rawles and similar soils

Extent: 40 to 60 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Silt loam
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Moderately well drained
Parent material: Alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Occasional (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 3.0 feet (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 5.0 feet (August, September, October)
Ponding: None
Available water capacity to a depth of 60 inches: 12.5 inches
Content of organic matter in the upper 10 inches: 2.0 percent

Urban land

Extent: 40 to 60 percent of the mapped areas
Slope range: 0 to 2 percent
General definition: Urban land consists of areas that have been disturbed as a result of urban development. Most areas are covered by roads, buildings, or other structures. The original soils can no longer be identified.

5010—Pits, sand and gravel

• This map unit consists of areas from which sand and gravel have been removed.

5040—Udorthents, loamy

Component Description

Udorthents, loamy, and similar soils

Extent: 100 percent of the map unit
Slope range: 0 to 14 percent
Texture of the surface layer: Variable

5044—Fluvaquents, 0 to 2 percent slopes, frequently flooded

Component Description

Fluvaquents and similar soils

Extent: 65 to 85 percent of the mapped areas
Geomorphic setting: Flood plains
Slope range: 0 to 2 percent
Texture of the surface layer: Variable
Depth to restrictive layer(s): Very deep (more than 60 inches)
Drainage class: Poorly drained
Parent material: Alluvium
Months in which flooding does not occur: January, December
Highest frequency of flooding: Frequent (February, March, April, May, June, July, August, September, October, November)
Shallowest depth to wet zone: 0.5 foot (January, February, March, April, May, June, July, November, December)
Deepest depth to wet zone: 6.0 feet (transitory) (August, September, October)
Months in which ponding does not occur: January, December
Deepest ponding: 0.5 foot (February, March, April, May, June, July, August, September, October, November)

Minor Dissimilar Components

Udifluvents

Extent: 15 to 35 percent of the mapped areas

5060—Pits, clay

• This map unit consists of areas from which clay has been removed for use as drainage tile.

5080—Udorthents, sanitary landfill

Component Description

Udorthents, sanitary landfill

Extent: 100 percent of the map unit
Drainage class: Moderately well drained

SL—Sewage lagoons

• This map unit consists of shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid waste.

W—Water

• This map unit consists of natural bodies of water.

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 sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; for agricultural waste management; 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 information given in the description of each soil under the heading “Detailed Soil Map Units.” Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Cropland Management Considerations

The management concerns affecting the use of the detailed soil map units for crops are shown in table 5. The main concerns in managing nonirrigated cropland are conserving moisture, controlling wind erosion and water erosion, and maintaining soil fertility.

Conserving moisture consists primarily of reducing the evaporation and runoff rates and increasing the water infiltration rate. Applying conservation tillage and conservation cropping systems, farming on the contour, stripcropping, establishing field windbreaks, and leaving crop residue on the surface conserve moisture.

Generally, a combination of several practices is needed to control *wind erosion* and *water erosion.* Conservation tillage, stripcropping, field windbreaks, contour farming, conservation cropping systems, crop residue management, terraces, diversions, and grassed waterways help to prevent excessive soil loss.

Measures that are effective in *maintaining soil fertility* include applying fertilizer, both organic and inorganic, including manure; incorporating crop residue or green manure crops into the soil; and using proper crop rotations. Controlling erosion helps to prevent the loss of organic matter and plant nutrients and thus helps to maintain productivity, although the level of fertility can be reduced even in areas where erosion is controlled. All soils used for nonirrigated crops respond well to applications of fertilizer.

Some of the considerations shown in the table cannot be easily overcome. These are *channels, flooding, gullies,* and *ponding.*

Additional considerations include the following:

Lime content, limited available water capacity, potential poor tilth and compaction, and *restricted permeability.*—These limitations can be minimized by incorporating green manure crops, manure, or crop residue into the soil; applying a system of conservation tillage; and using conservation cropping systems. Also, crops may respond well to additions of phosphate fertilizer in areas of soils that have a high content of lime.

Potential for ground-water contamination.—The proper use of nutrients and pesticides can reduce the risk of ground-water contamination.

Potential for surface-water contamination.—The risk of surface-water contamination can be reduced by the proper use of nutrients and pesticides and by conservation farming practices that reduce the runoff rate.

Surface crusting.—This limitation retards seedling development after periods of heavy rainfall.

Surface rock fragments.—This limitation causes rapid wear of tillage equipment. It cannot be easily overcome.

Surface stones.—Stones or boulders on or near the surface can hinder normal tillage unless they are removed.

Salt content.—In areas where this is a limitation, only salt-tolerant crops should be grown.

On irrigated soils the main management concerns are efficient water use, nutrient management, control of erosion, pest and weed control, and timely planting and harvesting for a successful crop. An irrigation system that provides optimum control and distribution of water at minimum cost is needed. Overirrigation wastes water, leaches plant nutrients, and causes erosion. Also, it can increase wetness and soil salinity.

Explanation of Criteria

Acid soil.—The pH is less than 6.1.

Channeled.—The word “channeled” is included in the map unit name.

Dense layer.—The bulk density is 1.80 g/cc or greater within the soil profile.

Depth to rock.—The depth to bedrock is less than 40 inches.

Eroded.—The word “eroded” is included in the map unit name.

Excessive permeability.—Saturated hydraulic conductivity is 42 micrometers per second or more within the soil profile.

Flooding.—Flooding is occasional, frequent, or very frequent.

Gullied.—The word “gullied” is included in the map unit name.

High content of organic matter.—The surface layer has more than 20 percent organic matter.

Lime content.—The pH is 7.4 or more in the surface layer, or the wind erodibility group is 4L.

Limited available water capacity.—The available water capacity calculated to a depth of 60 inches or to a root-limiting layer is 6 inches or less.

Limited content of organic matter.—The content of organic matter is 2 percent or less in the surface layer.

Ponding.—Ponding duration is assigned to the soil. Water is above the surface.

Potential poor tilth and compaction.—The content of clay is 27 percent or more in the surface layer.

Potential for ground-water contamination (by nutrients or pesticides).—The depth to a seasonal high water table is 4 feet or less, the saturated hydraulic conductivity of any layer is more than 42 micrometers per second, or the depth to bedrock is less than 60 inches.

Potential for surface-water contamination (by nutrients or pesticides).—The soil is occasionally, frequently, or very frequently flooded, is subject to ponding, is assigned to hydrologic group C or D and has a slope of more than 2 percent, is assigned to hydrologic group A and has a slope of more than 6 percent, or is assigned to hydrologic group B, has a slope of 3 percent or more, and has a K factor of more than 0.17.

Restricted permeability.—Saturated hydraulic conductivity is less than 0.42 micrometer per second within the soil profile.

Salt content.—The electrical conductivity is 4 or more in the surface layer or 8 or more within a depth of 30 inches.

Seasonal high water table.—The water table is within 2.5 feet of the surface.

Slope (equipment limitation).—The slope is more than 15 percent.

Surface crusting.—The content of clay in the surface layer is 27 percent or more, and the content of organic matter is 2 percent or less.

Surface rock fragments (equipment limitation).—The terms describing the texture of the surface layer include any rock fragment modifier, except for gravelly, channery, stony, very stony, extremely stony, bouldery, very bouldery, and extremely bouldery.

Surface stones (equipment limitation).—The word “stony” or “bouldery” is included in the description of the surface layer, or at least 0.01 percent of the surface is covered with boulders.

Water erosion.—Either the slope is 6 percent or more, or the slope is more than 3 percent and less than 6 percent and the surface layer is not sandy.

Wind erosion.—The wind erodibility group is 1, 2, 3, or 4L.

Hydrologic groups are described under the heading “Water Features.” Erosion factors (e.g., K factor) and wind erodibility groups are described under the heading “Physical Properties.”

Crop Yield Estimates

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. 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 each soil also is shown in the table.

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

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage (fig. 7), erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

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

Crops other than those shown in table 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Table 6 also shows the corn suitability rating (CSR) for the soils in the survey area. Corn suitability ratings provide a relative ranking of all soils mapped in the State of Iowa based on their potential to be utilized for the intensive production of row crops. The CSR is an index that can be used to rate the potential production of one soil compared with another over a period of time. The CSR considers average weather conditions and frequency of use of the soil for row crops. Ratings range from 100 for soils that have no physical limitations, are on minimal slopes, and can be continuously row cropped to as low as 5 for soils that have severe limitations affecting the production of row crops. The ratings listed in this table assume adequate management, natural weather conditions (no irrigation), artificial drainage where required, and no land leveling or terracing. They also assume that soils in the lower positions on the landscape are not affected by frequent damaging floods. The weighted CSR for a given field can be modified by the occurrence of sandy spots, local deposits, rock and gravel outcrops, field boundaries, and noncrossable drainageways. Even though predicted average yields will change with time, the CSRs are expected to remain relatively constant in relation to one another.

The CSRs in Woodbury County range from 80 (for map unit 212, as an example) to 5 (for map unit 1G, as an example). No ratings are provided for miscellaneous areas because of the variability of properties and use of these areas.

Figure 7.—Surface drains are needed to remove excess water in this area of Luton silty clay, 0 to 2 percent slopes, rarely flooded. Tile drainage is not effective because the soil is too clayey and permeability is restricted.

Inherent subsoil fertility levels, in terms of potential plant-available phosphorus and potassium, also are given in table 6. Soil tests of the tilled layer are used to determine the most profitable rates of fertilizers for various crops. Nutrient levels in the subsurface layers influence crop yields, particularly in the drier seasons when the nutrients in the dry tilled layer become temporarily unavailable to plants. The availability of nutrients in the tilled layer and the subsoil influences the relative uptake from the two zones in the soil profile. Fertilizer recommendations based on soil tests of the tilled layer may be adjusted by the average nutrient levels in the subsoil of each soil series. The ratings given in the table are described as follows:

Subsoil phosphorus.—The amount of plant-available phosphorus in the subsoil expressed in parts per million and based on the weighted average of air-dried soil samples from the subsoil (at a depth of 30 to 42 inches). (The value listed for complexes is the most limiting value of the soils identified in the map unit name.) A rating of very low indicates less than 7.5 ppm; low, 7.5 to 13.0 ppm; medium, 13.0 to 22.5 ppm; and high, more than 22.5 ppm.

Subsoil potassium.—The amount of plant-available potassium in the subsoil expressed in parts per million and based on the weighted average of air-dried soil samples from the subsoil (at a depth of 12 to 24 inches). (The value listed for complexes is the most limiting value of the soils identified in the map unit name.) A rating of very low indicates less than 50 ppm; low, 50 to 79 ppm; medium, 79 to 125 ppm; and high, more than 125 ppm.

Pasture and Hayland Interpretations

Under good management, proper grazing is essential for the production of high-quality forage, stand survival, and erosion control. Proper grazing helps plants to maintain sufficient and generally vigorous top growth during the growing season. Brush control is essential in many areas, and weed control generally is needed. Rotation grazing and renovation also are important management practices.

The average yields per acre that can be expected of the principal pasture and hay crops under a high level of management are shown in table 7. Yield estimates are often provided in animal unit months (AUM), or the amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about forage yields other than those shown in the table.

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 take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland or for engineering purposes.

In the capability system, soils generally are grouped at three levels—capability class, subclass, and unit (USDA, 1961). These categories indicate the degree and kinds of limitations affecting mechanized farming systems that produce the more commonly grown field crops, such as corn, small grain, cotton, hay, and field-grown vegetables. Only class and subclass are used in this survey.

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

If properly managed, soils in classes 1, 2, 3, and 4 are suitable for the mechanized production of commonly grown field crops and for pasture and woodland. The degree of the soil limitations affecting the production of cultivated crops increases progressively from class 1 to class 4. The limitations can affect levels of production and the risk of permanent soil deterioration caused by erosion and other factors.

Soils in classes 5, 6, and 7 are generally not suited to the mechanized production of commonly grown field crops without special management, but they are suitable for plants that provide a permanent cover, such as grasses and trees. The severity of the soil limitations affecting crops increases progressively from class 5 to class 7.

Areas in class 8 are generally not suitable for crops, pasture, or woodland without a level of management that is impractical. These areas may have potential for other uses, such as recreational facilities and wildlife habitat.

Capability subclasses identify the dominant kind of limitation in the 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 a 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 has been 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.

There are no subclasses in class 1 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 mainly to pasture, woodland, wildlife habitat, or recreation.

The capability classification of the soils in the survey area is given in tables 6 and 7.

Prime Farmland

Prime farmland is of major importance in meeting the Nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, State, and Federal levels, as well as individuals, must encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to food, feed, forage, fiber, and oilseed crops. Such soils have properties that favor the economic production of sustained high yields of crops. The soils need only to be treated and managed by acceptable farming methods. An adequate moisture supply and a sufficiently long growing season are required. Prime farmland soils produce the highest yields with minimal expenditure of energy and economic resources, and farming these soils results in the least damage to the environment.

Prime farmland soils may presently be used as cropland, pasture, or woodland or for other purposes. They either are used for food and fiber or are available for these uses. Urban or built-up land, public land, and water areas cannot be considered prime farmland. Urban or built-up land is any contiguous unit of land 10 acres or more in size that is used for such purposes as housing, industrial, and commercial sites, sites for institutions or public buildings, small parks, golf courses, cemeteries, railroad yards, airports, sanitary landfills, sewage treatment plants, and water-control structures. Public land is land not available for farming in National forests, National parks, military reservations, and State parks.

Prime farmland soils commonly receive an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable, and the level of acidity or alkalinity and the content of salts and sodium are acceptable. The soils have few, if any, rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods, and they are not frequently flooded during the growing season or are protected from flooding. Slopes range mainly from 0 to 6 percent.

Soils that have a high water table or are subject to flooding may qualify as prime farmland where these limitations are overcome by drainage measures or flood control. Onsite evaluation is necessary to determine the effectiveness of corrective measures. More information about the criteria for prime farmland can be obtained at the local office of the Natural Resources Conservation Service.

A recent trend in land use has been the conversion of prime farmland to urban and industrial uses. The loss of prime farmland to other uses puts pressure on lands that are less productive than prime farmland.

About 126,209 acres, or 22 percent of the survey area, meets the requirements for prime farmland.

The map units in the survey area that meet the requirements for 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 table, measures that overcome limitations are needed. The need for these measures is indicated in parentheses after the map unit name. The location of each map unit is shown on the detailed soil maps. The soil qualities that affect use and management are described in the section “Detailed Soil Map Units.”

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 9 shows the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates in table 9 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 of the Cooperative Extension Service or from a commercial nursery.

Recreation

The soils of the survey area are rated in tables 10a and 10b 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 tables 10a and 10b can be supplemented by other information in this survey, for example, interpretations for building site development, construction materials, sanitary facilities, and water management.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Off-road motorcycle trails require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, slope, depth to a water table, ponding, flooding, and texture of the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Wildlife Habitat

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

In table 11, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

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

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

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of grain and seed crops are corn, soybeans, 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 bromegrass, timothy, orchardgrass, 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, bluegrass, dandelions, goldenrod, ragweed, wheatgrass, and nightshade.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, box elder, birch, maple, green ash, willow, and American elm. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian olive, autumn olive, and crabapple.

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

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites (fig. 8). 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, rushes, sedges, and reeds.

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

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

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with

Figure 8.—A few remaining undrained areas of Albaton soils support an abundance of wetland plants and provide excellent habitat for many species of wildlife.

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 Hungarian partridge, ring-necked pheasant, bobwhite quail, sharp-tailed grouse, meadowlark, field sparrow, killdeer, cottontail rabbit, and red fox.

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

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

Engineering

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

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

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

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

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 12a and 12b 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 13a and 13b 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 72 inches or between a depth of 24 inches and a restrictive layer 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 14a and 14b 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.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction (fig. 9). Specifications for each use vary widely. In table 14a, 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 as *possible, probable,* or *improbable* sources of gravel and are rated *good, fair,* or *poor* as potential sources of sand. In this table, gravel is defined as particles ranging from 0.2 inch to 3.0 inches in diameter. Soils rated as a *possible* source of gravel contain at least 25 percent gravel, by weight. Soils rated as a *probable* source contain at least 50 percent gravel, by weight. The likelihood of the soil being a source of gravel is reduced by the content of rock fragments larger than 3 inches in diameter. For sand, a rating of *good* or *fair* means that the source material is likely to be in or below the soil. For both sand and gravel, 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

Figure 9.—An area of Pits, sand and gravel. This map unit is an excellent source of aggregate for road building. These pits are common throughout the Little Sioux River valley.

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 14b, the soils are rated *good, fair,* or *poor* as potential sources of reclamation material, roadfill, and topsoil. The features that limit the soils as sources of these materials are specified in the table. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of reclamation material, roadfill, or topsoil. The lower the number, the greater the limitation.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 15 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

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

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

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. Embankments that have zoned construction (core and shell) are not considered. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

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

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Agricultural Waste Management

Soil properties are important considerations in areas where soils are used as sites for the treatment and disposal of organic waste and wastewater. Selection of soils with properties that favor waste management can help to prevent environmental damage.

Table 16 shows the degree and kind of soil limitations affecting the treatment of agricultural waste, including municipal and food-processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food-processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. In the context of this table, the effluent in lagoons and storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30 milligrams per liter. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter. When wastewater is applied, checks should be made to ensure that nitrogen, heavy metals, and salts are not added in excessive amounts.

The ratings in the table are for waste management systems that not only dispose of and treat organic waste or wastewater but also are beneficial to crops (application of manure and food-processing waste, application of sewage sludge, and disposal of wastewater by irrigation).

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

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

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

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

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

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

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

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

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.

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.

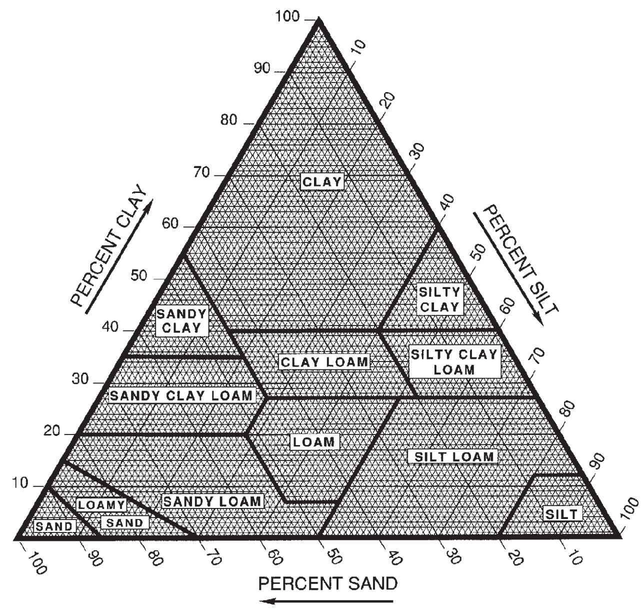


Figure 10.—Percentages of clay, silt, and sand in the basic USDA soil textural classes.

Engineering Index Properties

Table 17 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. “Loam,” for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand (fig. 10). 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 refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

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

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

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

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 18 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.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In table 18, 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 amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^1/_3$- or $^1/_{10}$-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The term “permeability,” as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). The estimates in the table indicate the rate of water movement, in 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 18, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in table 18 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. Descriptions of these groups are available in the National Soil Survey Handbook (USDA/NRCS).

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 19 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.

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.

Gypsum is expressed as a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water. Soils that have a high content of gypsum may collapse if the gypsum is removed by percolating water.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

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 20 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.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are *negligible, very low, low, medium, high,* and *very high*.

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

Water table refers to a saturated zone in the soil. Table 20 indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. Table 20 indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Soil Features

Table 21 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low, moderate,* or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 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 22 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 Mollisol.

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 Aquolls (*Aqu*, meaning water, plus *oll*, from Mollisol).

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 Endoaquolls (*Endo*, meaning within, plus *aquoll*, the suborder of the Mollisols that has an aquic 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. An example is Cumulic Endoaquolls.

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-silty, mixed, superactive, calcareous, mesic Cumulic Endoaquolls.

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

Soil Series and Their Morphology

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

Albaton Series

Typical Pedon

Albaton silty clay (fig. 11), 0 to 2 percent slopes, rarely flooded, in a cultivated field on a flood plain in Mills County, Iowa, about 1,080 feet west and 93 feet south of the northeast corner of sec. 1, T. 73 N., R. 44 W.; USGS Council Bluffs South topographic quadrangle;

lat. 41 degrees 09 minutes 5.0 seconds N. and long. 95 degrees 50 minutes 35.0 seconds W., NAD 83:

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silty clay, grayish brown (10YR 5/2) dry; moderate very fine and fine subangular blocky structure; firm; slightly effervescent; slightly alkaline; clear smooth boundary.

Cg—7 to 60 inches; alternating layers of olive gray (5Y 4/2) and dark gray (5Y 4/1) silty clay; massive with weak thin alluvial stratification; firm; few thin strata of silt loam below a depth of 40 inches; few thin strata darkened by organic matter below a depth of 24 inches; common fine distinct olive brown (2.5Y 4/4) and brown (10YR 4/3) redoximorphic concentrations; strongly effervescent; moderately alkaline.

Range in Characteristics

Ap or A horizon:
Hue—10YR or 2.5Y
Value—3
Chroma—1 or 2
Texture—silty clay, silty clay loam, or clay
Reaction—neutral or slightly alkaline

Cg horizon:
Hue—2.5Y, 5Y, or N
Value—4 or 5
Chroma—0 to 2
Texture—silty clay or clay; sandy material below a depth of 60 inches in some pedons
Reaction—slightly alkaline or moderately alkaline

Anthon Series

Typical Pedon

Anthon silty clay loam (fig. 12), 0 to 2 percent slopes, in a cultivated field on a stream terrace in Woodbury County, Iowa, about 1,400 feet east and 2,200 feet south of the northwest corner of sec. 26, T. 89 N., R. 42 W.; USGS Correctionville topographic quadrangle; lat. 42 degrees 29 minutes 49.7 seconds N. and long. 95 degrees 46 minutes 30.5 seconds W., NAD 83:

Ap—0 to 8 inches; about 70 percent very dark brown (10YR 2/2) and 30 percent very dark grayish brown (10YR 3/2) silty clay loam, dark grayish brown (10YR 4/2) dry; weak and moderate fine subangular blocky structure parting to weak fine granular; friable; few very fine and fine roots; common very fine and fine tubular pores; many distinct black (10YR 2/1) organic coatings on vertical faces of peds; moderately acid; clear smooth boundary.

A1—8 to 16 inches; about 60 percent very dark brown (10YR 2/2) and 40 percent very dark grayish brown (10YR 3/2) silty clay loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure parting to weak fine granular; friable; few very fine and fine roots; common very fine and few fine tubular pores; common distinct black (10YR 2/1) organic coatings on vertical faces of peds; moderately acid; clear smooth boundary.

A2—16 to 23 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure parting to weak fine granular; friable; few very fine and fine roots; common very fine tubular pores; common distinct very dark brown (10YR 2/2) organic coatings on vertical faces of peds; slightly acid; gradual smooth boundary.

AB—23 to 29 inches; about 60 percent very dark grayish brown (10YR 3/2) and 40 percent dark brown (10YR 3/3) silty clay loam, grayish brown (10YR 5/2) dry; weak very fine and fine subangular blocky structure parting to weak fine granular; very friable; few very fine and fine roots; common very fine tubular pores; common distinct very dark brown (10YR 2/2) organic coatings on vertical faces of peds; few fine rounded wormcasts; slightly acid; clear smooth boundary.

Bt1—29 to 38 inches; about 60 percent brown (10YR 4/3) and 40 percent dark brown (10YR 3/3) silty clay loam; weak very fine and fine subangular blocky structure; friable; few very fine roots; common very fine tubular pores; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds and in pores; few distinct dark brown (10YR 3/3) organic coatings in root channels and pores; few fine rounded wormcasts; slightly acid; clear smooth boundary.

Bt2—38 to 45 inches; brown (10YR 4/3) silty clay loam; weak very fine and fine subangular blocky structure; friable; few very fine roots; common very fine tubular pores; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds and in pores; neutral; abrupt smooth boundary.

2Bt3—45 to 50 inches; brown (10YR 4/3) sandy clay loam; weak fine subangular blocky structure; friable; few very fine roots; common very fine tubular pores; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds and in pores; about 3 percent rounded mixed gravel; neutral; abrupt smooth boundary.

2BC—50 to 59 inches; about 80 percent dark brown (10YR 3/3) and 20 percent brown (10YR 4/3) gravelly sandy clay loam; weak very fine subangular blocky structure; friable; many very fine tubular pores; about 30 percent rounded mixed gravel; neutral; clear smooth boundary.

2C1—59 to 64 inches; brown (10YR 4/3) loamy sand; single grain; loose; about 8 percent rounded mixed gravel; slightly effervescent; moderately alkaline; clear smooth boundary.

2C2—64 to 69 inches; brown (10YR 4/3) gravelly loamy sand; single grain; loose; about 30 percent rounded mixed gravel; slightly effervescent; moderately alkaline; clear smooth boundary.

2C3—69 to 72 inches; dark yellowish brown (10YR 4/4) gravelly sandy loam; single grain; loose; about 30 percent rounded mixed gravel; strongly effervescent; moderately alkaline; clear smooth boundary.

2C4—72 to 80 inches; dark yellowish brown (10YR 4/4) very gravelly loamy sand; single grain; loose; about 44 percent rounded mixed gravel; strongly effervescent; moderately alkaline.

Range in Characteristics

Depth to carbonates: 40 to 80 inches
Thickness of the mollic epipedon: 24 to 36 inches
Depth to sand and gravel: 40 to 60 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2 in the upper part; 2 or 3 in the lower part
Texture—silty clay loam or silt loam
Reaction—strongly acid to neutral

AB horizon:
Hue—10YR
Value—2 or 3
Chroma—2 or 3
Texture—silty clay loam or silt loam
Reaction—moderately acid to neutral

Bt or Bw horizon:
Hue—10YR
Value—3 or 4
Chroma—3 or 4
Texture—silty clay loam or silt loam
Reaction—moderately acid to neutral

2Bt horizon:
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—sandy clay loam, clay loam, or sandy loam or the gravelly or very gravelly analogs of these textures
Reaction—moderately acid to neutral
Content of rock fragments—3 to 50 percent

2BC horizon:
Hue—10YR
Value—3 to 5
Chroma—3 or 4
Texture—clay loam, loam, sandy clay loam, or sandy loam or the gravelly or very gravelly analogs of these textures
Reaction—moderately acid to slightly alkaline
Content of rock fragments—5 to 50 percent

2C horizon:
Hue—7.5YR or 10YR
Value—3 to 6
Chroma—2 to 6
Texture—loamy coarse sand, sand, loamy sand, or sandy loam or the gravelly or very gravelly analogs of these textures
Reaction—neutral to moderately alkaline
Content of rock fragments—5 to 50 percent

Blake Series

Typical Pedon

Blake silty clay loam, 0 to 2 percent slopes, rarely flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 250 feet west and 20 feet south of the northeast corner of sec. 16, T. 86 W., R. 47 W.; USGS Salix quadrangle; lat. 42 degrees 16 minutes 19.8 seconds N. and long. 96 degrees 18 minutes 38.0 seconds W., NAD 83:

Ap—0 to 6 inches; very dark grayish brown (2.5Y 3/2) silty clay loam, grayish brown (2.5Y 5/2) dry; weak fine subangular blocky structure; friable; common very fine and fine roots; many very fine and fine tubular pores; slightly effervescent; moderately alkaline; abrupt smooth boundary.

Cg1—6 to 18 inches; dark grayish brown (2.5Y 4/2) silty clay loam; massive with weak thin alluvial stratification; friable; few very fine and fine roots; many very fine and fine tubular pores; common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; slightly effervescent; moderately alkaline; gradual smooth boundary.

Cg2—18 to 32 inches; dark grayish brown (2.5Y 4/2) silty clay loam; massive with weak thin alluvial stratification; friable; few very fine and fine roots; many very fine and fine tubular pores; common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; gradual smooth boundary.

Cg3—32 to 50 inches; dark grayish brown (2.5Y 4/2) silty clay loam; massive with weak thin alluvial stratification; friable; few very fine and fine roots; many very fine and fine tubular pores; common fine prominent strong brown (7.5YR 4/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; clear smooth boundary.

Cg4—50 to 80 inches; dark grayish brown (2.5Y 4/2) silt loam; massive with weak thin alluvial stratification; very friable; many very fine and fine tubular pores; common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline.

Range in Characteristics

Ap or A horizon:
Hue—10YR or 2.5Y
Value—3
Chroma—1 or 2
Texture—silty clay loam or silt loam
Reaction—neutral to moderately alkaline

Cg horizon:
Hue—10YR or 2.5Y
Value—3 or 4
Chroma—1 to 4
Texture—silty clay loam or silt loam
Reaction—slightly alkaline or moderately alkaline

Blencoe Series

Typical Pedon

Blencoe silty clay, 0 to 2 percent slopes, rarely flooded, in a cultivated field on a flood plain in Monona County, Iowa, about 2,580 feet south and 150 feet east of the northwest corner of sec. 22, T. 84 N., R. 45 W.; USGS Onawa topographic quadrangle; lat. 42 degrees 04 minutes 30.9 seconds N. and long. 96 degrees 04 minutes 33.1 seconds W., NAD 83:

Ap—0 to 8 inches; black (N 2/0) silty clay, black (10YR 2/1) dry; moderate fine subangular blocky structure parting to weak fine granular; firm; few fine roots; few fine tubular pores; neutral; abrupt smooth boundary.

A—8 to 19 inches; black (N 2/0) silty clay, black (10YR 2/1) dry; moderate fine and medium subangular blocky structure; firm; few fine roots; few fine tubular pores; neutral; clear smooth boundary.

Bg—19 to 27 inches; dark grayish brown (2.5Y 4/2) silty clay; black (10YR 2/1) on faces of a few peds; moderate fine and medium subangular blocky structure; firm; few fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; neutral; clear smooth boundary.

BC—27 to 33 inches; olive brown (2.5Y 4/4) silty clay loam; weak medium prismatic structure; friable; few fine and medium irregular dark nodules; common fine distinct yellowish brown (10YR 5/6) redoximorphic concentrations; neutral; abrupt smooth boundary.

2Cg1—33 to 56 inches; grayish brown (2.5Y 5/2) silt loam; massive; friable; common fine prominent strong brown (7.5YR 5/6) and common fine distinct olive brown (2.5Y 4/4) redoximorphic concentrations; very slightly effervescent; slightly alkaline; clear smooth boundary.

2Cg2—56 to 60 inches; grayish brown (2.5Y 5/2) silt loam; massive; friable; common fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly effervescent; strongly alkaline.

Range in Characteristics

Depth to carbonates: 25 to 40 inches
Thickness of the mollic epipedon: 14 to 24 inches
Depth to contrasting material: 22 to 35 inches

Ap or A horizon:
Hue—10YR or N
Value—2 or 3
Chroma—0 to 2
Texture—silty clay
Reaction—slightly acid or neutral

AB or BA horizon (if it occurs):
Hue—10YR or 2.5Y
Value—3
Chroma—1 or 2
Texture—silty clay
Reaction—slightly acid or neutral

Bg horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2
Texture—silty clay
Reaction—neutral

BC horizon:
Hue—2.5Y
Value—4 or 5
Chroma—2 to 4

Texture—silty clay loam or silty clay
Reaction—neutral or slightly alkaline

2Cg horizon:
Hue—10YR or 2.5Y
Value—5
Chroma—2
Texture—silt loam
Reaction—slightly alkaline to strongly alkaline

Taxadjunct features: The representative pedon for the Blencoe series in Woodbury County, Iowa, is a taxadjunct because the strongly contrasting particle-size transition zone is thicker than is defined as the range for the series.

Blend Series

Typical Pedon

Blend silty clay, 0 to 2 percent slopes, rarely flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 2,000 feet north and 1,700 feet west of the southeast corner of sec. 30, T. 87 N., R. 46 W.; USGS Luton topographic quadrangle; lat. 42 degrees 19 minutes 13.3 seconds N. and long. 96 degrees 14 minutes 22.3 seconds W., NAD 83:

Ap—0 to 7 inches; black (10YR 2/1) silty clay, very dark gray (10YR 3/1) dry; moderate fine subangular blocky structure; firm; common fine roots; common fine and medium tubular pores; common fine faint very dark grayish brown (10YR 3/2) redoximorphic concentrations; slightly acid; abrupt smooth boundary.

A—7 to 14 inches; about 90 percent very dark gray (10YR 3/1) silty clay, dark gray (10YR 4/1) dry; moderate very fine and fine subangular blocky structure; firm; common fine roots; common medium and coarse irregular dark grayish brown (2.5Y 4/2) biological concentrations and mixing; common very fine tubular pores; common fine prominent light olive brown (2.5Y 5/4) redoximorphic concentrations; neutral; clear wavy boundary.

2Bg—14 to 25 inches; dark grayish brown (2.5Y 4/2) silty clay loam; weak fine subangular blocky structure; friable; few fine roots; common very fine tubular pores; many fine distinct light olive brown (2.5Y 5/4) redoximorphic concentrations; strongly effervescent; slightly alkaline; abrupt smooth boundary.

3Agb—25 to 35 inches; black (10YR 2/1) silty clay; moderate fine subangular blocky structure; firm; few fine roots; common very fine tubular pores; common fine distinct dark grayish brown (2.5Y 4/2) redoximorphic concentrations; very slightly effervescent; slightly alkaline; clear smooth boundary.

3Bgb—35 to 47 inches; very dark gray (10YR 3/1) clay; moderate fine and medium subangular blocky structure; firm; common very fine tubular pores; common fine prominent light olive brown (2.5Y 5/4) redoximorphic concentrations; very slightly effervescent; moderately alkaline; gradual smooth boundary.

3Bkgb—47 to 61 inches; very dark gray (10YR 3/1) clay; moderate medium subangular blocky structure; firm; common very fine tubular pores; common fine prominent light olive brown (2.5Y 5/4) redoximorphic concentrations; common fine and medium light gray (10YR 7/1) carbonate concretions; very slightly effervescent; slightly alkaline; clear smooth boundary.

3Cgb1—61 to 71 inches; gray (2.5Y 5/1) clay; massive; firm; common very fine tubular pores; common fine distinct light olive brown (2.5Y 5/4) redoximorphic concentrations; common medium light gray (10YR 7/2) carbonate concretions; slightly effervescent; moderately alkaline; gradual smooth boundary.

3Cgb2—71 to 80 inches; gray (2.5Y 5/1) clay; massive; firm; common very fine tubular pores; common fine distinct light olive brown (2.5Y 5/4) redoximorphic concentrations; strongly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 18 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silty clay or silty clay loam
Reaction—moderately acid to neutral

2Bg horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 or 2
Texture—silty clay loam
Reaction—slightly acid to slightly alkaline

3Agb horizon:
Hue—10YR or 2.5Y
Value—2 to 5
Chroma—1 to 4
Texture—silty clay
Reaction—slightly acid to slightly alkaline

3Bgb or 3Bkgb horizon:
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—1 to 4
Texture—silty clay or clay
Reaction—slightly alkaline or moderately alkaline

3Cgb horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 4
Texture—silty clay or clay
Reaction—slightly alkaline or moderately alkaline

Burcham Series

Typical Pedon

Burcham silt loam, 0 to 2 percent slopes, rarely flooded, in a cultivated field on a flood plain in Monona County, Iowa, about 1,200 feet west and 100 feet south of the northeast corner of sec. 4, T. 85 N., R. 46 W.; USGS Sloan topographic quadrangle; lat. 42 degrees 12 minutes 38.0 seconds N. and long. 96 degrees 11 minutes 38.1 seconds W., NAD 83:

Ap—0 to 7 inches; black (10YR 2/1) silt loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure parting to weak fine granular; friable; common fine roots; few fine tubular pores; neutral; abrupt smooth boundary.

A—7 to 13 inches; very dark brown (10YR 2/2) and very dark grayish brown (10YR 3/2) silt loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure; friable; common fine roots; few fine tubular pores; neutral; clear smooth boundary.

Bg—13 to 25 inches; dark grayish brown (2.5Y 4/2) and olive brown (2.5Y 4/4) silt loam; weak fine subangular blocky structure; friable; common fine roots; few fine tubular pores; few fine prominent strong brown (7.5YR 4/6) redoximorphic concentrations; slightly alkaline; clear smooth boundary.

2Cyg1—25 to 42 inches; dark grayish brown (2.5Y 4/2) silty clay; massive; firm; few fine roots; few fine tubular pores; few fine rounded gypsum crystals; common fine prominent brown (7.5YR 4/4) and strong brown (7.5YR 4/6) redoximorphic concentrations; few fine faint grayish brown (2.5Y 5/2) redoximorphic depletions; strongly effervescent; slightly alkaline; clear smooth boundary.

2Cyg2—42 to 60 inches; dark grayish brown (2.5Y 4/2) silty clay; massive; firm; few fine rounded gypsum crystals; few fine prominent brown (7.5YR 4/4) and common fine faint dark gray (5Y 4/1) redoximorphic depletions; strongly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 24 inches
Depth to carbonates: 15 to 25 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam
Reaction—neutral or slightly alkaline

Bg or Bw horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4
Texture—silt loam
Reaction—slightly alkaline or moderately alkaline

2Cg or 2Cyg horizon:
Hue—2.5Y or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—silty clay
Reaction—slightly alkaline or moderately alkaline

Burchard Series

Typical Pedon

Burchard clay loam, in an area of Steinauer-Burchard complex, 18 to 40 percent slopes, in a pasture on a side slope in Ida County, Iowa, about 1,870 feet south and 140 feet west of the northeast corner of sec. 6, T. 89 N., R. 41 W.; USGS Washta topographic quadrangle; lat. 42 degrees 33 minutes 21.9 seconds N. and long. 95 degrees 43 minutes 18.0 seconds W., NAD 83:

A—0 to 5 inches; black (10YR 2/1) clay loam, dark gray (10YR 4/1) dry; weak fine and very fine granular structure; friable; few fine and very fine roots; about 2 percent rounded gravel; neutral; clear smooth boundary.

AB—5 to 11 inches; very dark gray (10YR 3/1) and very dark grayish brown (10YR 3/2) clay loam, gray (10YR 5/1) and grayish brown (10YR 5/2) dry; weak fine subangular blocky and granular structure; friable; few fine and very fine roots; common black (10YR 2/1) wormcasts and surfaces along root channels; few brown (10YR 4/3) wormcasts; about 2 percent rounded gravel; neutral; clear smooth boundary.

Bt1—11 to 18 inches; brown (10YR 4/3) clay loam; weak fine and very fine subangular blocky structure; firm; few clay films on faces of peds; few fine and very fine roots; common very dark gray (10YR 3/1) and very dark grayish brown (10YR 3/2) wormcasts and surfaces along root channels; about 2 percent rounded gravel; neutral; clear smooth boundary.

Bt2—18 to 24 inches; brown (10YR 5/3) clay loam; weak medium and fine subangular blocky structure; firm; few clay films on faces of peds; few fine and very fine roots; few very dark gray (10YR 3/1) and very dark grayish brown (10YR 3/2) wormcasts and surfaces along root channels; about 2 percent rounded gravel; neutral; clear smooth boundary.

BC—24 to 36 inches; brown (10YR 5/3) clay loam; weak medium subangular blocky structure; firm; few fine and very fine roots; few very dark grayish brown (10YR 3/2) surfaces along root channels; about 2 percent rounded gravel; few fine faint grayish brown (2.5Y 5/2) redoximorphic depletions; strongly effervescent; slightly alkaline; gradual smooth boundary.

C—36 to 60 inches; brown (10YR 5/3) clay loam; massive; friable; very few very fine roots; about 2 percent rounded gravel; common fine faint grayish brown (2.5Y 5/2) redoximorphic depletions; few fine prominent yellowish red (5YR 4/6) redoximorphic concentrations; strongly effervescent; slightly alkaline.

Range in Characteristics

Depth to carbonates: 12 to 30 inches
Thickness of the mollic epipedon: 8 to 18 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—clay loam or loam
Reaction—moderately acid to neutral

AB horizon:
Hue—10YR
Value—3
Chroma—1 or 2
Texture—clay loam
Reaction—slightly acid or neutral

Bt horizon:
Hue—10YR
Value—4 to 6
Chroma—2 to 6
Texture—clay loam
Reaction—slightly acid or neutral

Bk horizon (if it occurs):
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—3 to 6
Texture—clay loam
Reaction—slightly alkaline or moderately alkaline

BC horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—3 to 6
Texture—clay loam
Reaction—slightly alkaline or moderately alkaline

C horizon:
Hue—10YR or 2.5Y
Value—5
Chroma—2 or 3
Texture—clay loam
Reaction—slightly alkaline or moderately alkaline

Calco Series

Typical Pedon

Calco silty clay loam, 0 to 2 percent slopes, in a cultivated field on a flood plain in Mills County, Iowa, about 1,420 feet north and 1,600 feet west of the southeast corner of sec. 29, T. 71 N., R. 41 W.; USGS Tabor NE topographic quadrangle; lat. 42 degrees 55 minutes 11.9 seconds N. and long. 95 degrees 34 minutes 55.0 seconds W., NAD 83:

Ap—0 to 9 inches; black (10YR 2/1) silty clay loam, very dark grayish brown (10YR 3/2) and very dark gray (10YR 3/1) dry; weak fine subangular blocky structure; friable; slightly effervescent; slightly alkaline; clear smooth boundary.

A1—9 to 19 inches; black (N 2/0) silty clay loam, black (N 2/0) dry; weak fine subangular blocky structure; friable; few fine fragments of snail shells; strongly effervescent; moderately alkaline; gradual smooth boundary.

A2—19 to 26 inches; black (N 2/0) silty clay loam, black (N 2/0) dry; weak coarse subangular blocky structure parting to moderate medium subangular blocky; friable; common fine fragments of snail shells; strongly effervescent; moderately alkaline; gradual smooth boundary.

A3—26 to 33 inches; black (5Y 2/1) silty clay loam, dark gray (10YR 4/1) and gray (10YR 5/1) dry; moderate fine subangular blocky structure; friable; few fine fragments of snail shells; common soft carbonate accumulations; strongly effervescent; moderately alkaline; gradual smooth boundary.

Bg—33 to 40 inches; very dark gray (10YR 3/1) silty clay loam; weak fine subangular blocky structure; friable; few fine fragments of snail shells; common carbonate accumulations; strongly effervescent; moderately alkaline; gradual smooth boundary.

Cg—40 to 60 inches; dark gray (10YR 4/1) and gray (10YR 5/1) silty clay loam; massive; friable; few fine fragments of snail shells; common medium prominent strong brown (7.5YR 5/6 and 5/8) redoximorphic concentrations; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 30 to more than 60 inches

Ap or A horizon:
Hue—10YR, 5Y, or N
Value—2 or 3
Chroma—0 or 1
Texture—silt loam or silty clay loam
Reaction—slightly alkaline or moderately alkaline

Bg or BCg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—3 or 6
Chroma—0 to 2
Texture—silt loam or silty clay loam
Reaction—slightly alkaline or moderately alkaline

Cg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—3 to 6
Chroma—1 to 3
Texture—silty clay loam or silt loam
Reaction—slightly alkaline or moderately alkaline

Castana Series

Typical Pedon

Castana silt loam, 14 to 20 percent slopes, in a cultivated field on a footslope in Woodbury County, Iowa, about 1,250 feet east and 1,900 feet south of the northwest corner of sec. 31, T. 86 N., R. 44 W.; USGS Hornick topographic quadrangle; lat. 42 degrees 13 minutes 14.0 seconds N. and long. 96 degrees 00 minutes 53.0 seconds W., NAD 83:

Ap1—0 to 3 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure; friable; many fine and medium roots; common very fine pores; neutral; abrupt smooth boundary.

Ap2—3 to 7 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; weak thin platy structure parting to weak fine granular; friable; many fine and medium roots; common very fine pores; slightly effervescent; slightly alkaline; clear smooth boundary.

A1—7 to 10 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; weak thin platy structure; friable; many very fine roots; common very fine pores; slightly effervescent; slightly alkaline; clear smooth boundary.

A2—10 to 19 inches; 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 very fine pores; strongly effervescent; moderately alkaline; clear smooth boundary.

A3—19 to 24 inches; dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; weak very fine granular structure; friable; many very fine roots; few very fine pores; common distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; strongly effervescent; moderately alkaline; clear smooth boundary.

C1—24 to 36 inches; brown (10YR 4/3) silt loam; massive; friable; many very fine roots; few very fine pores; strongly effervescent; moderately alkaline; clear smooth boundary.

C2—36 to 70 inches; brown (10YR 4/3) silt loam; massive; friable; many very fine roots; common very fine pores; common fine and medium very pale brown (10YR 8/2) rounded carbonate concretions; common fine very pale brown (10YR 8/2) masses of carbonate; strongly effervescent; moderately alkaline; gradual smooth boundary.

C3—70 to 80 inches; brown (10YR 5/3) silt loam; massive; friable; common very fine roots; strongly effervescent; moderately alkaline.

Range in Characteristics

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—2 or 3
Texture—silt loam
Reaction—neutral to moderately alkaline

C horizon:
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—silt loam
Reaction—slightly alkaline or moderately alkaline

Colo Series

Typical Pedon

Colo silty clay loam, 0 to 2 percent slopes, occasionally flooded, in a cultivated field on a flood plain in Monona County, Iowa, about 315 feet east and 75 feet south of the northwest corner of sec. 22, T. 85 N., R. 44 W.; USGS Smithland topographic quadrangle; lat. 42 degrees 10 minutes 05.0 seconds N. and long. 95 degrees 57 minutes 40.0 seconds W., NAD 83:

Ap—0 to 8 inches; black (10YR 2/1) silty clay loam, dark grayish brown (10YR 4/2) dry; weak fine granular structure; friable; common fine and medium roots; slightly acid; abrupt smooth boundary.

A1—8 to 18 inches; black (N 2/0) silty clay loam, black (10YR 2/1) dry; weak fine subangular blocky structure parting to weak fine granular; friable; common fine and medium roots; slightly acid; gradual smooth boundary.

A2—18 to 26 inches; black (N 2/0) silty clay loam, black (10YR 2/1) dry; weak fine and medium subangular blocky structure; friable; common fine roots; neutral; gradual smooth boundary.

A3—26 to 35 inches; black (N 2/0) silty clay loam, black (10YR 2/1) dry; weak medium subangular blocky structure; friable; common fine roots; neutral; gradual smooth boundary.

Bg1—35 to 42 inches; black (10YR 2/1) silty clay loam; black (N 2/0) on faces of a few peds; weak medium prismatic structure parting to weak fine and medium subangular blocky; friable; common fine roots; neutral; gradual smooth boundary.

Bg2—42 to 51 inches; black (10YR 2/1) silty clay loam; weak medium and coarse prismatic structure; friable; few fine roots; common fine prominent brown (7.5YR 5/4) and strong brown (7.5YR 5/6) redoximorphic concentrations; neutral; gradual smooth boundary.

Cg—51 to 60 inches; very dark gray (10YR 3/1), dark grayish brown (10YR 4/2), and grayish brown (10YR 5/2) silty clay loam; massive; friable; common fine prominent brown (7.5YR 5/4) and strong brown (7.5YR 5/6) redoximorphic concentrations; neutral.

Range in Characteristics

Depth to carbonates: More than 60 inches
Thickness of the mollic epipedon: More than 36 inches

Ap or A horizon:
Hue—10YR or N
Value—2 or 3
Chroma—0 or 1
Texture—silty clay loam
Reaction—moderately acid to neutral

Bg horizon:
Hue—10YR or 2.5Y
Value—2 to 4
Chroma—1
Texture—silty clay loam
Reaction—moderately acid to neutral

BCg horizon (if it occurs):
Hue—10YR to 5Y
Value—3 to 6
Chroma—1 or 2
Texture—silty clay loam
Reaction—moderately acid to neutral

Cg horizon:
Hue—10YR to 5Y
Value—3 to 6
Chroma—1 or 2
Texture—silty clay loam or silt loam
Reaction—moderately acid to neutral

Cooper Series

Typical Pedon

Cooper silty clay loam, 0 to 2 percent slopes, rarely flooded, in a cultivated field on a flood plain in Monona County, Iowa, about 100 feet south and 115 feet west of the northeast corner of sec. 4, T. 85 N., R. 46 W.; USGS Sloan topographic quadrangle; lat. 42 degrees 12 minutes 38.0 seconds N. and long. 96 degrees 11 minutes 39.0 seconds W., NAD 83:

Ap—0 to 7 inches; black (10YR 2/1) silty clay loam; weak fine and very fine granular structure; friable; few fine roots; neutral; abrupt smooth boundary.

A—7 to 12 inches; very dark brown (10YR 2/2) silty clay loam; weak fine subangular blocky and weak very fine granular structure; friable; few fine roots; black (10YR 2/1) organic stains on faces of peds; neutral; clear smooth boundary.

BA—12 to 18 inches; very dark grayish brown (2.5Y 3/2) silty clay loam; weak very fine and fine subangular blocky structure; friable; few fine roots; very dark gray (10YR 3/1) organic stains on faces of peds; few faint very dark brown (10YR 2/2) organic coatings in root channels and pores; common fine faint dark grayish brown (2.5Y 4/2) redoximorphic depletions; neutral; clear wavy boundary.

Bg1—18 to 25 inches; dark grayish brown (2.5Y 4/2) and grayish brown (2.5Y 5/2) silty clay loam; weak very fine and fine subangular blocky structure; friable; few fine roots; few distinct very dark brown (10YR 2/2) organic coatings in root channels and pores; very dark grayish brown (2.5Y 3/2) organic stains on faces of peds; common fine distinct yellowish brown (10YR 5/4) and common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; neutral; clear wavy boundary.

2Bg2—25 to 31 inches; grayish brown (2.5Y 5/2) silty clay; weak very fine and fine subangular blocky structure; few fine roots; firm; dark grayish brown (2.5Y 4/2) coatings on faces of peds; common fine distinct yellowish brown (10YR 5/4) and common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; slightly alkaline; gradual wavy boundary.

2Bkg—31 to 42 inches; grayish brown (2.5Y 5/2) silty clay; moderate medium prismatic structure parting to moderate fine prismatic; firm; few fine roots; few fine and medium irregular very pale brown (10YR 8/2) carbonate concretions; slightly effervescent; moderately alkaline; gradual wavy boundary.

2Cg—42 to 60 inches; grayish brown (2.5Y 5/2) silty clay; massive; firm; few fine and medium irregular very pale brown (10YR 8/2) carbonate concretions; common fine distinct yellowish brown (10YR 5/4) and common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; slightly effervescent; moderately alkaline.

Range in Characteristics

Depth to carbonates: 20 to 40 inches
Thickness of the mollic epipedon: 10 to 20 inches

Ap or A horizon:
Hue—10YR
Value—2
Chroma—1 or 2
Texture—silty clay loam
Reaction—slightly acid to slightly alkaline

BA horizon:
Hue—2.5Y
Value—3
Chroma—2
Texture—silty clay loam
Reaction—neutral or slightly alkaline

Bg horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2
Texture—silty clay loam
Reaction—neutral or slightly alkaline

2Bg horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—1 or 2
Texture—silty clay or clay
Reaction—slightly alkaline or moderately alkaline

2Bkg horizon:
Hue—2.5Y
Value—4 or 5
Chroma—2
Texture—silty clay or clay
Reaction—slightly alkaline or moderately alkaline

2Cg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—2
Texture—silty clay or clay
Reaction—slightly alkaline or moderately alkaline

Danbury Series

Typical Pedon

Danbury silt loam, 0 to 2 percent slopes, occasionally flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 1,700 feet north and 500 feet west of the southeast corner of sec. 23, T. 88 N., R. 42 W.; USGS Cushing topographic quadrangle; lat. 42 degrees 25 minutes 08.0 seconds N. and long. 95 degrees 41 minutes 26.0 seconds W., NAD 83:

Ap—0 to 7 inches; about 95 percent very dark grayish brown (10YR 3/2) and 5 percent dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; weak fine subangular blocky structure; friable; common fine roots; many very fine pores; moderately acid; abrupt smooth boundary.

C1—7 to 15 inches; about 90 percent very dark grayish brown (10YR 3/2) and 10 percent dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; massive with weak thin alluvial stratification; friable; few very fine roots; many very fine pores; neutral; clear smooth boundary.

C2—15 to 25 inches; about 95 percent very dark grayish brown (10YR 3/2) and 5 percent dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; massive with weak thin alluvial stratification; friable; few very fine roots; many very fine and fine tubular pores; neutral; clear smooth boundary.

C3—25 to 32 inches; about 95 percent very dark grayish brown (10YR 3/2) and 5 percent dark grayish brown (10YR 4/2) silt loam, brown (10YR 5/3) dry; massive with weak thin alluvial stratification; friable; few very fine roots; many very fine and fine tubular pores; common fine distinct yellowish brown (10YR 5/4) redoximorphic concentrations; neutral; abrupt wavy boundary.

2Ab1—32 to 43 inches; black (10YR 2/1) silty clay loam; weak very fine subangular blocky structure; friable; many very fine and fine tubular pores; common fine prominent strong brown (7.5YR 4/6) redoximorphic concentrations; neutral; gradual smooth boundary.

2Ab2—43 to 53 inches; black (10YR 2/1) silty clay loam; weak very fine and fine subangular blocky structure; friable; many very fine and fine tubular pores; common fine distinct brown (10YR 4/3) redoximorphic concentrations; neutral; gradual smooth boundary.

2Ab3—53 to 64 inches; black (10YR 2/1) silty clay loam; weak fine subangular blocky structure; friable; many very fine and fine tubular pores; common fine distinct brown (10YR 4/3) redoximorphic concentrations; neutral; clear smooth boundary.

2Bwb1—64 to 71 inches; very dark gray (10YR 3/1) silty clay loam; weak very fine prismatic structure parting to weak fine subangular blocky; friable; many very fine and fine tubular pores; common fine distinct brown (10YR 4/3) redoximorphic concentrations; neutral; clear smooth boundary.

2Bwb2—71 to 80 inches; very dark gray (10YR 3/1) silty clay loam; moderate very fine prismatic structure parting to weak fine subangular blocky; friable; many very fine and fine tubular pores; common fine distinct brown (10YR 4/3) redoximorphic concentrations; neutral.

Range in Characteristics

Depth to the buried soil: 20 to 40 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—2 or 3
Texture—silt loam or silty clay loam
Reaction—moderately acid to neutral

C horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 4
Texture—silt loam or silty clay loam
Reaction—moderately acid to neutral

2Ab horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silty clay loam or silt loam
Reaction—slightly acid or neutral

2Bwb horizon:
Hue—10YR or 2.5Y
Value—3 or 4
Chroma—1 to 3
Texture—silty clay loam or silt loam
Reaction—moderately acid to neutral

Deloit Series

Typical Pedon

Deloit loam, 5 to 9 percent slopes, in a pastured area on a footslope in Woodbury County, Iowa, about 2,050 feet west and 900 feet north of the southeast corner of sec. 1, T. 89 N., R. 42 W.; USGS Washta topographic quadrangle; lat. 42 degrees 32 minutes 59.0 seconds N. and long. 95 degrees 44 minutes 56.8 seconds W., NAD 83:

Ap—0 to 8 inches; black (10YR 2/1) loam, very dark grayish brown (10YR 3/2) dry; weak fine subangular blocky structure parting to weak fine granular; friable; common fine roots; common fine tubular pores; neutral; abrupt smooth boundary.

A1—8 to 18 inches; very dark brown (10YR 2/2) loam, very dark grayish brown (10YR 3/2) dry; weak very fine subangular blocky structure parting to weak very fine and fine granular; friable; few very fine and fine roots; common very fine and fine tubular pores; many distinct black (10YR 2/1) organic coatings on vertical faces of peds; slightly acid; gradual smooth boundary.

A2—18 to 30 inches; very dark brown (10YR 2/2) loam, very dark grayish brown (10YR 3/2) dry; weak very fine and fine subangular blocky structure; friable; few very fine and fine roots; common very fine and fine tubular pores; many distinct black (10YR 2/1) organic coatings on vertical faces of peds; slightly acid; gradual smooth boundary.

A3—30 to 40 inches; very dark grayish brown (10YR 3/2) clay loam, dark grayish brown (10YR 4/2) dry; weak very fine and fine subangular blocky structure; friable; few very fine and fine roots; common very fine and fine tubular pores; many distinct very dark brown (10YR 2/2) organic coatings on vertical faces of peds; slightly acid; clear smooth boundary.

AB—40 to 50 inches; dark brown (10YR 3/3) clay loam, dark grayish brown (10YR 4/2) dry; weak very fine prismatic structure parting to weak fine subangular blocky; friable; few very fine and fine roots; common very fine and fine tubular pores; many distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; slightly acid; gradual smooth boundary.

Bw1—50 to 61 inches; brown (10YR 4/3) clay loam; weak fine prismatic structure parting to weak fine and medium subangular blocky; friable; common very fine and fine tubular pores; many distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; slightly acid; gradual smooth boundary.

Bw2—61 to 69 inches; brown (10YR 4/3) clay loam; weak fine prismatic structure parting to weak medium subangular blocky; friable; common very fine and fine tubular pores; common distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; slightly acid; gradual smooth boundary.

Bw3—69 to 80 inches; brown (10YR 4/3) loam; weak medium prismatic structure parting to weak coarse subangular blocky; friable; common very fine and fine tubular pores; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 24 to 55 inches
Depth to carbonates: More than 50 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—loam or clay loam
Reaction—moderately acid to neutral

AB horizon:
Hue—10YR
Value—3
Chroma—2 or 3
Texture—loam or clay loam
Reaction—slightly acid to slightly alkaline

Bw horizon:
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—loam, clay loam, or silt loam
Reaction—slightly acid to slightly alkaline

Bt or Bk horizon (if it occurs):
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—loam, clay loam, or silt loam
Reaction—slightly acid to slightly alkaline

Dow Series

Typical Pedon

Dow silt loam, in an area of Dow-Monona silt loams, 9 to 14 percent slopes, moderately eroded, in a cultivated field in Crawford County, Iowa, about 2,525 feet north and 410 feet west of the southeast corner of sec. 31, T. 82 N., R. 40 W.; USGS Dunlap NE topographic quadrangle; lat. 41 degrees 52 minutes 13.6 seconds N. and long. 95 degrees 32 minutes 22.0 seconds W., NAD 83:

Ap—0 to 6 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure parting to weak fine granular; friable; common fine and very fine roots; few fine and very fine pores; slightly effervescent; moderately alkaline; clear smooth boundary.

C1—6 to 15 inches; grayish brown (2.5Y 5/2) silt loam; massive; very friable; common fine and very fine roots; few fine and very fine pores; few distinct brown (10YR 4/3) organic stains along cleavage planes; few fine and medium prominent yellowish brown (10YR 5/6) and few fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; gradual smooth boundary.

C2—15 to 21 inches; light brownish gray (2.5Y 6/2) silt loam; massive; very friable; few very fine roots; few very fine pores; few fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; gradual smooth boundary.

C3—21 to 80 inches; light brownish gray (2.5Y 6/2) silt loam; massive; very friable; few very fine pores; few fine prominent strong brown (7.5YR 5/6) and reddish brown (5YR 4/4) redoximorphic concentrations; strongly effervescent; moderately alkaline.

Range in Characteristics

Ap horizon:
Hue—10YR
Value—3 to 5
Chroma—2 or 3
Texture—silt loam
Reaction—neutral to moderately alkaline

A horizon (if it occurs):
Hue—10YR
Value—2 or 3
Chroma—2
Texture—silt loam
Reaction—neutral to moderately alkaline

C horizon:
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—2
Texture—silt loam
Reaction—slightly alkaline or moderately alkaline
Other features—the redoximorphic features are considered relict features

Fairhaven Series

Typical Pedon

Fairhaven silt loam, 32 to 40 inches to sand and gravel, 0 to 2 percent slopes, in a cultivated field on a stream terrace in Woodbury County, Iowa, about 1,700 feet east and 2,200 feet south of the northwest corner of sec. 26, T. 89 N., R. 42 W.; USGS Correctionville topographic quadrangle; lat. 42 degrees 29 minutes 51.3 seconds N. and long. 95 degrees 46 minutes 26.1 seconds W., NAD 83:

Ap—0 to 6 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure; friable; common very fine and fine roots; many very fine and fine tubular pores; moderately acid; abrupt smooth boundary.

A—6 to 12 inches; very dark grayish brown (10YR 3/2) silty clay loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure; friable; few very fine and fine roots; many very fine and fine tubular pores; many distinct very dark brown (10YR 2/2) organic coatings on faces of peds; moderately acid; clear wavy boundary.

Bw1—12 to 19 inches; brown (10YR 4/3) silty clay loam; weak fine subangular blocky structure; friable; few very fine and fine roots; many very fine and fine tubular pores; many distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; slightly acid; gradual smooth boundary.

Bw2—19 to 25 inches; dark yellowish brown (10YR 4/4) silt loam; weak very fine prismatic structure parting to weak fine and medium subangular blocky; friable; few very fine and fine roots; many very fine and fine tubular pores; common distinct dark brown (10YR 3/3) organic coatings on faces of peds; slightly acid; gradual smooth boundary.

2Bw3—25 to 31 inches; dark yellowish brown (10YR 4/4) clay loam; weak very fine prismatic structure parting to weak medium subangular blocky; friable; few very fine and fine roots; many very fine and fine tubular pores; few distinct brown (10YR 4/3) coatings on faces of peds; neutral; clear wavy boundary.

2BC—31 to 39 inches; dark brown (10YR 3/3) gravelly sandy clay loam; weak fine subangular blocky structure; very friable; many very fine and fine tubular pores; about 25 percent gravel; neutral; abrupt wavy boundary.

2C1—39 to 52 inches; brown (10YR 4/3) very gravelly sandy loam; single grain; loose; about 46 percent gravel; slightly effervescent; moderately alkaline; gradual smooth boundary.

2C2—52 to 69 inches; dark yellowish brown (10YR 4/4) very gravelly sandy loam; single grain; loose; about 51 percent gravel; slightly effervescent; moderately alkaline; gradual smooth boundary.

2C3—69 to 80 inches; brown (10YR 4/3) very gravelly loamy coarse sand; single grain; loose; about 42 percent gravel; strongly effervescent; moderately alkaline.

Range in Characteristics

Depth to carbonates: 20 to 50 inches
Thickness of the mollic epipedon: 10 to 22 inches
Depth to sand and gravel: 22 to 40 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silty clay loam, silt loam, or loam
Reaction—moderately acid to neutral

Bw horizon:
Hue—10YR
Value—3 to 5
Chroma—3 or 4
Texture—silty clay loam, loam, or silt loam
Reaction—moderately acid to neutral

2Bw horizon:
Hue—10YR
Value—3 to 5
Chroma—3 to 6
Texture—sandy loam or clay loam
Reaction—moderately acid to neutral

2BC horizon:
Hue—10YR
Value—3 to 5
Chroma—3 to 6
Texture—sandy loam or sandy clay loam or the gravelly analogs of these textures
Reaction—moderately acid to neutral

2C horizon:
Hue—10YR or 2.5Y

Value—4 to 6
Chroma—2 to 5
Texture—coarse sand, sand, loamy coarse sand, loamy sand, fine sandy loam, or sandy loam or the gravelly or very gravelly analogs of these textures
Reaction—slightly alkaline or moderately alkaline

Taxadjunct features: The representative pedon for the Fairhaven series in Woodbury County, Iowa, is a taxadjunct because the strongly contrasting particle-size transition zone is 6 inches thick and there is not enough clay difference to meet the contrasting particle-size criteria defined for the series. Also, the textures in the underlying material are finer than those defined as the range for the series.

Galva Series

Typical Pedon

Galva silty clay loam, 2 to 5 percent slopes, in a cultivated field on a broad summit in Woodbury County, Iowa, about 1,600 feet east and 100 feet south of the northwest corner of sec. 4, T. 89 N., R. 43 W.; USGS Pierson topographic quadrangle; lat. 42 degrees 33 minutes 38.4 seconds N. and long. 95 degrees 55 minutes 56.5 seconds W., NAD 83:

Ap1—0 to 4 inches; about 80 percent very dark brown (10YR 2/2) and 20 percent black (10YR 2/1) silty clay loam, dark grayish brown (10YR 4/2) dry; weak fine and medium angular blocky structure parting to weak fine subangular blocky; friable; common fine and medium roots; common fine and medium and few very fine tubular pores; strongly acid; abrupt smooth boundary.

Ap2—4 to 8 inches; about 90 percent very dark brown (10YR 2/2) and 10 percent black (10YR 2/1) silty clay loam, dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure parting to weak fine granular; friable; common fine and medium roots; common fine and medium pores and few very fine tubular pores; moderately acid; clear smooth boundary.

AB—8 to 18 inches; dark brown (10YR 3/3) silty clay loam, brown (10YR 5/3) dry; weak fine and medium subangular blocky structure parting to weak fine granular; friable; common fine and medium roots; common very fine and fine tubular pores; many distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds and in pores; slightly acid; clear smooth boundary.

Bw1—18 to 35 inches; brown (10YR 4/3) silty clay loam; weak fine prismatic and weak fine subangular blocky structure parting to weak fine granular; friable; common fine and medium roots; many fine and medium tubular pores; many distinct dark brown (10YR 3/3) organic coatings on faces of peds and in pores; neutral; abrupt smooth boundary.

Bw2—35 to 43 inches; brown (10YR 4/3) silty clay loam; weak fine prismatic structure parting to weak fine subangular blocky; friable; few fine and medium roots; many very fine and fine tubular pores; few distinct dark brown (10YR 3/3) organic coatings on faces of peds and in pores; common fine distinct grayish brown (2.5Y 5/2) redoximorphic depletions; common fine prominent strong brown (7.5YR 4/6) redoximorphic concentrations; neutral; clear smooth boundary.

Bw3—43 to 50 inches; brown (10YR 4/3) silt loam; weak fine subangular blocky structure; friable; few very fine roots; few medium and many very fine and fine tubular pores; many fine and medium distinct grayish brown (2.5Y 5/2) redoximorphic depletions; many fine and medium prominent strong brown (7.5YR 4/6) redoximorphic concentrations; neutral; clear smooth boundary.

C1—50 to 65 inches; dark yellowish brown (10YR 4/4) silt loam; massive; very friable; few very fine and fine tubular pores; many medium prominent grayish brown (2.5Y 5/2) redoximorphic depletions; many medium prominent strong brown (7.5YR 4/6) redoximorphic concentrations; neutral; clear smooth boundary.

C2—65 to 72 inches; dark yellowish brown (10YR 4/4) silt loam; massive; very friable; few very fine and fine tubular pores; many medium prominent grayish brown (2.5Y 5/2) redoximorphic depletions; many medium prominent strong brown (7.5YR 4/6) redoximorphic concentrations; neutral; abrupt wavy boundary.

C3—72 to 80 inches; dark yellowish brown (10YR 4/4) silt loam; massive; friable; few very fine and fine tubular pores; common fine and medium very pale brown (10YR 8/2) masses of carbonate; many medium prominent grayish brown (2.5Y 5/2) redoximorphic depletions; many medium prominent strong brown (7.5YR 4/6) redoximorphic concentrations; strongly effervescent; slightly alkaline.

Range in Characteristics

Depth to carbonates: 36 to 72 inches
Thickness of the mollic epipedon: 10 to 24 inches

Ap or A horizon:
Hue—10YR

Value—2
Chroma—1 or 2
Texture—silty clay loam
Reaction—strongly acid to slightly acid

AB horizon:
Hue—10YR
Value—3
Chroma—2 or 3
Texture—silty clay loam
Reaction—moderately acid or slightly acid

Bw horizon:
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—silty clay loam in the upper part; silt loam in the lower part
Reaction—slightly acid or neutral

C horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—1 to 8
Texture—silt loam
Reaction—neutral to moderately alkaline

Taxadjunct features: The moderately eroded and severely eroded phases of the Galva series in Woodbury County, Iowa, have a thinner surface layer than is defined as the range for the series.

Grable Series

Typical Pedon

Grable silt loam, in an area of Grable-Morconick complex, 0 to 2 percent slopes, rarely flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 2,373 feet west and 1,000 feet south of the northeast corner of sec. 31, T. 87 N., R. 47 W.; USGS Salix topographic quadrangle; lat. 42 degrees 18 minutes 40.6 seconds N. and long. 96 degrees 21 minutes 26.9 seconds W., NAD 83:

Ap—0 to 9 inches; about 95 percent very dark grayish brown (2.5Y 3/2) silt loam, grayish brown (2.5Y 5/2) dry; weak fine subangular blocky structure parting to weak fine granular; very friable; common fine roots; slightly effervescent; moderately alkaline; abrupt smooth boundary.
C1—9 to 22 inches; about 70 percent grayish brown (2.5Y 5/2) and 30 percent dark grayish brown (2.5Y 4/2) silt loam; massive with weak thin alluvial stratification; very friable; few fine roots; common fine tubular pores; few fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; abrupt wavy boundary.
2C2—22 to 80 inches; grayish brown (2.5Y 5/2) sand; single grain; loose; common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; slightly effervescent; strongly alkaline.

Range in Characteristics

Depth to sandy alluvium: 18 to 30 inches

Ap or A horizon:
Hue—10YR or 2.5Y
Value—3
Chroma—1 to 3
Texture—silt loam
Reaction—slightly alkaline or moderately alkaline

C horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2
Texture—silt loam
Reaction—slightly alkaline or moderately alkaline

2C horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2
Texture—fine sand or sand
Reaction—slightly alkaline to strongly alkaline

Grantcenter Series

Typical Pedon

Grantcenter silty clay loam, 0 to 2 percent slopes, rarely flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 255 feet south and 700 feet west of the northeast corner of sec. 7, T. 86 W., R. 45 W.; USGS Climbing Hill topographic quadrangle; lat. 42 degrees 17 minutes 03.5 seconds N. and long. 96 degrees 07 minutes 09.1 seconds W., NAD 83:

Ap—0 to 7 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; weak very fine subangular blocky structure parting to weak fine granular; friable; common fine and medium roots between peds; few very fine tubular pores; many distinct black (10YR 2/1) organic coatings on faces of peds; slightly acid; abrupt smooth boundary.
A—7 to 13 inches; very dark grayish brown (10YR 3/2) silty clay loam, dark grayish brown (10YR 4/2) dry; weak very fine and fine granular structure; friable; common fine roots between peds; few very fine

tubular pores; many distinct black (10YR 2/1) organic coatings on faces of peds; slightly acid; clear smooth boundary.

AB—13 to 18 inches; very dark grayish brown (2.5Y 3/2) silty clay loam, dark grayish brown (10YR 4/2) dry; weak very fine subangular blocky structure; friable; common very fine and fine roots between peds; common very fine tubular pores; many distinct black (10YR 2/1) organic coatings on faces of peds; slightly acid; clear wavy boundary.

Bg—18 to 24 inches; dark grayish brown (2.5Y 4/2) silty clay loam; weak very fine and fine subangular blocky structure; friable; common very fine and fine roots between peds; common very fine tubular pores; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; neutral; clear smooth boundary.

Bk—24 to 30 inches; olive brown (2.5Y 4/4) silty clay loam; weak fine subangular blocky structure; friable; common very fine and fine roots between peds; common very fine tubular pores; common distinct dark grayish brown (2.5Y 4/2) coatings on faces of peds; few fine white (10YR 8/1) masses of carbonate; common fine distinct light olive brown (2.5Y 5/6) redoximorphic concentrations; very slightly effervescent; slightly alkaline; abrupt wavy boundary.

Bkg—30 to 39 inches; grayish brown (2.5Y 5/2) silt loam; weak fine and medium subangular blocky structure; friable; common very fine tubular pores; common fine white (10YR 8/1) masses of carbonate and common medium white (10YR 8/1) carbonate concretions; many fine and medium prominent olive yellow (2.5Y 6/6) redoximorphic concentrations; violently effervescent; moderately alkaline; clear wavy boundary.

Cg1—39 to 53 inches; grayish brown (2.5Y 5/2) silt loam; massive; friable; common very fine tubular pores; many medium prominent olive yellow (2.5Y 6/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; diffuse smooth boundary.

Cg2—53 to 80 inches; grayish brown (2.5Y 5/2) silt loam; massive; friable; common very fine tubular pores; common fine prominent light olive brown (2.5Y 5/6) and reddish brown (5YR 4/4) and common medium prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline.

Range in Characteristics

Depth to carbonates: 24 to 60 inches
Thickness of the mollic epipedon: 10 to 24 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silty clay loam
Reaction—moderately acid to neutral

AB horizon:
Hue—10YR or 2.5Y
Value—3
Chroma—2
Texture—silty clay loam
Reaction—slightly acid or neutral

Bg horizon:
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—2
Texture—silty clay loam or silt loam
Reaction—neutral or slightly alkaline

Bk or Bkg horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4
Texture—silt loam or silty clay loam
Reaction—slightly alkaline or moderately alkaline

Cg horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4
Texture—silt loam
Reaction—slightly alkaline or moderately alkaline

Hamburg Series

Typical Pedon

Hamburg silt loam, 40 to 75 percent slopes, in a pasture in Monona County, Iowa, about 2,100 feet south and 2,100 feet east of the northwest corner of sec. 20, T. 84 N., R. 44 W.; USGS Castana topographic quadrangle; lat. 42 degrees 04 minutes 27.0 seconds N. and long. 95 degrees 59 minutes 38.0 seconds W., NAD 83:

A—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam, grayish brown (10YR 5/2) dry; weak fine and very fine granular structure; friable; many fine roots; strongly effervescent; slightly alkaline; clear smooth boundary.

AC—4 to 8 inches; brown (10YR 4/3) silt loam; dark grayish brown (10YR 4/2) faces of peds; weak fine granular structure; friable; few fine roots; few distinct very dark grayish brown (10YR 3/2) organic stains in root channels and pores; strongly effervescent; slightly alkaline; gradual smooth boundary.

C1—8 to 18 inches; brown (10YR 5/3) silt loam; massive; friable; few fine and very fine roots; very few distinct dark brown (10YR 3/3) organic stains in root channels and pores; strongly effervescent; slightly alkaline; diffuse smooth boundary.

C2—18 to 60 inches; brown (10YR 5/3) silt loam; massive; friable; few fine roots; few fine faint light brownish gray (10YR 6/2) redoximorphic depletions; few fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly effervescent; slightly alkaline.

Range in Characteristics

Redoximorphic features: The redoximorphic features in this pedon are considered relict features.

Ap or A horizon:
Hue—10YR
Value—3 or 4
Chroma—2 or 3
Texture—silt loam
Reaction—slightly alkaline or moderately alkaline

AC horizon:
Hue—10YR
Value—4 to 6
Chroma—3 or 4
Texture—silt loam
Reaction—slightly alkaline or moderate alkaline

C horizon:
Hue—10YR
Value—4 to 6
Chroma—3 or 4
Texture—silt loam
Reaction—slightly alkaline or moderately alkaline

Hawick Series

Typical Pedon

Hawick sandy loam, 14 to 18 percent slopes, in a cultivated field on a stream terrace in Woodbury County, Iowa, about 2,400 feet west and 500 feet south of the northeast corner of sec. 20, T. 89 N., R. 42 W.; USGS Pierson topographic quadrangle; lat. 42 degrees 31 minutes 03.4 seconds N. and long. 95 degrees 49 minutes 41.3 seconds W., NAD 83:

Ap—0 to 5 inches; dark brown (10YR 3/3) sandy loam, brown (10YR 5/3) dry; weak very fine and fine subangular blocky structure; very friable; few very fine and fine roots; many fine tubular pores; strongly effervescent; slightly alkaline; abrupt smooth boundary.

Bk1—5 to 12 inches; light olive brown (2.5Y 5/4) very gravelly loamy sand; single grain; loose; few very fine and fine roots; few fine very pale brown (10YR 8/2) carbonate coatings on rock fragments; about 46 percent gravel; strongly effervescent; moderately alkaline; abrupt smooth boundary.

Bk2—12 to 22 inches; light yellowish brown (2.5Y 6/4) gravelly loamy sand; single grain; loose; few very fine and fine roots; common fine very pale brown (10YR 8/2) carbonate coatings on rock fragments; about 27 percent gravel; strongly effervescent; moderately alkaline; gradual smooth boundary.

C—22 to 80 inches; light yellowish brown (2.5Y 6/4) loamy coarse sand; single grain; loose; common fine very pale brown (10YR 8/2) carbonate coatings on rock fragments; about 14 percent gravel; strongly effervescent; moderately alkaline.

Range in Characteristics

Depth to carbonates: 0 to 30 inches
Thickness of the mollic epipedon: 7 to 16 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 to 3
Texture—sandy loam or loamy sand
Reaction—slightly acid to slightly alkaline

Bk horizon:
Hue—7.5YR, 10YR, or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—loamy sand, loamy coarse sand, or coarse sand or the gravelly and very gravelly analogs of these textures
Reaction—slightly alkaline or moderately alkaline

C horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 6
Texture—coarse sand, loamy sand, loamy coarse

sand, or sand or the gravelly analogs of these textures
Reaction—slightly alkaline or moderately alkaline

Taxadjunct features: The representative pedon for the Hawick series in Woodbury County, Iowa, is a taxadjunct because the surface horizon is thinner than is defined as the range for the series.

Haynie Series

Typical Pedon

Haynie silt loam, 0 to 2 percent slopes, rarely flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 200 feet east and 138 feet north of the southwest corner of sec. 15, T. 87 N., R. 47 W.; USGS Salix topographic quadrangle; lat. 42 degrees 20 minutes 43.2 seconds N. and long. 96 degrees 18 minutes 35.2 seconds W., NAD 83:

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, dark grayish brown (10YR 4/2) dry; weak very fine subangular blocky structure; very friable; common fine roots; common fine tubular pores; slightly effervescent; slightly alkaline; abrupt smooth boundary.
C1—7 to 57 inches; dark grayish brown (10YR 4/2) silt loam; massive with weak thin alluvial stratification; very friable; few fine roots; common fine tubular pores; strongly effervescent; moderately alkaline; gradual smooth boundary.
C2—57 to 65 inches; dark grayish brown (10YR 4/2) silt loam; massive with weak thin alluvial stratification; very friable; common fine tubular pores; few fine and common fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; clear smooth boundary.
C3—65 to 80 inches; dark grayish brown (10YR 4/2) silt loam; massive with weak thin alluvial stratification; very friable; common fine tubular pores; common fine very pale brown (10YR 8/2) masses of carbonate; common fine prominent strong brown (7.5YR 5/6) and common fine and medium prominent yellowish brown (10YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline.

Range in Characteristics

Ap or A horizon:
Hue—10YR or 2.5Y
Value—3
Chroma—2
Texture—silt loam
Reaction—neutral or slightly alkaline

C horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2
Texture—silt loam
Reaction—slightly alkaline or moderately alkaline

Holly Springs Series

Typical Pedon

Holly Springs silty clay loam, 0 to 2 percent slopes, rarely flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 300 feet west and 1,665 feet south of the northeast corner of sec. 9, T. 87 N., R. 46 W.; USGS Luton topographic quadrangle; lat. 42 degrees 11 minutes 40.0 seconds N. and long. 96 degrees 07 minutes 58.1 seconds W., NAD 83:

Ap—0 to 7 inches; black (10YR 2/1) silty clay loam, dark gray (10YR 4/1) dry; weak fine and medium subangular blocky structure; firm; common very fine and fine roots; common very fine tubular pores; few very fine snail shells; slightly effervescent; slightly alkaline; abrupt smooth boundary.
A1—7 to 15 inches; black (N 2/0) silty clay loam, very dark gray (10YR 3/1) dry; weak fine subangular blocky structure; firm; common very fine and fine roots; common very fine tubular pores; few very fine snail shells; common fine distinct very dark grayish brown (2.5Y 3/2) redoximorphic concentrations; strongly effervescent; moderately alkaline; gradual smooth boundary.
A2—15 to 26 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; weak very fine subangular blocky structure; firm; common very fine and fine roots; common very fine tubular pores; few very fine snail shells; common fine distinct very dark grayish brown (2.5Y 3/2) redoximorphic concentrations; strongly effervescent; moderately alkaline; gradual smooth boundary.
A3—26 to 36 inches; very dark gray (10YR 3/1) silty clay, dark gray (10YR 4/1) dry; weak very fine and fine subangular blocky structure; firm; common very fine and fine roots; common very fine tubular pores; common very fine snail shells; common fine distinct very dark grayish brown (2.5Y 3/2)

redoximorphic concentrations; strongly effervescent; moderately alkaline; clear smooth boundary.

Bg—36 to 47 inches; very dark gray (5Y 3/1) silty clay; weak fine and medium subangular blocky structure; firm; common very fine tubular pores; common very fine snail shells; common fine distinct very dark grayish brown (2.5Y 3/2) redoximorphic concentrations; strongly effervescent; moderately alkaline; clear smooth boundary.

Bkg—47 to 60 inches; very dark gray (5Y 3/1) silty clay; weak fine and medium subangular blocky structure; firm; common very fine tubular pores; common very fine snail shells; common fine and medium rounded very pale brown (10YR 8/2) carbonate concretions; common fine very pale brown (10YR 8/2) carbonate threads; common fine very dark grayish brown (2.5Y 3/2) redoximorphic concentrations; strongly effervescent; moderately alkaline; abrupt wavy boundary.

Cg—60 to 80 inches; about 90 percent dark gray (5Y 4/1) and 10 percent very dark gray (5Y 3/1) clay; massive; firm; common very fine tubular pores; common very fine snail shells; common fine and medium rounded very pale brown (10YR 8/2) carbonate concretions; common fine very pale brown (10YR 8/2) carbonate threads; common fine light olive brown (2.5Y 5/6) redoximorphic concentrations; violently effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 24 to 60 inches

Ap or A horizon:
Hue—10YR or N
Value—2 or 3
Chroma—0 or 1
Texture—silty clay loam in the upper part; silty clay in the lower part
Reaction—slightly alkaline or moderately alkaline

Bg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—3 or 4
Chroma—0 or 1
Texture—silty clay
Reaction—slightly alkaline or moderately alkaline

Bkg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—3 or 4
Chroma—0 or 1
Texture—silty clay
Reaction—slightly alkaline or moderately alkaline

Cg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—3 or 4
Chroma—0 or 1
Texture—silty clay or clay
Reaction—slightly alkaline or moderately alkaline

Ida Series

Typical Pedon

Ida silt loam (fig. 13), 5 to 9 percent slopes, severely eroded, in a cultivated field on a ridgetop in Crawford County, Iowa, about 150 feet north and 2,400 feet west of the southeast corner of sec. 7, T. 85 N., R. 41 W.; USGS Danbury topographic quadrangle; lat. 42 degrees 10 minutes 57.6 seconds N. and long. 95 degrees 39 minutes 41.3 seconds W., NAD 83:

Ap—0 to 6 inches; about 90 percent brown (10YR 4/3) and 10 percent brown (10YR 5/3) silt loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure; friable; common very fine and fine roots; few tubular pores; dark brown (10YR 3/3) organic stains on faces of peds; few fine and medium very pale brown (10YR 8/2) carbonate concretions; few fine faint brown (7.5YR 4/4) redoximorphic concentrations; strongly effervescent; slightly alkaline; clear smooth boundary.

C1—6 to 12 inches; brown (10YR 5/3) silt loam; massive; friable; few fine roots; common fine tubular pores; few distinct dark brown (10YR 3/3) organic stains; common fine and medium very pale brown (10YR 8/2) carbonate concretions; few fine faint brown (7.5YR 4/4) redoximorphic concentrations; strongly effervescent; moderately alkaline; clear smooth boundary.

C2—12 to 18 inches; yellowish brown (10YR 5/4) silt loam; massive; friable; few fine roots; common fine tubular pores; common fine and medium very pale brown (10YR 8/2) carbonate concretions; few fine very dark brown (7.5YR 2/2) masses of manganese; few fine distinct grayish brown (10YR 5/2) redoximorphic depletions; few fine distinct yellowish brown (10YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; clear smooth boundary.

C3—18 to 25 inches; yellowish brown (10YR 5/4) silt loam; massive; friable; few fine roots; common fine tubular pores; few fine very pale brown (10YR 8/2) carbonate concretions; few fine very dark brown (7.5YR 2/2) masses of manganese; few fine distinct grayish brown (10YR 5/2) redoximorphic depletions; few fine distinct yellowish brown (10YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; clear smooth boundary.

C4—25 to 31 inches; yellowish brown (10YR 5/4) silt loam; massive; friable; few fine roots; common fine tubular pores; few fine very pale brown (10YR 8/2) carbonate concretions and few fine very dark brown (7.5YR 2/2) masses of manganese; common coarse distinct light brownish gray (10YR 6/2) redoximorphic depletions; common coarse distinct yellowish brown (10YR 5/6) and few fine distinct strong brown (7.5YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; gradual smooth boundary.

C5—31 to 46 inches; yellowish brown (10YR 5/4) silt loam; massive; friable; common fine tubular pores; few fine very pale brown (10YR 8/2) carbonate concretions; few fine very dark brown (7.5YR 2/2) masses of manganese; common coarse distinct light brownish gray (2.5Y 6/2) redoximorphic depletions; common coarse distinct strong brown (7.5YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; gradual smooth boundary.

C6—46 to 71 inches; yellowish brown (10YR 5/4) silt loam; massive; friable; common fine tubular pores; few fine dark brown (7.5YR 3/2) masses of manganese; common coarse distinct light brownish gray (2.5Y 6/2) redoximorphic depletions; common coarse distinct strong brown (7.5YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; gradual smooth boundary.

C7—71 to 80 inches; yellowish brown (10YR 5/4) silt loam; massive; friable; few fine very pale brown (10YR 8/2) carbonate concretions; dark brown (7.5YR 3/2) masses of manganese; common coarse distinct light brownish gray (2.5Y 6/2) redoximorphic depletions; common coarse distinct strong brown (7.5YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline.

Range in Characteristics

Redoximorphic features: The redoximorphic features in this pedon are considered relict features.

Ap or A horizon:
Hue—10YR
Value—3 to 5
Chroma—2 or 3
Texture—silt loam
Reaction—neutral to moderately alkaline

C horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—3 to 6
Texture—silt loam
Reaction—slightly alkaline or moderately alkaline

Judson Series

Typical Pedon

Judson silty clay loam (fig. 14), 2 to 5 percent slopes, in a cultivated field in an upland drainageway in Woodbury County, Iowa, about 1,100 feet east and 800 feet south of the northwest corner of sec. 28, T. 89 N., R. 43 W.; USGS Kingsley topographic quadrangle; lat. 42 degrees 30 minutes 08.5 seconds N. and long. 95 degrees 55 minutes 59.3 seconds W., NAD 83:

Ap—0 to 11 inches; very dark grayish brown (10YR 3/2) silty clay loam, dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure parting to weak fine and medium granular; very friable; common fine and medium roots; common fine and medium tubular pores; common medium rounded wormcasts; few distinct very dark brown (10YR 2/2) organic stains on faces of peds and in pores; moderately acid; clear smooth boundary.

A1—11 to 20 inches; about 80 percent very dark grayish brown (10YR 3/2) and 20 percent very dark brown (10YR 2/2) silty clay loam, dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure parting to weak fine and medium granular; very friable; common fine and medium roots; many very fine tubular pores; common medium rounded wormcasts; many distinct black (10YR 2/1) organic stains on faces of peds and in pores; slightly acid; clear smooth boundary.

A2—20 to 30 inches; very dark grayish brown (10YR 3/2) silty clay loam, dark grayish brown (10YR 4/2) dry; weak fine and medium subangular blocky structure; very friable; common very fine roots; many very fine tubular pores; common medium rounded wormcasts; many distinct very dark brown (10YR 2/2) organic stains on faces of peds and in pores; slightly acid; clear smooth boundary.

AB—30 to 40 inches; very dark grayish brown (10YR 3/2) silty clay loam, brown (10YR 4/3) dry; weak medium prismatic structure parting to weak fine and medium subangular blocky; friable; common very fine roots; many very fine tubular pores; common distinct very dark brown (10YR 2/2) organic stains on faces of peds and in pores; neutral; gradual smooth boundary.

Bw1—40 to 52 inches; dark brown (10YR 3/3) silty clay loam, brown (10YR 4/3) dry; weak medium subangular blocky structure; friable; common very fine roots; many very fine tubular pores; few distinct very dark grayish brown (10YR 3/2) organic stains on faces of peds and in pores; neutral; clear smooth boundary.

Bw2—52 to 60 inches; brown (10YR 4/3) silty clay loam; weak coarse prismatic structure parting to weak fine and medium subangular blocky; friable; many very fine and common fine tubular pores; few distinct dark grayish brown (10YR 4/2) coatings on faces of peds and in pores; very few distinct very dark grayish brown (10YR 3/2) organic stains in root channels and pores; few fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; few fine distinct light brownish gray (2.5Y 6/2) redoximorphic depletions; neutral; gradual smooth boundary.

Bw3—60 to 68 inches; yellowish brown (10YR 5/4) silty clay loam; weak medium prismatic structure parting to weak medium subangular blocky; friable; many very fine and common fine tubular pores; few distinct brown (10YR 4/3) coatings on faces of peds and in pores; few fine distinct strong brown (7.5YR 5/6) redoximorphic concentrations; few fine distinct light brownish gray (2.5Y 6/2) redoximorphic depletions; neutral; clear wavy boundary.

BC—68 to 78 inches; yellowish brown (10YR 5/4) silt loam; weak medium prismatic structure parting to weak fine subangular blocky; friable; common very fine and fine tubular pores; common fine distinct strong brown (7.5YR 5/6) redoximorphic concentrations; common fine distinct light brownish gray (2.5Y 6/2) redoximorphic depletions; slightly alkaline; abrupt smooth boundary.

C—78 to 80 inches; brown (10YR 5/3) silt loam; massive; friable; common very fine and fine tubular pores; few coarse and common fine and medium very pale brown (10YR 8/2) carbonate concretions; common fine and medium prominent strong brown (7.5YR 5/6) redoximorphic concentrations; common fine and medium faint pinkish gray (7.5YR 6/2) redoximorphic depletions; strongly effervescent; slightly alkaline.

Range in Characteristics

Depth to carbonates: More than 60 inches
Thickness of the mollic epipedon: 32 to 52 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silty clay loam
Reaction—moderately acid to neutral

AB horizon:
Hue—10YR
Value—2 or 3
Chroma—2
Texture—silty clay loam
Reaction—moderately acid to neutral

Bw horizon:
Hue—10YR
Value—3 to 5
Chroma—3 or 4
Texture—silty clay loam
Reaction—moderately acid to neutral

BC horizon:
Hue—10YR
Value—3 to 5
Chroma—3 or 4
Texture—silty clay loam or silt loam
Reaction—slightly acid to slightly alkaline

C horizon:
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—silty clay loam or silt loam
Reaction—slightly acid to slightly alkaline

Keg Series

Typical Pedon

Keg loam, 0 to 2 percent slopes, rarely flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 1,377 feet east and 63 feet north of the southwest corner of sec. 2, T. 86 N., R. 47 W.; USGS Salix topographic quadrangle; lat. 42 degrees 17 minutes 12.5 seconds N. and long. 96 degrees 17 minutes 06.3 seconds W., NAD 83:

Ap—0 to 7 inches; black (10YR 2/1) loam, dark gray (10YR 4/1) dry; weak medium subangular blocky structure; friable; many very fine and fine roots;

common very fine and few fine tubular pores; neutral; abrupt smooth boundary.

A—7 to 16 inches; very dark brown (10YR 2/2) loam, very dark grayish brown (2.5Y 3/2) dry; weak fine and medium subangular blocky structure; very friable; many very fine and fine roots; common very fine tubular pores and few fine tubular pores; few faint black (10YR 2/1) organic coatings on faces of peds and in pores; neutral; clear smooth boundary.

AB—16 to 29 inches; very dark grayish brown (10YR 3/2) loam, dark grayish brown (2.5Y 4/2) dry; weak fine subangular blocky structure; very friable; few very fine roots; many very fine and few fine tubular pores; few distinct black (10YR 2/1) organic coatings on faces of peds and in pores; slightly alkaline; abrupt smooth boundary.

Bw—29 to 36 inches; dark grayish brown (2.5Y 4/2) loam; weak very fine and fine subangular blocky structure; very friable; common very fine roots; many very fine tubular pores; few distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds and in pores; strongly effervescent; slightly alkaline; clear smooth boundary.

Bk1—36 to 45 inches; about 50 percent dark grayish brown (10YR 4/2) and 50 percent grayish brown (10YR 5/2) very fine sandy loam; weak very fine and fine subangular blocky structure; very friable; few very fine roots; common very fine tubular pores; common fine light brownish gray (10YR 6/2) carbonate threads; strongly effervescent; moderately alkaline; clear smooth boundary.

Bk2—45 to 56 inches; about 50 percent dark grayish brown (2.5Y 4/2) and 50 percent grayish brown (2.5Y 5/2) very fine sandy loam; weak very fine subangular blocky structure; very friable; few very fine roots; common very fine tubular pores; common fine and medium light brownish gray (10YR 6/2) carbonate concretions; strongly effervescent; moderately alkaline; gradual smooth boundary.

C1—56 to 69 inches; about 50 percent grayish brown (2.5Y 5/2) and 50 percent light olive brown (2.5Y 5/3) very fine sandy loam; massive; very friable; common very fine tubular pores; strongly effervescent; moderately alkaline; gradual smooth boundary.

C2—69 to 80 inches; light olive brown (2.5Y 5/3) loam; massive; very friable; common very fine tubular pores; strongly effervescent; moderately alkaline.

Range in Characteristics

Depth to carbonates: 24 to 42 inches
Thickness of the mollic epipedon: 10 to 29 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—loam or silt loam
Reaction—slightly acid or neutral

AB horizon:
Hue—10YR
Value—3
Chroma—2 or 3
Texture—loam or silt loam
Reaction—slightly acid to slightly alkaline

Bw horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4
Texture—loam or very fine sandy loam
Reaction—neutral or slightly alkaline

Bk horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4
Texture—loam or very fine sandy loam
Reaction—slightly alkaline or moderately alkaline

C horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4
Texture—loam, silt loam, or very fine sandy loam
Reaction—slightly alkaline or moderately alkaline

Taxadjunct features: The representative pedon for the Keg series in Woodbury County, Iowa, is a taxadjunct because the combined thickness of the A horizons is more than that defined as the range for the series; the content of sand throughout the profile is greater than is defined as the range for the series; and reaction in the AB and Bw horizons is outside the range defined for the series.

Kennebec Series

Typical Pedon

Kennebec silty clay loam, 0 to 2 percent slopes, rarely flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 600 feet west and

1,700 feet south of the northeast corner of sec. 13, T. 86 N., R. 42 W.; USGS Holstein topographic quadrangle; lat. 42 degrees 15 minutes 47.7 seconds N. and long. 95 degrees 40 minutes 21.2 seconds W., NAD 83:

Ap—0 to 9 inches; black (10YR 2/1) silty clay loam, dark gray (10YR 4/1) dry; weak very fine subangular blocky structure parting to weak fine granular; friable; common fine and medium roots; common fine and medium tubular pores; neutral; abrupt smooth boundary.

A1—9 to 17 inches; very dark gray (10YR 3/1) silt loam, dark gray (10YR 4/1) dry; weak very fine subangular blocky structure; friable; few fine roots; common fine tubular pores; neutral; gradual smooth boundary.

A2—17 to 27 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; weak very fine and fine subangular blocky structure; friable; few fine roots; many fine tubular pores; neutral; gradual smooth boundary.

A3—27 to 37 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; weak very fine prismatic structure parting to weak fine subangular blocky; friable; few fine roots; many fine tubular pores; neutral; gradual smooth boundary.

AB—37 to 48 inches; very dark gray (10YR 3/1) silty clay loam, gray (10YR 5/1) dry; weak very fine prismatic structure parting to weak fine subangular blocky; friable; few fine roots; many fine tubular pores; neutral; clear smooth boundary.

Bw1—48 to 59 inches; very dark grayish brown (10YR 3/2) silty clay loam; weak very fine prismatic structure parting to weak fine subangular blocky; friable; few fine roots; many fine tubular pores; common prominent very pale brown (10YR 7/3) silt coatings on faces of peds; common fine faint dark brown (10YR 3/3) redoximorphic concentrations; neutral; gradual smooth boundary.

Bw2—59 to 71 inches; dark grayish brown (2.5Y 4/2) silty clay loam; weak fine prismatic structure parting to weak fine and medium subangular blocky; friable; many fine tubular pores; many distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; many prominent light gray (10YR 7/2) silt coatings on faces of peds; common fine faint brown (10YR 4/3) redoximorphic concentrations; neutral; gradual smooth boundary.

Bw3—71 to 80 inches; dark grayish brown (2.5Y 4/2) silty clay loam; weak fine prismatic structure parting to weak medium subangular blocky; friable; many fine tubular pores; common prominent very pale brown (10YR 8/2) silt coatings on faces of peds; common fine faint brown (10YR 4/3) redoximorphic concentrations; neutral.

Range in Characteristics

Thickness of the mollic epipedon: More than 40 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silty clay loam or silt loam
Reaction—moderately acid to neutral

AB horizon:
Hue—10YR
Value—3
Chroma—1
Texture—silty clay loam or silt loam
Reaction—slightly acid or neutral

Bw horizon:
Hue—10YR or 2.5Y
Value—3 or 4
Chroma—2 or 3
Texture—silty clay loam or silt loam
Reaction—slightly acid or neutral

Lakeport Series

Typical Pedon

Lakeport silty clay loam, 0 to 2 percent slopes, rarely flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 1,840 feet west and 200 feet north of the southeast corner of sec. 36, T. 86 N., R. 47 W.; USGS Albaton topographic quadrangle; lat. 42 degrees 12 minutes 55.4 seconds N. and long. 96 degrees 15 minutes 28.2 seconds W., NAD 83:

Ap1—0 to 4 inches; very dark brown (10YR 2/2) silty clay loam, very dark grayish brown (10YR 3/2) dry; weak fine subangular blocky structure parting to moderate very fine granular and moderate very fine subangular blocky; friable; few fine roots; few fine tubular pores; strongly acid; abrupt smooth boundary.

Ap2—4 to 12 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; moderate very fine subangular blocky structure; friable; few fine roots; common fine tubular pores; moderately acid; clear smooth boundary.

A—12 to 22 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; moderate fine subangular blocky structure parting to moderate very fine subangular blocky and moderate very fine granular; friable; few fine roots; common fine tubular pores; slightly acid; clear smooth boundary.

Bg1—22 to 28 inches; dark grayish brown (10YR 4/2) silty clay loam; moderate fine granular and moderate very fine subangular blocky structure; firm; few fine roots; few medium tubular pores; common distinct very dark grayish brown (2.5Y 3/2) organic coatings on vertical faces of peds; neutral; clear smooth boundary.

Bg2—28 to 37 inches; dark grayish brown (2.5Y 4/2) silty clay loam; moderate very fine subangular blocky structure; firm; few distinct very dark grayish brown (2.5Y 3/2) organic coatings on vertical faces of peds; neutral; clear smooth boundary.

Bg3—37 to 48 inches; dark grayish brown (2.5Y 4/2) silty clay; moderate very fine subangular blocky structure; firm; few distinct olive gray (5Y 5/2) coatings on vertical faces of peds; few fine prominent dark yellowish brown (10YR 4/4) and many fine prominent light yellowish brown (10YR 6/4) redoximorphic concentrations; neutral; abrupt smooth boundary.

2Cg1—48 to 58 inches; grayish brown (2.5Y 5/2) silt loam; massive; very friable; few distinct dark grayish brown (2.5Y 4/2) coatings in root channels and pores; few fine prominent dark yellowish brown (10YR 4/4), many medium prominent brown (7.5YR 4/4), and common fine prominent yellowish brown (10YR 5/4) redoximorphic concentrations; strongly effervescent; moderately alkaline; clear smooth boundary.

2Cg2—58 to 64 inches; grayish brown (2.5Y 5/2) silty clay loam; massive; friable; few very fine roots; many fine tubular pores; common fine light brownish gray (2.5Y 6/2) carbonate threads; many fine prominent yellowish brown (10YR 5/6) and common fine distinct brown (10YR 4/3) redoximorphic concentrations; strongly effervescent; moderately alkaline; abrupt smooth boundary.

3Cg3—64 to 76 inches; grayish brown (2.5Y 5/2) silty clay; massive; very firm; few very fine roots; common very fine tubular pores; few dark yellowish brown (10YR 4/6) coatings in root channels and pores; few fine and medium light brownish gray (2.5Y 6/2) carbonate nodules; many fine prominent yellowish brown (10YR 5/4) and common fine distinct brown (10YR 4/3) redoximorphic concentrations; strongly effervescent; slightly alkaline; abrupt smooth boundary.

3Cg4—76 to 80 inches; grayish brown (2.5Y 5/2) clay; massive; very firm; few fine carbonate threads; few fine and medium light brownish gray (2.5Y 6/2) carbonate concretions; few fine rounded light brownish gray (2.5Y 6/2) carbonate nodules; strongly effervescent; slightly alkaline.

Range in Characteristics

Depth to carbonates: More than 36 inches
Thickness of the mollic epipedon: 16 to 24 inches

Ap or A horizon:
Hue—10YR
Value—2
Chroma—1 or 2
Texture—silty clay loam
Reaction—strongly acid to neutral

Bg horizon:
Hue—10YR or 2.5Y
Value—3 or 4
Chroma—1 or 2
Texture—silty clay or silty clay loam
Reaction—slightly acid to slightly alkaline

C, Cg, 2Cg, or 3Cg horizon:
Hue—10YR or 2.5Y
Value—5 or 6
Chroma—2 to 4
Texture—silty clay, clay, silt loam, or silty clay loam
Reaction—slightly alkaline or moderately alkaline

Larpenteur Series

Typical Pedon

Larpenteur loam, 0 to 2 percent slopes, rarely flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 1,400 feet south and 488 feet east of the northwest corner of sec. 36, T. 87 N., R. 46 W.; USGS Luton topographic quadrangle; lat. 42 degrees 18 minutes 40.6 seconds N. and long. 96 degrees 09 minutes 08.9 seconds W., NAD 83:

Ap—0 to 8 inches; black (10YR 2/1) loam, very dark gray (10YR 3/1) dry; weak medium subangular blocky structure parting to weak fine subangular blocky; friable; few very fine and fine roots; common very fine tubular pores; slightly effervescent; slightly alkaline; abrupt smooth boundary.

A—8 to 15 inches; very dark gray (10YR 3/1) loam, dark gray (10YR 4/1) dry; weak fine and medium subangular blocky structure; friable; few very fine and fine roots; common very fine and few fine tubular pores; few distinct black (10YR 2/1) organic coatings on faces of peds and in pores; strongly effervescent; moderately alkaline; clear smooth boundary.

BA—15 to 22 inches; about 50 percent very dark grayish brown (2.5Y 3/2) and 50 percent dark grayish brown (2.5Y 4/2) clay loam; weak very fine and fine subangular blocky structure; friable; few very fine and fine roots; common very fine and few fine tubular pores; violently effervescent; moderately alkaline; clear smooth boundary.

Bg—22 to 28 inches; about 50 percent dark grayish brown (2.5Y 4/2) and 50 percent olive brown (2.5Y 4/3) loam; weak fine subangular blocky structure; friable; many very fine and common fine tubular pores; violently effervescent; moderately alkaline; clear smooth boundary.

Bkg—28 to 35 inches; dark grayish brown (2.5Y 4/2) silt loam; weak fine subangular blocky structure; very friable; many very fine tubular pores; few fine very pale brown (10YR 8/2) carbonate threads; few fine prominent dark yellowish brown (10YR 4/6) redoximorphic concentrations; violently effervescent; strongly alkaline; clear smooth boundary.

Bk—35 to 46 inches; light olive brown (2.5Y 5/3) silt loam; weak fine subangular blocky structure; very friable; common very fine and fine tubular pores; few fine very pale brown (10YR 8/2) carbonate concretions; few fine prominent dark yellowish brown (10YR 4/6) redoximorphic concentrations; strongly effervescent; strongly alkaline; abrupt smooth boundary.

C1—46 to 55 inches; light olive brown (2.5Y 5/3) silt loam; massive; very friable; few very fine and fine tubular pores; few fine very pale brown (10YR 8/2) carbonate concretions; common fine and medium prominent dark yellowish brown (10YR 4/6) redoximorphic concentrations; strongly effervescent; strongly alkaline; clear smooth boundary.

C2—55 to 64 inches; light olive brown (2.5Y 5/3) silt loam; massive; very friable; few very fine and fine tubular pores; few fine very pale brown (10YR 8/2) carbonate concretions; common medium prominent dark yellowish brown (10YR 4/6) redoximorphic concentrations; strongly effervescent; strongly alkaline; clear smooth boundary.

C3—64 to 80 inches; light olive brown (2.5Y 5/3) silt loam; massive; very friable; few very fine and fine tubular pores; common medium prominent dark yellowish brown (10YR 4/6) redoximorphic concentrations; strongly effervescent; strongly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 24 inches
Depth to carbonates: 0 to 10 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam or loam
Reaction—slightly alkaline or moderately alkaline

BA horizon:
Hue—10YR or 2.5Y
Value—3 or 4
Chroma—2
Texture—loam, clay loam, or silt loam
Reaction—slightly alkaline or moderately alkaline

Bg and Bkg horizons:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4
Texture—loam or silt loam
Reaction—slightly alkaline to strongly alkaline

C horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4
Texture—silt loam
Reaction—slightly alkaline to strongly alkaline

Taxadjunct features: The representative pedon for the Larpenteur series in Woodbury County, Iowa, is a taxadjunct because it has less clay and more sand in the particle-size control section than are defined as the range for the series.

Liston Series

Typical Pedon

Liston clay loam, in an area of Liston-Burchard complex, 14 to 18 percent slopes, in a pasture in Crawford County, Iowa, about 840 feet north and 1,410 feet west of the southeast corner of sec. 28, T. 85 N., R. 38 W.; USGS Kiron topographic quadrangle; lat. 42 degrees 08 minutes 29.4 seconds N. and long. 95 degrees 16 minutes 08.9 seconds W., NAD 83:

A—0 to 5 inches; very dark grayish brown (10YR 3/2) clay loam, dark grayish brown (10YR 4/2) dry; moderate fine granular structure; friable; many very fine and fine roots; many very fine and fine tubular pores; strongly effervescent; moderately alkaline; clear smooth boundary.

Bw—5 to 12 inches; brown (10YR 4/3) clay loam; moderate fine subangular blocky structure; firm; many very fine roots; many very fine and fine tubular pores; common faint dark brown (10YR 3/3) organic coatings on vertical faces of peds; strongly effervescent; moderately alkaline; clear smooth boundary.

Bk1—12 to 18 inches; yellowish brown (10YR 5/4) clay loam; moderate fine subangular blocky structure; firm; many very fine roots; common very fine and fine tubular pores; common fine and medium very pale brown (10YR 8/2) masses of carbonate; few fine and medium very pale brown (10YR 8/2) carbonate concretions; strongly effervescent; moderately alkaline; clear smooth boundary.

Bk2—18 to 29 inches; yellowish brown (10YR 5/4) clay loam; moderate medium and coarse prismatic structure parting to moderate fine subangular blocky; firm; common very fine roots; common very fine and fine tubular pores; common medium and coarse very pale brown (10YR 8/2) masses of carbonate; few fine and medium very pale brown (10YR 8/2) carbonate concretions; few fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; gradual smooth boundary.

Bk3—29 to 38 inches; yellowish brown (10YR 5/4) clay loam; moderate medium and coarse prismatic structure parting to moderate fine angular blocky; firm; common very fine roots; common very fine and fine tubular pores; common medium and coarse very pale brown (10YR 8/2) masses of carbonate; few fine and medium very pale brown (10YR 8/2) carbonate concretions; few fine distinct grayish brown (2.5Y 5/2) redoximorphic depletions; few fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; clear smooth boundary.

C1—38 to 55 inches; brown (10YR 5/3) clay loam; massive; firm; common very fine roots; common very fine and fine tubular pores; common fine and medium very pale brown (10YR 8/2) masses of carbonate; common fine and medium very pale brown (10YR 8/2) carbonate concretions; common fine and medium distinct strong brown (7.5YR 4/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; gradual smooth boundary.

C2—55 to 67 inches; about 50 percent strong brown (7.5YR 5/6) and 50 percent grayish brown (2.5Y 5/2) clay loam; massive; firm; common very fine and fine tubular pores; common fine and medium very pale brown (10YR 8/2) masses of carbonate; few fine and medium very pale brown (10YR 8/2) carbonate concretions; few distinct very dark brown (7.5YR 2/2) manganese stains on faces of peds and in pores; strongly effervescent; moderately alkaline; gradual smooth boundary.

C3—67 to 80 inches; about 50 percent strong brown (7.5YR 5/6) and 50 percent gray (2.5Y 6/1) clay loam; massive; firm; common very fine and fine tubular pores; common fine and medium very pale brown (10YR 8/2) masses of carbonate; few fine and medium very pale brown (10YR 8/2) carbonate concretions; few distinct very dark brown (7.5YR 2/2) manganese stains on faces of peds and in pores; strongly effervescent; moderately alkaline.

Range in Characteristics

A or Ap horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—loam or clay loam
Reaction—neutral to moderately alkaline

AB horizon (if it occurs):
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—clay loam
Reaction—slightly alkaline or moderately alkaline

Bw horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—3 or 4
Texture—clay loam
Reaction—slightly alkaline or moderately alkaline

Bk horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4
Texture—clay loam
Reaction—slightly alkaline or moderately alkaline

C horizon:
Hue—7.5YR, 10YR, 2.5Y, or 5Y
Value—4 to 6
Chroma—1 to 6
Texture—clay loam
Reaction—slightly alkaline or moderately alkaline

Figure 11.—A profile of an Albaton soil. This soil has dark strata in the lower part of the profile. Depth is marked in inches.

Figure 12.—A profile of Anthon silty clay loam. The underlying material, from a depth of 140 to 203 centimeters, is gravelly sandy alluvium. Depth is marked in centimeters.

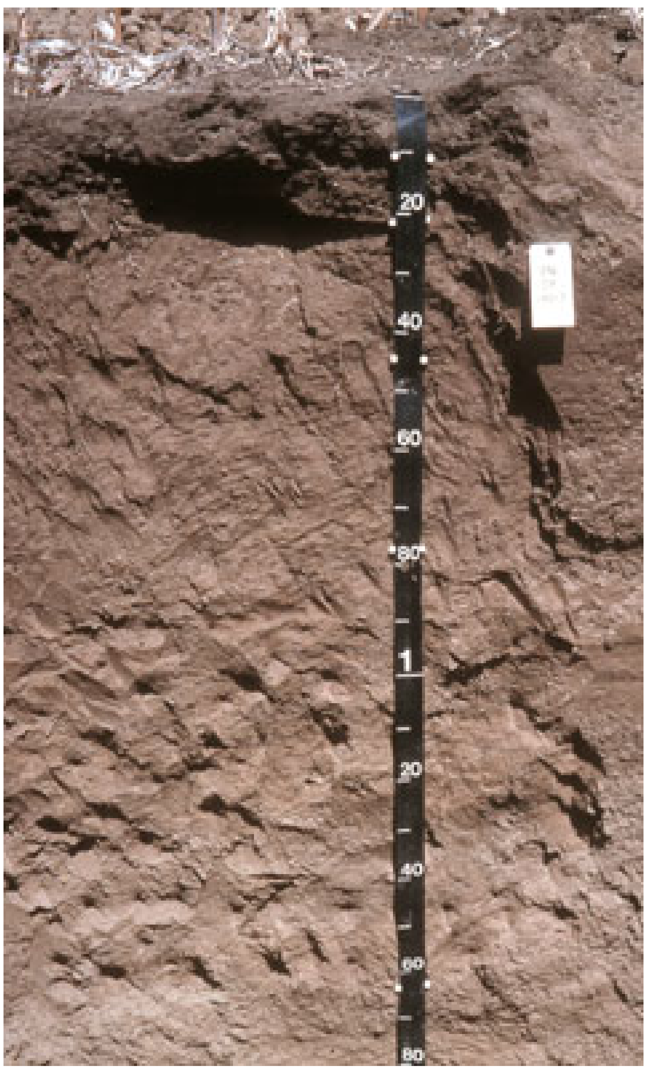


Figure 13.—A profile of Ida silt loam. Ida soils have free calcium carbonate throughout the profile. Depth is marked in centimeters.

Figure 14.—A profile of Judson silty clay loam. This soil has a thick dark surface layer. Depth is marked in centimeters.

Figure 15.—A profile of Luton silty clay. The surface soil is approximately 44 inches thick. Depth is marked in inches.

Figure 16.—A profile of Monona silty clay loam. The surface soil is approximately 40 centimeters thick. Depth is marked in centimeters.

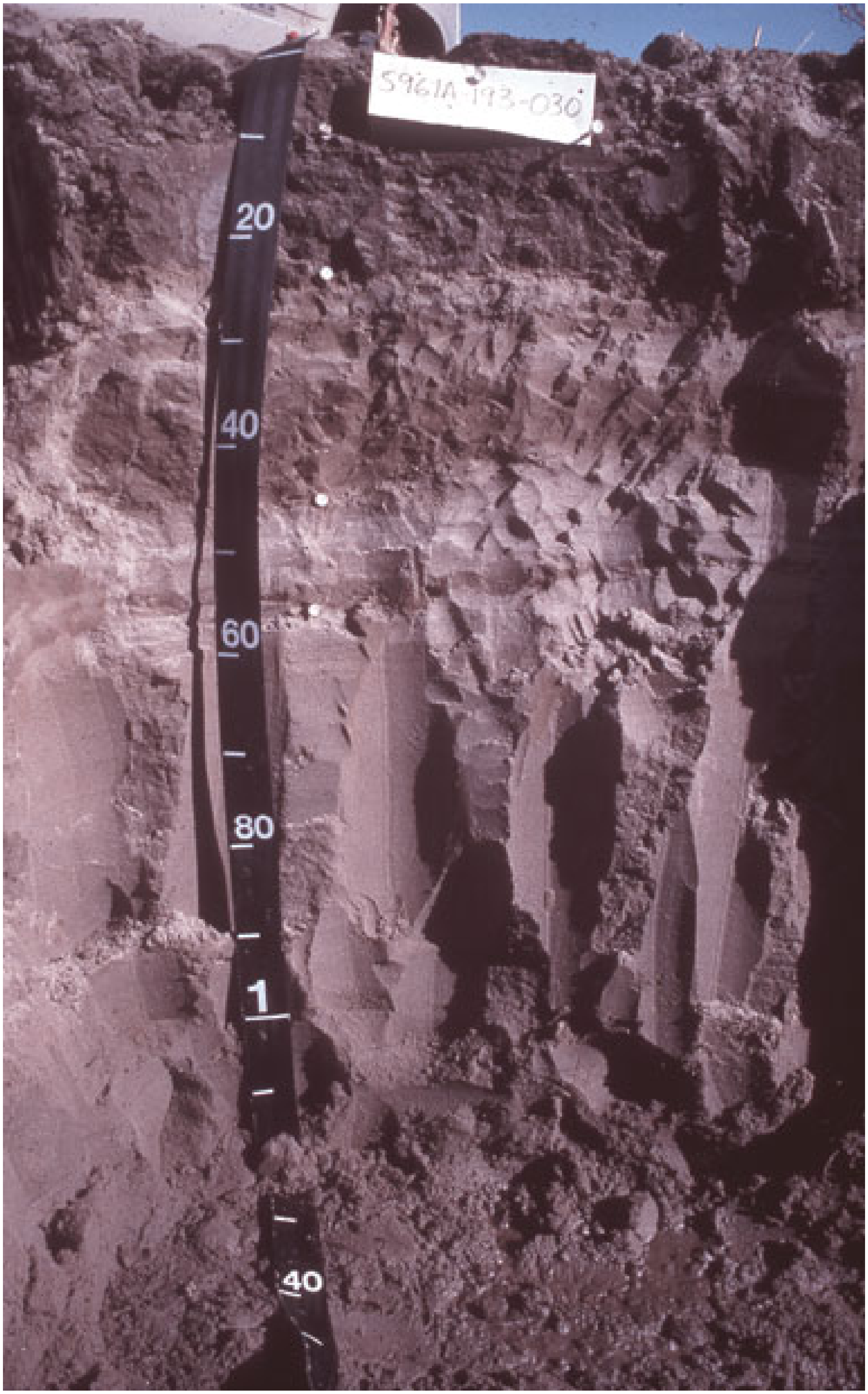


Figure 17.—A profile of Scroll silty clay. Note the stratification of the sandy material below the clayey surface soil. Depth is marked in centimeters.

Luton Series

Typical Pedon

Luton silty clay (fig. 15), 0 to 2 percent slopes, rarely flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 100 feet south and 2,640 feet west of the northeast corner of sec. 27, T. 86 N., R. 46 W.; USGS Sloan topographic quadrangle; lat. 42 degrees 14 minutes 34.0 seconds N. and long. 96 degrees 11 minutes 01.1 minutes W., NAD 83:

Ap1—0 to 3 inches; black (10YR 2/1) silty clay, dark gray (10YR 4/1) dry; moderate fine subangular blocky structure; firm; many very fine and fine roots; few very fine pores; neutral; abrupt smooth boundary.

Ap2—3 to 7 inches; black (10YR 2/1) silty clay, very dark gray (10YR 4/1) dry; moderate medium angular blocky structure; firm; many very fine and fine roots; common very fine pores; few fine prominent strong brown (7.5YR 4/6) redoximorphic concentrations; neutral; abrupt smooth boundary.

A1—7 to 11 inches; about 60 percent black (10YR 2/1) and 40 percent very dark gray (10YR 3/1) silty clay, dark gray (10YR 4/1) dry; moderate fine and medium subangular blocky structure; firm; many very fine and fine roots; many very fine and fine tubular pores; common fine prominent strong brown (7.5YR 4/6) redoximorphic concentrations; neutral; gradual smooth boundary.

A2—11 to 19 inches; black (10YR 2/1) silty clay, very dark gray (10YR 3/1) dry; weak fine and medium subangular blocky and moderate fine granular structure; firm; many very fine roots; common very fine and fine tubular pores; common fine prominent strong brown (7.5YR 4/6) redoximorphic concentrations; neutral; gradual smooth boundary.

A3—19 to 30 inches; very dark gray (10YR 3/1) silty clay, dark gray (10YR 4/1) dry; moderate fine and medium subangular blocky structure; firm; common very fine and fine roots; common medium tubular pores; many faint black (10YR 2/1) organic coatings on faces of peds; common fine prominent strong brown (7.5YR 4/6 and 5/6) and yellowish brown (10YR 5/6) redoximorphic concentrations; neutral; clear smooth boundary.

Bssg1—30 to 37 inches; dark gray (5Y 4/1) silty clay; weak fine and medium subangular blocky and moderate medium granular structure; friable; many very fine roots; many very fine and fine and few medium tubular pores; many distinct very dark gray (5Y 3/1) slickensides; common fine and medium prominent brown (7.5YR 4/4) redoximorphic concentrations; neutral; gradual smooth boundary.

Bssg2—37 to 42 inches; gray (5Y 5/1) silty clay; weak fine and medium subangular blocky structure; friable; many very fine and fine tubular pores; many distinct dark gray (5Y 4/1) slickensides; many fine prominent strong brown (7.5YR 4/6) redoximorphic concentrations; neutral; clear smooth boundary.

Bssg3—42 to 48 inches; gray (5Y 5/1) silty clay; moderate fine prismatic structure parting to moderate fine and medium subangular blocky; friable; common medium tubular pores; many distinct dark gray (5Y 4/1) slickensides; common fine and medium prominent brown (7.5YR 4/4), many fine prominent strong brown (7.5YR 4/6), and many fine and medium prominent light olive brown (2.5Y 5/4) redoximorphic concentrations; slightly alkaline; clear wavy boundary.

Cg1—48 to 60 inches; about 50 percent gray (2.5Y 5/1) and 50 percent dark gray (5Y 4/1) silty clay loam; massive; friable; many very fine and fine and few medium tubular pores; many fine and medium prominent strong brown (7.5YR 4/6) and common fine and medium light olive brown (2.5Y 5/4) redoximorphic concentrations; slightly alkaline; clear smooth boundary.

Cg2—60 to 71 inches; gray (2.5Y 5/1) silty clay; massive; firm; many very fine and fine tubular pores; many fine and medium prominent strong brown (7.5YR 4/6) redoximorphic concentrations and common fine light olive brown (2.5Y 5/4) redoximorphic concentrations; slightly effervescent; slightly alkaline; gradual smooth boundary.

Cg3—71 to 80 inches; gray (2.5Y 6/1) clay; massive; firm; many very fine and fine tubular pores; few fine very pale brown (10YR 8/2) masses of carbonate and few fine very pale brown (10YR 8/2) carbonate concretions; many fine and medium prominent strong brown (7.5YR 4/6) redoximorphic concentrations; strongly effervescent; moderately alkaline.

Range in Characteristics

Depth to carbonates: More than 36 inches
Thickness of the mollic epipedon: 15 to 30 inches

Ap or A horizon:
Hue—10YR or N
Value—2 or 3
Chroma—0 or 1

Texture—silty clay
Reaction—neutral or slightly alkaline

Bssg horizon:
Hue—5Y
Value—3 to 5
Chroma—1 or 2
Texture—silty clay
Reaction—neutral to moderately alkaline

Cg horizon:
Hue—2.5Y or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—silty clay, clay, or silty clay loam
Reaction—neutral to moderately alkaline

Modale Series

Typical Pedon

Modale silt loam, in an area of Modale complex, 0 to 2 percent slopes, rarely flooded, in a cultivated field on a flood plain in Monona County, Iowa, about 1,100 feet east and 50 feet north of the southwest corner of sec. 21, T. 84 N., R. 46 W.; USGS Onawa SW topographic quadrangle; lat. 42 degrees 04 minutes 14.0 seconds N. and long. 96 degrees 12 minutes 38.1 seconds W., NAD 83:

Ap—0 to 7 inches; very dark grayish brown (2.5Y 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; slightly effervescent; slightly alkaline; abrupt smooth boundary.

Cg1—7 to 24 inches; dark grayish brown (10YR 4/2) and grayish brown (10YR 5/2) silt loam; massive with weak thin alluvial stratification; friable; strongly effervescent; few fine distinct brown (7.5YR 4/4) redoximorphic concentrations; slightly alkaline; abrupt smooth boundary.

2Cg2—24 to 29 inches; dark grayish brown (10YR 4/2) silty clay; massive with weak thin alluvial stratification; firm; strongly effervescent; few fine faint dark gray (10YR 4/1) and grayish brown (10YR 5/2) redoximorphic depletions; slightly alkaline; clear smooth boundary.

2Cg3—29 to 60 inches; dark gray (10YR 4/1) and dark grayish brown (10YR 4/2) silty clay; massive with weak thin alluvial stratification; firm; layers of grayish brown (10YR 5/2) silt loam $^1/_2$ inch thick at depths of 43, 48, and 51 inches; few fine prominent brown (7.5YR 4/4) redoximorphic concentrations; strongly effervescent; moderately alkaline.

Range in Characteristics

Ap or A horizon:
Hue—10YR or 2.5Y
Value—3
Chroma—1 or 2
Texture—silt loam, silty clay loam, or loam
Reaction—slightly alkaline or moderately alkaline

C or Cg horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 or 3
Texture—silt loam or loam
Reaction—slightly alkaline or moderately alkaline

2C or 2Cg horizon:
Hue—10YR, 2.5Y, or N
Value—3 to 5
Chroma—0 to 3
Texture—silty clay or clay
Reaction—slightly alkaline or moderately alkaline

Monona Series

Typical Pedon

Monona silty clay loam (fig. 16), 2 to 5 percent slopes, in a cultivated field on a ridgetop in Woodbury County, Iowa, about 2,440 feet east and 400 feet north of the southwest corner of sec. 7, T. 89 N., R. 45 W.; USGS Union Center SW topographic quadrangle; lat. 42 degrees 32 minutes 02.0 seconds N. and long. 96 degrees 12 minutes 16.1 seconds W., NAD 83:

Ap1—0 to 6 inches; very dark grayish brown (10YR 3/2) silty clay loam, brown (10YR 5/3) dry; moderate fine and medium subangular blocky structure parting to moderate fine granular; friable; common fine and medium roots; common very fine and fine tubular pores; moderately acid; clear smooth boundary.

Ap2—6 to 11 inches; very dark grayish brown (10YR 3/2) silty clay loam, brown (10YR 4/3) dry; moderate fine and medium subangular blocky structure parting to moderate fine granular; friable; common fine and medium roots; common very fine and fine tubular pores; few distinct very dark brown (10YR 2/2) organic coatings on vertical faces of peds; moderately acid; abrupt smooth boundary.

AB—11 to 16 inches; dark brown (10YR 3/3) silty clay loam, yellowish brown (10YR 5/4) dry; moderate medium subangular blocky structure; friable;

common fine and medium roots; many very fine and common medium tubular pores; few distinct very dark brown (10YR 2/2) and very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; slightly acid; clear smooth boundary.

Bw1—16 to 24 inches; brown (10YR 4/3) silty clay loam; weak coarse prismatic structure parting to weak fine and medium subangular blocky; friable; common fine roots; many very fine and common medium tubular pores; neutral; gradual smooth boundary.

Bw2—24 to 30 inches; brown (10YR 4/3) silty clay loam; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; friable; common fine roots; many very fine and common medium tubular pores; few distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; neutral; clear smooth boundary.

Bw3—30 to 41 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium prismatic structure parting to moderate fine and medium subangular blocky; very friable; common fine roots; many very fine and common medium tubular pores; few distinct brown (10YR 4/3) organic coatings on vertical faces of peds; neutral; clear smooth boundary.

BC—41 to 49 inches; yellowish brown (10YR 5/4) silt loam; weak medium prismatic structure parting to weak medium subangular blocky; very friable; common very fine and fine roots; many very fine and common medium tubular pores; very few distinct very dark grayish brown (10YR 3/2) organic coatings in root channels and pores; few distinct brown (10YR 4/3) organic coatings on faces of peds; few fine distinct light brownish gray (10YR 6/2) redoximorphic depletions; few fine distinct yellowish brown (10YR 5/6) redoximorphic concentrations; slightly alkaline; gradual smooth boundary.

C1—49 to 58 inches; yellowish brown (10YR 5/4) silt loam; massive; very friable; common very fine and fine roots; many very fine tubular pores; very few distinct very dark grayish brown (10YR 3/2) organic coatings in root channels and pores; few fine and medium very pale brown (10YR 8/2) carbonate concretions; common fine distinct light brownish gray (10YR 6/2) redoximorphic depletions; common fine distinct yellowish brown (10YR 5/6) redoximorphic concentrations; slightly effervescent; slightly alkaline; clear smooth boundary.

C2—58 to 72 inches; yellowish brown (10YR 5/4) silt loam; massive; very friable; common very fine and fine roots; many very fine tubular pores; very few distinct very dark grayish brown (10YR 3/2) organic coatings in root channels and pores; few fine and medium very pale brown (10YR 8/2) carbonate concretions; few medium distinct light brownish gray (10YR 6/2) redoximorphic depletions; few medium distinct yellowish brown (10YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; gradual wavy boundary.

C3—72 to 78 inches; yellowish brown (10YR 5/4) silt loam; massive; very friable; many very fine tubular pores; few fine and medium very pale brown (10YR 8/2) carbonate concretions; common medium distinct light brownish gray (10YR 6/2) and few medium prominent dark brown (7.5YR 3/2) redoximorphic depletions; few medium distinct yellowish brown (10YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; clear smooth boundary.

C4—78 to 80 inches; yellowish brown (10YR 5/4) silt loam; massive; friable; common medium distinct light brownish gray (10YR 6/2) and few medium prominent dark brown (7.5YR 3/2) redoximorphic depletions; common medium distinct yellowish brown (10YR 5/6) and few fine distinct strong brown (7.5YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline.

Range in Characteristics

Depth to carbonates: 24 to 72 inches
Thickness of the mollic epipedon: 10 to 24 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam or silty clay loam
Reaction—moderately acid to neutral

AB horizon:
Hue—10YR
Value—3
Chroma—3
Texture—silt loam or silty clay loam
Reaction—slightly acid or neutral

Bw horizon:
Hue—10YR
Value—4 or 5
Chroma—3 or 4

Texture—silt loam or silty clay loam
Reaction—slightly acid or neutral

BC horizon:
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—silt loam
Reaction—neutral or slightly alkaline
Other features—the redoximorphic features in this horizon are considered relict features

C horizon:
Hue—10YR
Value—4 or 5
Chroma—3 to 6
Texture—silt loam
Reaction—neutral to moderately alkaline
Other features—the redoximorphic features in this horizon are considered relict features

Taxadjunct features: The moderately eroded and severely eroded phases of the Monona series in Woodbury County, Iowa, have a thinner surface layer than is defined as the range for the series.

Morconick Series

Typical Pedon

Morconick fine sandy loam, 0 to 2 percent slopes, occasionally flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 80 feet north and 2,000 feet west of the southeast corner of sec. 33, T. 86 N., R. 47 W.; USGS Albaton topographic quadrangle; lat. 42 degrees 12 minutes 55.0 seconds N. and long. 96 degrees 19 minutes 05.1 seconds W., NAD 83:

Ap—0 to 7 inches; dark brown (10YR 3/3) fine sandy loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; many very fine and fine roots; common very fine and fine tubular pores; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds and in pores; strongly effervescent; moderately alkaline; abrupt smooth boundary.

C1—7 to 13 inches; dark grayish brown (2.5Y 4/2) silt loam; massive with weak thin alluvial stratification; very friable; many very fine and fine roots; common very fine and fine tubular pores; common fine prominent brown (7.5YR 4/4) and strong brown (7.5YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; abrupt smooth boundary.

2C2—13 to 19 inches; dark grayish brown (2.5Y 4/2) fine sand; single grain; loose; common fine roots; few medium and coarse prominent brown (7.5YR 4/4) redoximorphic concentrations; strongly effervescent; moderately alkaline; abrupt smooth boundary.

2C3—19 to 30 inches; dark grayish brown (2.5Y 4/2) fine sand; single grain; loose; common fine roots; few fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; gradual smooth boundary.

2C4—30 to 45 inches; grayish brown (2.5Y 5/2) fine sand; single grain; loose; common fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; gradual smooth boundary.

2C5—45 to 58 inches; grayish brown (2.5Y 5/2) fine sand; single grain; loose; common fine prominent reddish yellow (7.5YR 6/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; gradual smooth boundary.

2C6—58 to 72 inches; about 50 percent dark grayish brown (2.5Y 4/2) and 50 percent grayish brown (2.5Y 5/2) fine sand; single grain; loose; few medium and coarse prominent brown (7.5YR 4/4) and common fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; gradual smooth boundary.

2C7—72 to 80 inches; dark grayish brown (2.5Y 4/2) fine sand; single grain; loose; few fine black (10YR 2/1) masses of manganese; common fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline.

Range in Characteristics

Depth to carbonates: 0 to 10 inches
Depth to sandy material: 9 to 16 inches

Ap or A horizon:
Hue—10YR or 2.5Y
Value—2 or 3
Chroma—2 or 3
Texture—fine sandy loam, silt loam, or loam
Reaction—slightly alkaline or moderately alkaline

C horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 or 3
Texture—silt loam, loam, or very fine sandy loam
Reaction—slightly alkaline or moderately alkaline

2C horizon:
Hue—10YR or 2.5Y

Value—4 to 6
Chroma—2 to 4
Texture—very fine sand, fine sand, sand, loamy fine sand, or loamy sand or stratified with these textures
Reaction—slightly alkaline or moderately alkaline

Moville Series

Typical Pedon

Moville silt loam, in a cultivated field on a flood plain in Harrison County, Iowa, about 2,200 feet west and 2,400 feet north of the southeast corner of sec. 4, T. 78 N., R. 44 W.; USGS Missouri Valley topographic quadrangle; lat. 41 degrees 35 minutes 04.7 seconds N. and long. 95 degrees 54 minutes 20.5 seconds W., NAD 83:

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (2.5Y 5/2) dry; weak very fine subangular blocky structure; friable; common fine roots; many very fine tubular pores; slightly effervescent; slightly alkaline; abrupt smooth boundary.

C1—6 to 15 inches; dark grayish brown (2.5Y 4/2) silt loam; massive with weak thin alluvial stratification; very friable; many very fine tubular pores; few fine distinct yellowish brown (10YR 5/4) redoximorphic concentrations; slightly effervescent; slightly alkaline; clear smooth boundary.

C2—15 to 28 inches; about 60 percent dark grayish brown (2.5Y 4/2), 35 percent grayish brown (2.5Y 5/2), and 5 percent very dark grayish brown (2.5Y 3/2) silt loam; massive with weak thin alluvial stratification; very friable; many fine roots; many very fine tubular pores; common fine distinct light olive brown (2.5Y 5/4) redoximorphic concentrations; slightly effervescent; slightly alkaline; abrupt smooth boundary.

2Ab1—28 to 35 inches; black (N 2/0) silty clay; moderate very fine subangular blocky structure; firm; common very fine roots; many very fine tubular pores; common fine prominent dark grayish brown (2.5Y 4/2) redoximorphic concentrations; neutral; clear smooth boundary.

2Ab2—35 to 44 inches; black (N 2/0) silty clay; moderate fine subangular blocky structure; firm; many very fine tubular pores; common fine prominent dark grayish brown (2.5Y 4/2) redoximorphic concentrations; neutral; clear smooth boundary.

2Bssgb1—44 to 53 inches; very dark gray (2.5Y 3/1) clay; moderate fine and medium subangular blocky structure; very firm; many very fine tubular pores; common distinct very dark gray (5Y 3/1) slickensides; very many distinct black (10YR 2/1) organic stains; common fine distinct dark grayish brown (2.5Y 4/2) redoximorphic concentrations; neutral; gradual smooth boundary.

2Bssgb2—53 to 64 inches; dark gray (5Y 3/1) clay; moderate medium subangular blocky structure; very firm; many very fine tubular pores; common faint very dark gray (5Y 3/1) slickensides; many distinct black (10YR 2/1) organic stains; common fine distinct dark grayish brown (2.5Y 4/2) redoximorphic concentrations; slightly effervescent; slightly alkaline; gradual smooth boundary.

2Bssgb3—64 to 80 inches; dark gray (5Y 4/1) clay; moderate medium prismatic structure; very firm; many very fine tubular pores; many faint dark gray (5Y 4/1) slickensides; many distinct (10YR 3/1) organic stains; common fine distinct dark grayish brown (2.5Y 4/2) redoximorphic concentrations; slightly effervescent; slightly alkaline.

Range in Characteristics

Depth to the buried soil: 18 to 32 inches

Ap or A horizon:
Hue—10YR or 2.5Y
Value—3 or 4
Chroma—2 or 3
Texture—silt loam
Reaction—slightly alkaline or moderately alkaline

C horizon:
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—2 or 3
Texture—silt loam
Reaction—slightly alkaline or moderately alkaline

2Ab horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—2 or 3
Chroma—0 or 1
Texture—silty clay or clay
Reaction—neutral or slightly alkaline

2Bgb horizon (if it occurs):
Hue—2.5Y, 5Y, or N
Value—3 to 6
Chroma—0 or 1
Texture—silty clay or clay
Reaction—neutral or slightly alkaline

2Bssgb horizon:
Hue—2.5Y, 5Y, or N
Value—3 to 6
Chroma—0 or 1

Texture—silty clay or clay
Reaction—neutral or slightly alkaline

Napa Series

Typical Pedon

Napa silty clay, in an area of Napa-Luton-Tieville silty clays, 0 to 2 percent slopes, rarely flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 1,421 feet east and 117 feet south of the northwest corner of sec. 19, T. 86 N., R. 45 W.; USGS Luton topographic quadrangle; lat. 42 degrees 15 minutes 21.9 seconds N. and long. 96 degrees 07 minutes 47.1 seconds W., NAD 83:

Ap—0 to 6 inches; black (N 2/0) silty clay, black (2.5Y 2/1) dry; moderate medium subangular blocky structure; firm; few very fine roots; common very fine tubular pores; neutral; abrupt smooth boundary.

By—6 to 15 inches; black (N 2/0) clay, very dark gray (N 3/0) dry; moderate very fine and fine subangular blocky structure; firm; few very fine roots; many very fine tubular pores; few fine gray (10YR 6/1) gypsum threads; strongly effervescent; slightly alkaline; clear smooth boundary.

Btknyz—15 to 27 inches; very dark gray (10YR 3/1) silty clay, very dark gray (2.5Y 3/1) dry; moderate fine prismatic structure parting to moderate very fine and fine subangular blocky; firm; few very fine roots; many very fine and few fine tubular pores; few faint black (10YR 2/1) clay films; few distinct black (N 2/0) organic coatings on faces of peds and in pores; common fine very pale brown (10YR 8/2) masses of carbonate; common fine gray (10YR 6/1) nests of gypsum; common fine white (10YR 8/1) salt masses; slightly effervescent; slightly alkaline; clear smooth boundary.

Btnyz—27 to 33 inches; very dark gray (2.5Y 3/1) silty clay, dark gray (2.5Y 4/1) dry; moderate fine prismatic structure parting to moderate very fine and fine subangular blocky; firm; many very fine and few fine tubular pores; few faint very dark gray (10YR 3/1) clay films; few distinct black (10YR 2/1) organic coatings on faces of peds and in pores; many fine gray (10YR 6/1) nests of gypsum; many fine white (10YR 8/1) salt masses; slightly effervescent; slightly alkaline; clear smooth boundary.

Btnyssz—33 to 46 inches; very dark gray (2.5Y 3/1) silty clay, dark gray (2.5Y 4/1) dry; moderate fine and medium prismatic structure parting to moderate fine subangular blocky; firm; common very fine and fine tubular pores; common faint very dark gray (2.5Y 3/1) slickensides; few faint very dark gray (10YR 3/1) clay films; few distinct black (10YR 2/1) organic stains on faces of peds and in pores; common fine gray (10YR 6/1) nests of gypsum; common fine white (10YR 8/1) salt masses; few fine prominent dark brown (7.5YR 3/3) redoximorphic concentrations; slightly effervescent; slightly alkaline; clear smooth boundary.

Btnysszg—46 to 57 inches; about 50 percent dark gray (2.5Y 4/1), 40 percent gray (2.5Y 5/1), and 10 percent very dark gray (2.5Y 3/1) silty clay; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; firm; common very fine and fine tubular pores; common faint gray (2.5Y 5/1) slickensides; few faint very dark gray (10YR 3/1) clay films; common fine gray (10YR 6/1) nests of gypsum; common fine white (10YR 8/1) salt masses; common fine prominent dark yellowish brown (10YR 4/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; clear smooth boundary.

Cyssg1—57 to 71 inches; about 50 percent gray (2.5Y 5/1), 40 percent dark gray (2.5Y 4/1), and 10 percent very dark gray (2.5Y 3/1) silty clay; massive; firm; few very fine and fine tubular pores; common faint gray (2.5Y 5/1) slickensides; common fine and medium very pale brown (10YR 8/2) carbonate concretions; common fine gray (10YR 6/1) gypsum crystals; common fine prominent dark yellowish brown (10YR 4/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; clear smooth boundary.

Cyssg2—71 to 80 inches; about 50 percent gray (2.5Y 5/1) and 50 percent gray (2.5Y 6/1) clay; massive; firm; few very fine and fine tubular pores; few faint gray (2.5Y 6/1) slickensides; common fine very pale brown (10YR 8/2) carbonate concretions; common fine gray (10YR 6/1) gypsum crystals; common fine and medium prominent yellowish brown (10YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline.

Range in Characteristics

Depth to carbonates: 6 to 45 inches
Thickness of the mollic epipedon: 20 to 50 inches

Ap horizon:
Hue—10YR, 2.5Y, or N
Value—2 or 3
Chroma—0 or 1
Texture—silty clay
Reaction—neutral or slightly alkaline

By horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—2 or 3
Chroma—0 or 1
Texture—silty clay or clay
Reaction—slightly alkaline to strongly alkaline

Btnyz, Btknyz, Btnyssz, or Btnysszg horizon:
Hue—10YR, 2.5Y, 5Y, or N
Value—2 to 5
Chroma—0 or 1
Texture—silty clay or clay
Reaction—slightly alkaline to strongly alkaline

Cyssg horizon:
Hue—2.5Y or 5Y
Value—4 to 6
Chroma—1 or 2
Texture—silty clay or clay
Reaction—slightly alkaline to strongly alkaline

Taxadjunct features: The representative pedon for the Napa series in Woodbury County, Iowa, is a taxadjunct because the sodium adsorption ratio is not greater than 13 within a depth of 40 inches.

Napier Series

Typical Pedon

Napier silt loam, in an area of Napier-Gullied land complex, 5 to 14 percent slopes, in a pasture in an upland drainageway in Woodbury County, Iowa, about 120 feet south and 2,600 feet east of the northwest corner of sec. 18, T. 89 N., R. 46 W.; USGS James topographic quadrangle; lat. 42 degrees 31 minutes 58.3 seconds N. and long. 96 degrees 19 minutes 17.5 seconds W., NAD 83:

A1—0 to 13 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; moderate fine subangular blocky structure parting to weak fine granular; friable; common fine and medium roots; many fine tubular pores; very many distinct black (10YR 2/1) organic coatings on faces of peds; neutral; abrupt smooth boundary.

A2—13 to 21 inches; very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; weak fine granular structure; friable; common fine and medium roots; many fine tubular pores; neutral; clear smooth boundary.

A3—21 to 27 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak very fine subangular blocky structure; friable; few fine roots; many fine tubular pores; common distinct very dark brown (10YR 2/2) organic coatings on faces of peds; neutral; clear smooth boundary.

BA—27 to 37 inches; dark brown (10YR 3/3) silt loam, brown (10YR 5/3) dry; weak very fine prismatic structure parting to weak fine subangular blocky; friable; few fine roots; many fine tubular pores; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; neutral; gradual smooth boundary.

Bw—37 to 43 inches; brown (10YR 4/3) silt loam; weak fine prismatic structure parting to weak fine and medium subangular blocky; friable; few fine roots; many very fine tubular pores; common distinct dark brown (10YR 3/3) organic coatings on faces of peds; neutral; abrupt smooth boundary.

Bk1—43 to 54 inches; brown (10YR 4/3) silt loam; weak fine prismatic structure parting to weak medium subangular blocky; friable; few fine roots; many very fine tubular pores; few distinct dark brown (10YR 3/3) organic coatings on faces of peds; few fine very pale brown (10YR 8/2) carbonate threads; strongly effervescent; slightly alkaline; gradual smooth boundary.

Bk2—54 to 63 inches; brown (10YR 4/3) silt loam; weak medium prismatic structure parting to weak medium and coarse subangular blocky; friable; few fine roots; many very fine tubular pores; few distinct brown (10YR 3/3) organic coatings on faces of peds; common fine very pale brown (10YR 8/2) carbonate threads; common medium rounded very pale brown (10YR 8/2) carbonate nodules; strongly effervescent; moderately alkaline; gradual smooth boundary.

Bk3—63 to 75 inches; brown (10YR 5/3) silt loam; weak medium prismatic structure parting to weak coarse subangular blocky; friable; many very fine tubular pores; common distinct brown (10YR 4/3) coatings on faces of peds; common fine very pale brown (10YR 8/2) carbonate threads; strongly effervescent; moderately alkaline; clear smooth boundary.

C—75 to 80 inches; yellowish brown (10YR 5/4) silt loam; massive; friable; many very fine tubular pores; common fine very pale brown (10YR 8/2) carbonate threads; strongly effervescent; moderately alkaline.

Range in Characteristics

Depth to carbonates: More than 36 inches
Thickness of the mollic epipedon: 24 to 40 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3

Chroma—2
Texture—silt loam
Reaction—slightly acid or neutral

BA horizon:
Hue—10YR
Value—3
Chroma—3
Texture—silt loam
Reaction—slightly acid or neutral

Bw horizon:
Hue—10YR
Value—4
Chroma—3
Texture—silt loam
Reaction—slightly acid or neutral

Bk horizon:
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—silt loam
Reaction—slightly alkaline or moderately alkaline

C horizon (if it occurs):
Hue—10YR
Value—4 or 5
Chroma—3 or 4
Texture—silt loam
Reaction—neutral to moderately alkaline

Nodaway Series

Typical Pedon

Nodaway silty clay loam, 0 to 2 percent slopes, occasionally flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 1,500 feet east and 1,660 feet north of the southwest corner of sec. 33, T. 86 N., R. 42 W.; USGS Danbury topographic quadrangle; lat. 42 degrees 12 minutes 56.9 seconds N. and long. 95 degrees 44 minutes 31.5 seconds W., NAD 83:

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; weak very fine and fine subangular blocky structure; friable; common very fine and fine roots; many very fine tubular pores; neutral; abrupt smooth boundary.

C1—7 to 16 inches; about 90 percent very dark grayish brown (10YR 3/2) and 10 percent dark grayish brown (10YR 4/2) silty clay loam, grayish brown (10YR 5/2) dry; massive with weak thin alluvial stratification; friable; few very fine and fine roots; many very fine and fine tubular pores; neutral; gradual smooth boundary.

C2—16 to 30 inches; about 90 percent very dark grayish brown (10YR 3/2) and 10 percent dark grayish brown (10YR 4/2) silt loam; massive with weak thin alluvial stratification; friable; few very fine and fine roots; many very fine and fine tubular pores; few fine distinct yellowish brown (10YR 5/4) redoximorphic concentrations; neutral; clear smooth boundary.

C3—30 to 58 inches; about 90 percent very dark brown (10YR 3/1) and 10 percent very dark grayish brown (10YR 3/2) silty clay loam; massive with weak thin alluvial stratification; friable; few very fine and fine roots; many very fine tubular pores; neutral; gradual smooth boundary.

C4—58 to 72 inches; about 85 percent very dark grayish brown (10YR 3/2) and 15 percent dark grayish brown (10YR 4/2) silt loam; massive with weak thin alluvial stratification; friable; few very fine and fine roots; many very fine tubular pores; neutral; clear smooth boundary.

C5—72 to 80 inches; about 85 percent very dark grayish brown (10YR 3/2) and 15 percent dark grayish brown (10YR 4/2) silt loam; massive with weak thin alluvial stratification; friable; many very fine and fine tubular pores; common medium distinct yellowish brown (10YR 5/4) and common fine prominent brown (7.5YR 5/4) redoximorphic concentrations; neutral.

Range in Characteristics

Ap or A horizon:
Hue—10YR
Value—3
Chroma—1 or 2
Texture—silty clay loam or silt loam
Reaction—slightly acid or neutral

C horizon:
Hue—10YR
Value—2 to 4
Chroma—1 or 2
Texture—silt loam or silty clay loam or stratified with these textures
Reaction—slightly acid or neutral

Onawa Series

Typical Pedon

Onawa silty clay, 0 to 2 percent slopes, occasionally flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 1,310 feet east and

1,330 feet north of the southwest corner of sec. 26, T. 86 N., R. 47 W.; USGS Albaton topographic quadrangle; lat. 42 degrees 13 minutes 59.0 seconds N. and long. 96 degrees 17 minutes 07.1 seconds W., NAD 83:

Ap1—0 to 4 inches; very dark gray (10YR 3/1) silty clay, dark grayish brown (10YR 4/2) dry; moderate very fine subangular blocky structure; firm; many very fine and fine roots; many very fine tubular pores; common fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; slightly alkaline; abrupt smooth boundary.

Ap2—4 to 9 inches; very dark grayish brown (10YR 3/2) clay, dark grayish brown (10YR 4/2) dry; moderate very fine subangular blocky structure; firm; many very fine and fine roots; many very fine tubular pores; common fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; slightly alkaline; clear smooth boundary.

Cg1—9 to 17 inches; dark grayish brown (10YR 4/2) clay; massive; firm; many very fine and fine roots; many very fine and fine tubular pores; few fine distinct brown (7.5YR 4/4) redoximorphic concentrations; slightly effervescent; moderately alkaline; clear smooth boundary.

Cg2—17 to 24 inches; dark grayish brown (10YR 4/2) clay; massive; firm; many very fine and fine roots; many very fine tubular pores; common fine light gray (10YR 7/2) masses of carbonate; slightly effervescent; moderately alkaline; clear smooth boundary.

Cg3—24 to 30 inches; dark grayish brown (2.5Y 4/2) silty clay; massive; firm; many very fine and fine roots; common fine tubular pores and many very fine tubular pores; common fine very dark gray (10YR 3/1) wormcasts; common fine light gray (10YR 7/2) masses of carbonate; few fine prominent brown (7.5YR 4/4) and common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; abrupt smooth boundary.

Cg4—30 to 36 inches; dark grayish brown (2.5Y 4/2) silty clay loam; massive; firm; many very fine and fine roots; many very fine and fine tubular pores; common fine light gray (10YR 7/2) masses of carbonate; common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; clear smooth boundary.

2Cg5—36 to 43 inches; grayish brown (2.5Y 5/2) silt loam; massive; friable; many very fine and fine roots; many very fine and fine tubular pores; common fine very dark gray (10YR 3/1) wormcasts; strongly effervescent; moderately alkaline; clear smooth boundary.

2Cg6—43 to 58 inches; grayish brown (2.5Y 5/2) silt loam; massive; friable; many very fine roots; many very fine and fine tubular pores; common fine light gray (10YR 7/2) masses of carbonate; common fine and medium distinct yellowish brown (10YR 5/4) redoximorphic concentrations; common fine and medium faint gray (2.5Y 6/1) redoximorphic depletions; strongly effervescent; moderately alkaline; clear smooth boundary.

2Cg7—58 to 65 inches; grayish brown (2.5Y 5/2) silt loam; massive; friable; many very fine and fine tubular pores; common fine light gray (10YR 7/2) masses of carbonate; common fine and medium prominent strong brown (7.5YR 5/6) redoximorphic concentrations; common fine and medium faint gray (2.5Y 6/1) redoximorphic depletions; strongly effervescent; moderately alkaline; clear smooth boundary.

2Cg8—65 to 80 inches; grayish brown (2.5Y 5/2) loam; massive; friable; many very fine tubular pores; common fine light gray (10YR 7/2) masses of carbonate; common fine and medium prominent strong brown (7.5YR 5/6) redoximorphic concentrations; common fine and medium faint gray (2.5Y 6/1) redoximorphic depletions; strongly effervescent; moderately alkaline.

Range in Characteristics

Depth to loamy alluvium: 18 to 36 inches
Depth to carbonates: Less than 10 inches

Ap or A horizon:
Hue—10YR or 2.5Y
Value—2 or 3
Chroma—1 or 2
Texture—silty clay, clay, or silt loam
Reaction—slightly alkaline or moderately alkaline

Cg horizon:
Hue—10YR, 2.5Y, or 5Y; N in strata
Value—3 to 5
Chroma—0 to 2
Texture—clay, silty clay, or silty clay loam
Reaction—slightly alkaline or moderately alkaline

2Cg horizon:
Hue—2.5Y or 5Y; 10YR or N in strata
Value—3 to 5
Chroma—0 to 2
Texture—silt loam, loam, or very fine sandy loam
Reaction—slightly alkaline or moderately alkaline

Taxadjunct features: The representative pedon for the Onawa series in Woodbury County, Iowa, is a taxadjunct because the strongly contrasting particle-size transition zone is too thick. Also, there is not enough clay difference to meet the contrasting particle-size criteria as defined for the series.

Owego Series

Typical Pedon

Owego silty clay, 0 to 2 percent slopes, rarely flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 1,175 feet south and 2,520 feet east of the northwest corner of sec. 23, T. 87 N., R. 47 W.; USGS Salix topographic quadrangle; lat. 42 degrees 20 minutes 28.3 seconds N. and long. 96 degrees 16 minutes 53.3 seconds W., NAD 83:

Ap—0 to 8 inches; very dark gray (5Y 3/1) silty clay, gray (5Y 5/1) dry; moderate very fine and fine subangular blocky structure parting to moderate fine granular; firm; common very fine and fine roots; common very fine tubular pores; common fine faint olive gray (5Y 4/2) redoximorphic depletions; moderately acid; abrupt smooth boundary.

Bg—8 to 14 inches; dark gray (5Y 4/1) silty clay; moderate very fine subangular blocky structure; firm; few very fine roots; common very fine tubular pores; common fine faint olive gray (5Y 4/2) and common fine prominent light olive brown (2.5Y 5/4) redoximorphic concentrations; neutral; abrupt wavy boundary.

2Cg—14 to 23 inches; about 50 percent light olive gray (5Y 6/2) and 50 percent pale olive (5Y 6/3) silt loam; massive; friable; few very fine roots; many very fine tubular pores; common fine prominent light olive brown (2.5Y 5/4), yellowish brown (10YR 5/6), and strong brown (7.5YR 4/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; abrupt wavy boundary.

3Ab—23 to 32 inches; black (5Y 2/1) silty clay; moderate very fine subangular blocky structure; firm; few very fine roots; common very fine tubular pores; many distinct black (N 2/0) organic coatings on vertical faces of peds; few fine prominent strong brown (7.5YR 5/6) and common fine prominent light olive brown (2.5Y 5/4) redoximorphic concentrations; slightly effervescent; slightly alkaline; gradual smooth boundary.

3Bgb1—32 to 43 inches; very dark gray (5Y 3/1) silty clay; moderate very fine prismatic structure parting to moderate very fine and fine subangular blocky; firm; few very fine roots; common very fine tubular pores; many distinct black (N 2/0) organic coatings on vertical faces of peds; common fine prominent yellowish brown (10YR 5/6) and light olive brown (2.5Y 5/4) redoximorphic concentrations; strongly effervescent; slightly alkaline; clear smooth boundary.

3Bgb2—43 to 55 inches; olive gray (5Y 4/2) silty clay; moderate very fine prismatic structure parting to moderate very fine and fine subangular blocky; firm; few very fine roots; common very fine tubular pores; few distinct very dark gray (5Y 3/1) organic coatings on vertical faces of peds; common faint dark gray (5Y 4/1) coatings on vertical faces of peds; common fine prominent light olive brown (2.5Y 5/4 and 5/6) redoximorphic concentrations; very slightly effervescent; slightly alkaline; abrupt wavy boundary.

3Bsskgb—55 to 66 inches; dark gray (5Y 4/1) silty clay; moderate fine prismatic structure; firm; few very fine roots; common very fine tubular pores; many faint very dark gray (5Y 3/1) intersecting slickensides; common fine rounded very pale brown (10YR 8/2) carbonate nodules; common fine distinct dark grayish brown (2.5Y 4/2) redoximorphic depletions; very slightly effervescent; slightly alkaline; clear wavy boundary.

3BCssgb—66 to 77 inches; dark gray (5Y 4/1) clay; massive; firm; common very fine tubular pores; common faint very dark gray (5Y 3/1) nonintersecting slickensides; common medium rounded very pale brown (10YR 8/2) carbonate nodules; common fine prominent strong brown (7.5YR 5/6) and light olive brown (2.5Y 5/6) redoximorphic concentrations; very slightly effervescent; slightly alkaline; clear wavy boundary.

3Cg—77 to 80 inches; gray (5Y 5/1) clay; massive; firm; common very fine tubular pores; common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; slightly effervescent; slightly alkaline.

Range in Characteristics

Depth to carbonates: 12 to 24 inches

Ap or A horizon:
Hue—10YR, 2.5Y, or 5Y
Value—3
Chroma—1 or 2
Texture—silty clay
Reaction—moderately acid to neutral

Bg horizon:
Hue—2.5Y or 5Y
Value—4
Chroma—1
Texture—silty clay
Reaction—slightly acid or neutral

2Cg horizon:
Hue—2.5Y or 5Y
Value—4 to 6
Chroma—1 to 3
Texture—silt loam, silty clay loam, clay loam, or loam
Reaction—slightly alkaline or moderately alkaline

3Ab horizon:
Hue—10YR, 2.5Y, or 5Y
Value—2 or 3
Chroma—1
Texture—silty clay
Reaction—slightly alkaline or moderately alkaline

3Bgb or 3Bsskgb horizon:
Hue—2.5Y or 5Y
Value—3 to 6
Chroma—1 or 2
Texture—silty clay
Reaction—slightly alkaline or moderately alkaline

3BCssgb or 3Cg horizon:
Hue—5Y or N
Value—4 or 5
Chroma—0 to 2
Texture—silty clay or clay
Reaction—slightly alkaline or moderately alkaline

Percival Series

Typical Pedon

Percival clay, in an area of Percival-Albaton complex, 0 to 2 percent slopes, occasionally flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 1,000 feet east and 400 feet south of the northwest corner of sec. 34, T. 86 N., R. 47 W.; USGS Albaton topographic quadrangle; lat. 42 degrees 13 minutes 41.0 seconds N. and long. 96 degrees 18 minutes 21.1 seconds W., NAD 83:

Ap—0 to 8 inches; dark grayish brown (2.5Y 4/2) clay, grayish brown (2.5Y 5/2) dry; weak fine subangular blocky structure parting to weak very fine subangular blocky; firm; common fine roots; common very fine tubular pores; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; slightly effervescent; slightly alkaline; abrupt smooth boundary.

Cg1—8 to 11 inches; dark grayish brown (2.5Y 4/2) clay; massive with weak thin alluvial stratification; firm; common very fine and fine roots; common very fine tubular pores; many distinct very dark grayish brown (10YR 3/2) organic coatings; slightly effervescent; moderately alkaline; clear smooth boundary.

Cg2—11 to 15 inches; dark grayish brown (2.5Y 4/2) clay; massive with weak thin alluvial stratification; firm; common very fine roots; common very fine pores; few fine distinct light olive brown (2.5Y 5/4) redoximorphic concentrations; slightly effervescent; moderately alkaline; abrupt wavy boundary.

Cg3—15 to 20 inches; dark grayish brown (2.5Y 4/2) silty clay loam; massive with weak thin alluvial stratification; friable; common very fine roots; common very fine pores; strongly effervescent; moderately alkaline; abrupt smooth boundary.

2Cg4—20 to 33 inches; dark grayish brown (2.5Y 4/2) fine sand; single grain; loose; common very fine roots; slightly effervescent; moderately alkaline; gradual smooth boundary.

2Cg5—33 to 41 inches; dark grayish brown (2.5Y 4/2) fine sand; single grain; loose; few coarse prominent strong brown (7.5YR 4/6) redoximorphic concentrations; slightly effervescent; moderately alkaline; gradual smooth boundary.

2Cg6—41 to 80 inches; dark grayish brown (2.5Y 4/2) fine sand; single grain; loose; slightly effervescent; moderately alkaline.

Range in Characteristics

Depth to sandy alluvium: 15 to 30 inches
Depth to carbonates: Less than 10 inches
Other features: Some pedons have a transitional horizon of silty clay loam as much as 5 inches thick below the Cg horizon.

Ap or A horizon:
Hue—10YR or 2.5Y
Value—3 or 4
Chroma—1 or 2
Texture—silty clay or clay
Reaction—slightly alkaline or moderately alkaline

Cg horizon:
Hue—2.5Y or 5Y
Value—4 or 5
Chroma—1 or 2
Texture—silty clay, clay, or silty clay loam
Reaction—slightly alkaline or moderately alkaline

2Cg horizon:
Hue—2.5Y

Value—4 to 6
Chroma—2
Texture—fine sand or loamy fine sand
Reaction—slightly alkaline or moderately alkaline

Pilot Grove Series

Typical Pedon

Pilot Grove sandy loam, in an area of Fairhaven silt loam, 32 to 40 inches to sand and gravel, 2 to 5 percent slopes, in a cultivated field in Woodbury County, Iowa, about 2,200 feet north and 2,040 feet east of the southwest corner of sec. 28, T. 89 N., R. 42 W.; USGS Correctionville topographic quadrangle; lat. 42 degrees 29 minutes 47.1 seconds N. and long. 95 degrees 48 minutes 49.8 seconds W., NAD 83:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) sandy loam, brown (10YR 4/3) dry; very friable; few fine roots; many fine tubular pores; slightly acid; abrupt smooth boundary.

Bw—9 to 22 inches; brown (10YR 4/3) sandy loam; weak fine subangular blocky structure; very friable; few fine roots; common fine tubular pores; slightly acid; gradual smooth boundary.

2BC—22 to 35 inches; dark yellowish brown (10YR 4/4) loamy sand; single grain; loose; few fine roots; slightly acid; gradual wavy boundary.

2C1—35 to 46 inches; dark yellowish brown (10YR 4/4) gravelly loamy sand; single grain; loose; common coarse very pale brown (10YR 8/2) carbonate coatings around stones; about 18 percent gravel; strongly effervescent; slightly alkaline; clear wavy boundary.

2C2—46 to 55 inches; yellowish brown (10YR 5/4) gravelly loamy sand; single grain; loose; common coarse very pale brown (10YR 8/2) carbonate coatings around stones; about 19 percent gravel; strongly effervescent; moderately alkaline; clear wavy boundary.

3C3—55 to 80 inches; yellowish brown (10YR 5/4) clay loam; massive; firm; common fine irregular very pale brown (10YR 8/2) masses of carbonate; about 3 percent rounded gravel; common fine distinct strong brown (7.5YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 7 to 20 inches
Depth to carbonates: 12 to 40 inches
Depth to till: 40 to 60 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—sandy loam
Reaction—moderately acid to neutral

Bw horizon:
Hue—7.5YR or 10YR
Value—3 or 4
Chroma—3 or 4
Texture—sandy loam
Reaction—moderately acid to neutral

2BC horizon:
Hue—10YR or 2.5Y
Value—3 or 4
Chroma—3 or 4
Texture—loamy sand or gravelly loamy sand
Reaction—slightly acid to slightly alkaline

2C horizon:
Hue—10YR or 2.5Y
Value—4 to 7
Chroma—3 to 6
Texture—loamy sand or coarse sand or the gravelly analogs of these textures
Reaction—slightly alkaline or moderately alkaline

3C horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 to 4
Texture—clay loam
Reaction—slightly alkaline or moderately alkaline

Rawles Series

Typical Pedon

Rawles silt loam, 0 to 2 percent slopes, occasionally flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 140 feet south and 500 feet east of the northwest corner of sec. 18, T. 88 N., R. 46 W.; USGS Sergeant Bluff topographic quadrangle; lat. 42 degrees 26 minutes 43.8 seconds N. and long. 96 degrees 15 minutes 03.5 seconds W., NAD 83:

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, brown (10YR 5/3) dry; weak fine subangular blocky structure; friable; common very fine and fine roots; many very fine and fine tubular pores; very slightly effervescent; slightly alkaline; abrupt smooth boundary.

C1—7 to 16 inches; about 90 percent very dark grayish brown (10YR 3/2) and 10 percent dark brown (10YR 3/3) silt loam; massive with weak thin alluvial stratification; friable; few very fine and fine roots; many very fine and fine tubular pores; slightly effervescent; slightly alkaline; gradual smooth boundary.

C2—16 to 30 inches; about 85 percent very dark grayish brown (10YR 3/2) and 15 percent dark brown (10YR 3/3) silt loam; massive with weak thin alluvial stratification; friable; few very fine and fine roots; many very fine and fine tubular pores; common fine distinct yellowish brown (10YR 5/4) redoximorphic concentrations; slightly effervescent; slightly alkaline; clear wavy boundary.

2Ab1—30 to 38 inches; about 90 percent black (10YR 2/1) and 10 percent very dark grayish brown (10YR 3/2) silty clay loam; weak very fine subangular blocky structure; friable; few very fine and fine roots; many very fine and fine tubular pores; very slightly effervescent; slightly alkaline; gradual smooth boundary.

2Ab2—38 to 48 inches; black (10YR 2/1) silty clay loam; weak very fine and fine subangular blocky structure; friable; many very fine and fine tubular pores; slightly alkaline; gradual smooth boundary.

2Ab3—48 to 58 inches; very dark brown (10YR 2/2) silty clay loam; weak very fine and fine subangular blocky structure; friable; many very fine and fine tubular pores; many distinct black (10YR 2/1) organic coatings on faces of peds; common fine distinct very dark grayish brown (2.5Y 3/2) redoximorphic concentrations; slightly alkaline; gradual smooth boundary.

2Bwb1—58 to 68 inches; very dark grayish brown (10YR 3/2) silty clay loam; weak very fine prismatic structure parting to weak fine subangular blocky; friable; many very fine and fine tubular pores; many distinct black (10YR 2/1) organic coatings on faces of peds; common fine distinct very dark grayish brown (2.5Y 3/2) redoximorphic concentrations; slightly alkaline; gradual smooth boundary.

2Bwb2—68 to 80 inches; very dark grayish brown (10YR 3/2) silty clay loam; weak very fine prismatic structure parting to weak fine and medium subangular blocky; friable; many very fine and fine tubular pores; common distinct black (10YR 2/1) organic coatings on faces of peds; common fine distinct very dark grayish brown (2.5Y 3/2) redoximorphic concentrations; slightly alkaline.

Range in Characteristics

Depth to the buried soil: 20 to 40 inches

Ap or A horizon:
Hue—10YR
Value—3
Chroma—2 or 3
Texture—silt loam
Reaction—neutral to moderately alkaline

C horizon:
Hue—10YR
Value—3 to 5
Chroma—2 or 3
Texture—silt loam
Reaction—slightly alkaline or moderately alkaline

2Ab horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silt loam or silty clay loam
Reaction—slightly acid to slightly alkaline

2Bwb horizon:
Hue—10YR
Value—3
Chroma—1 or 2
Texture—silt loam or silty clay loam
Reaction—slightly acid to slightly alkaline

Salix Series

Typical Pedon

Salix silt loam, 0 to 2 percent slopes, rarely flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 60 feet south and 250 feet east of the northwest corner of sec. 31, T. 86 N., R. 46 W.; USGS Albaton topographic quadrangle; lat. 42 degrees 13 minutes 43.0 seconds N. and long. 96 degrees 15 minutes 01.1 seconds W., NAD 83:

Ap1—0 to 6 inches; black (10YR 2/1) silt loam, dark grayish brown (10YR 4/2) dry; weak fine and medium subangular blocky structure; friable; common very fine and fine roots; few very fine and fine tubular pores; moderately acid; abrupt smooth boundary.

Ap2—6 to 12 inches; black (10YR 2/1) silty clay loam, dark grayish brown (10YR 4/2) dry; moderate medium subangular blocky structure; friable; few very fine and fine roots; few very fine and fine tubular pores; moderately acid; abrupt smooth boundary.

A—12 to 16 inches; black (10YR 2/1) silty clay loam, dark grayish brown (10YR 4/2) dry; moderate fine subangular blocky structure; friable; common very fine and fine roots; common very fine and fine tubular pores; neutral; clear smooth boundary.

BA—16 to 22 inches; about 70 percent very dark grayish brown (10YR 3/2) and 30 percent dark grayish brown (2.5Y 4/2) silty clay loam; weak and moderate fine subangular blocky structure; friable; common very fine and fine roots; common very fine and fine tubular pores; neutral; clear smooth boundary.

Bw1—22 to 29 inches; dark grayish brown (2.5Y 4/2) silty clay loam; weak and moderate fine subangular blocky structure; friable; few very fine roots; few fine tubular pores; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds and in pores; neutral; clear smooth boundary.

Bw2—29 to 40 inches; dark grayish brown (2.5Y 4/2) silt loam; weak medium subangular blocky structure; friable; few very fine roots; many very fine and few medium tubular pores; few fine distinct dark yellowish brown (10YR 4/4) redoximorphic concentrations; strongly effervescent; moderately alkaline; clear smooth boundary.

BC—40 to 46 inches; dark grayish brown (2.5Y 4/2) silt loam; weak medium prismatic structure parting to weak medium subangular blocky; friable; few very fine roots; many very fine tubular pores; few fine distinct dark yellowish brown (10YR 4/4) redoximorphic concentrations; strongly effervescent; moderately alkaline; clear smooth boundary.

C1—46 to 56 inches; brown (10YR 5/3) silt loam; massive; friable; few very fine roots; many very fine, common fine, and few medium tubular pores; few fine and medium very pale brown (10YR 8/2) carbonate concretions; few fine faint dark yellowish brown (10YR 4/4) redoximorphic concentrations; strongly effervescent; moderately alkaline; clear smooth boundary.

C2—56 to 66 inches; brown (10YR 5/3) silt loam; massive; friable; many very fine, common fine, and few medium tubular pores; common fine and medium very pale brown (10YR 8/2) carbonate concretions; few fine faint dark yellowish brown (10YR 4/4) redoximorphic concentrations; common fine faint light brownish gray (2.5Y 6/2) redoximorphic depletions; strongly effervescent; moderately alkaline; clear smooth boundary.

C3—66 to 76 inches; brown (10YR 5/3) silt loam; massive; friable; common fine and medium very pale brown (10YR 8/2) carbonate concretions; common fine faint light brownish gray (2.5Y 6/2) redoximorphic depletions; strongly effervescent; moderately alkaline; clear smooth boundary.

C4—76 to 80 inches; brown (10YR 5/3) silty clay loam; massive; friable; common fine and medium very pale brown (10YR 8/2) carbonate concretions; many medium faint brown (7.5YR 4/4) and many medium prominent strong brown (7.5YR 4/6) redoximorphic concentrations; strongly effervescent; moderately alkaline.

Range in Characteristics

Depth to carbonates: 24 to 36 inches
Thickness of the mollic epipedon: 14 to 24 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—silty clay loam or silt loam
Reaction—moderately acid to slightly alkaline

BA and Bw horizons:
Hue—10YR or 2.5Y
Value—3 or 4
Chroma—2 or 3
Texture—silty clay loam in the upper part; silt loam in the lower part
Reaction—slightly acid to moderately alkaline

BC horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 or 3
Texture—silt loam, loam, or very fine sandy loam
Reaction—slightly alkaline or moderately alkaline

C horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 or 3
Texture—silt loam; silty clay loam below a depth of 60 inches in some pedons
Reaction—slightly alkaline or moderately alkaline

Sarpy Series

Typical Pedon

Sarpy loamy fine sand, 0 to 3 percent slopes, in a cultivated field on a flood plain in Pottawattamie County, Iowa, about 900 feet east and 1,100 feet south of the northwest corner of sec. 24, T. 74 N., R. 44 W.; USGS Council Bluffs South topographic quadrangle; lat. 41 degrees 12 minutes 05.0 seconds N. and long. 95 degrees 51 minutes 36.0 seconds W., NAD 83:

Ap—0 to 6 inches; dark brown (10YR 3/3) loamy fine sand, grayish brown (10YR 5/2) dry; weak fine granular structure; very friable; few fine roots; slightly effervescent; slightly alkaline; clear smooth boundary.

C1—6 to 10 inches; dark grayish brown (10YR 4/2) loamy fine sand; single grain; loose; slightly effervescent; slightly alkaline; clear smooth boundary.

C2—10 to 20 inches; grayish brown (2.5Y 5/2) fine sand; single grain; loose; strongly effervescent; slightly alkaline; diffuse smooth boundary.

C3—20 to 60 inches; stratified grayish brown (2.5Y 5/2) fine sand; single grain; loose; strongly effervescent; moderately alkaline.

Range in Characteristics

Ap or A horizon:
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—1 to 3
Texture—loamy fine sand or fine sand
Reaction—neutral to moderately alkaline

C horizon:
Hue—10YR or 2.5Y
Value—4 or 5
Chroma—2 or 3
Texture—loamy fine sand, fine sand, or sand
Reaction—neutral to moderately alkaline

Scroll Series

Typical Pedon

Scroll silty clay (fig. 17), 0 to 2 percent slopes, occasionally flooded, in a cultivated field on a flood plain in Monona County, Iowa, about 1,490 feet east and 2,540 feet north of the southwest corner of sec. 33, T. 84 N., R. 46 W.; USGS Onawa SW topographic quadrangle; lat. 42 degrees 02 minutes 52.0 seconds N. and long. 96 degrees 12 minutes 28.0 seconds W., NAD 83:

Ap—0 to 7 inches; dark olive gray (5Y 3/2) and olive gray (5Y 4/2) silty clay, olive gray (5Y 5/2) dry; weak fine and medium subangular blocky structure; firm; many fine roots; few fine faint dark brown (7.5YR 3/2) redoximorphic concentrations; slightly effervescent; slightly alkaline; abrupt smooth boundary.

Cg1—7 to 11 inches; alternating layers of grayish brown (2.5Y 5/2) and olive gray (5Y 4/2) silt loam; massive; friable; few fine roots; common fine prominent brown (7.5YR 4/4) redoximorphic concentrations; strongly effervescent; slightly alkaline; abrupt smooth boundary.

2Cg2—11 to 43 inches; grayish brown (2.5Y 5/2) and light brownish gray (2.5Y 6/2) loamy fine sand; single grain; loose; common fine prominent brown (7.5YR 4/4) redoximorphic concentrations; strongly effervescent; slightly alkaline; gradual smooth boundary.

2Cg3—43 to 60 inches; dark grayish brown (2.5Y 4/2) fine sandy loam; single grain; loose; strongly effervescent; slightly alkaline.

Range in Characteristics

Depth to sandy material: 11 to 15 inches
Depth to carbonates: Less than 10 inches

Ap or A horizon:
Hue—10YR, 2.5Y, or 5Y
Value—3 or 4
Chroma—1 or 2
Texture—silty clay loam or silty clay
Reaction—slightly alkaline or moderately alkaline

Cg horizon:
Hue—2.5Y or 5Y
Value—4 or 5
Chroma—2
Texture—silt loam or silty clay loam
Reaction—slightly alkaline or moderately alkaline

2Cg horizon:
Hue—2.5Y or 5Y
Value—4 to 6
Chroma—2
Texture—fine sand, loamy fine sand, or sand; fine sandy loam below a depth of 40 inches in some pedons
Reaction—slightly alkaline or moderately alkaline

Smithland Series

Typical Pedon

Smithland silty clay loam, 0 to 2 percent slopes, occasionally flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 2,500 feet west and 2,200 feet south of the northeast corner of sec. 30, T. 87 N., R. 43 W.; USGS Oto topographic quadrangle; lat. 42 degrees 19 minutes 17.3 seconds N. and long. 95 degrees 53 minutes 24.2 seconds W., NAD 83:

Ap—0 to 7 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; weak fine subangular blocky structure; friable; common very fine tubular pores; slightly acid; abrupt smooth boundary.

A1—7 to 15 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; weak fine granular structure; friable; common very fine and fine roots; many very fine and fine tubular pores; neutral; gradual smooth boundary.

A2—15 to 23 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; weak very fine prismatic structure parting to weak very fine subangular blocky; friable; few very fine and fine roots; many very fine tubular pores; neutral; gradual smooth boundary.

A3—23 to 33 inches; very dark gray (10YR 3/1) silty clay loam, dark grayish brown (10YR 4/2) dry; weak very fine prismatic structure parting to weak very fine and fine subangular blocky; friable; few very fine and fine roots; many very fine tubular pores; many distinct black (10YR 2/1) organic coatings on faces of peds; common fine distinct yellowish brown (10YR 5/4) redoximorphic concentrations; neutral; gradual smooth boundary.

Bg1—33 to 43 inches; very dark grayish brown (10YR 3/2) silty clay loam, dark grayish brown (10YR 4/2) dry; weak very fine prismatic structure parting to weak very fine and fine subangular blocky; friable; few very fine and fine roots; many very fine tubular pores; common distinct very dark gray (10YR 3/1) organic coatings on faces of peds; common fine distinct light olive brown (2.5Y 5/4) and common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; neutral; gradual smooth boundary.

Bg2—43 to 55 inches; very dark grayish brown (10YR 3/2) silty clay loam; weak very fine prismatic structure parting to weak fine subangular blocky; friable; few very fine and fine roots; many very fine tubular pores; common distinct very dark gray (10YR 3/1) organic coatings on faces of peds; common fine prominent strong brown (7.5YR 4/6) redoximorphic concentrations; neutral; gradual smooth boundary.

Bg3—55 to 70 inches; very dark grayish brown (10YR 3/2) silty clay loam; weak fine prismatic structure parting to weak medium subangular blocky; friable; many very fine tubular pores; common distinct very dark gray (10YR 3/1) organic coatings on faces of peds; common fine distinct yellowish brown (10YR 5/4) redoximorphic concentrations; neutral; gradual smooth boundary.

BCg—70 to 80 inches; very dark grayish brown (10YR 3/2) silty clay loam; weak fine prismatic structure parting to weak medium and coarse subangular blocky; friable; many very fine tubular pores; common distinct very dark gray (10YR 3/1) organic coatings on faces of peds; common fine faint dark grayish brown (2.5Y 4/2) redoximorphic depletions; neutral.

Range in Characteristics

Depth to carbonates: 60 inches or more
Thickness of the mollic epipedon: 36 inches or more

Ap or A horizon:
Hue—10YR or N
Value—2 or 3
Chroma—0 or 1
Texture—silty clay loam or silt loam (in the upper 10 inches)
Reaction—moderately acid to neutral

Bg or B horizon:
Hue—10YR
Value—2 to 4
Chroma—1 or 2
Texture—silty clay loam
Reaction—moderately acid to neutral

BCg or BC horizon:
Hue—10YR or 2.5Y
Value—3 or 4
Chroma—1 or 2
Texture—silty clay loam
Reaction—moderately acid to neutral

Cg horizon (if it occurs):
Hue—10YR or 2.5Y
Value—3 or 4
Chroma—1 or 2
Texture—silty clay loam
Reaction—slightly acid or neutral

Spillville Series

Typical Pedon

Spillville loam, 0 to 2 percent slopes, in a cultivated field on a flood plain in Cherokee County, Iowa, about 700 feet north and 1,120 feet west of the southeast corner of sec. 3, T. 93 N., R. 39 W.; USGS Sutherland East topographic quadrangle; lat. 42 degrees 53 minutes 45.9 seconds N. and long. 95 degrees 25 minutes 48.0 seconds W., NAD 83:

Ap—0 to 8 inches; black (10YR 2/1) loam, very dark gray (10YR 3/1) dry; moderate medium subangular structure; friable; neutral; clear smooth boundary.

A1—8 to 20 inches; black (10YR 2/1) loam, dark gray

(10YR 4/1) dry; weak fine subangular structure parting to weak fine granular; friable; slightly acid; gradual smooth boundary.

A2—20 to 34 inches; very dark grayish brown (10YR 3/2) loam, dark grayish brown (10YR 4/2) dry; many distinct very dark gray (10YR 3/1) organic stains on faces of peds; weak fine and medium subangular blocky structure; friable; slightly acid; diffuse smooth boundary.

AC—34 to 48 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; friable; few fine distinct dark yellowish brown (10YR 4/4) redoximorphic concentrations; neutral; gradual smooth boundary.

C—48 to 60 inches; dark brown (10YR 3/3) loam; massive; friable; few fine faint dark yellowish brown (10YR 4/4) redoximorphic concentrations; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 40 to 60 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1 or 2
Texture—loam or silt loam
Reaction—moderately acid to neutral

AC horizon:
Hue—10YR or 2.5Y
Value—2 to 4
Chroma—1 or 2
Texture—loam or sandy clay loam
Reaction—moderately acid to neutral

C horizon:
Hue—10YR or 2.5Y
Value—3 or 4
Chroma—1 to 3
Texture—loam
Reaction—moderately acid to neutral

Ticonic Series

Typical Pedon

Ticonic very fine sandy loam, 0 to 2 percent slopes, rarely flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 2,375 feet north and 2,150 feet west of the southeast corner of sec. 7, T. 87 N., R. 47 W., USGS Salix topographic quadrangle; lat. 42 degrees 21 minutes 54.0 seconds N. and long. 96 degrees 21 minutes 29.9 seconds W., NAD 83:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) very fine sandy loam, dark grayish brown (10YR 4/2) dry; weak medium subangular blocky structure; very friable; common very fine roots; common very fine tubular pores; very slightly effervescent; slightly alkaline; abrupt smooth boundary.

C1—8 to 21 inches; dark grayish brown (10YR 4/2) loamy fine sand; single grain; loose; common very fine roots; slightly effervescent; moderately alkaline; gradual smooth boundary.

C2—21 to 35 inches; dark grayish brown (10YR 4/2) loamy very fine sand; single grain; loose; common very fine roots; slightly effervescent; moderately alkaline; gradual smooth boundary.

2C3—35 to 39 inches; dark grayish brown (10YR 4/2) fine sandy loam; massive with weak thin alluvial stratification; very friable; common very fine roots; common very fine tubular pores; strongly effervescent; moderately alkaline; clear smooth boundary.

3C4—39 to 44 inches; dark grayish brown (10YR 4/2) loamy fine sand; single grain; loose; common very fine roots; many fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; clear smooth boundary.

3C5—44 to 50 inches; dark grayish brown (10YR 4/2) fine sandy loam; massive with weak thin alluvial stratification; very friable; common very fine roots; many very fine tubular pores; many fine and medium prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; clear smooth boundary.

4C6—50 to 62 inches; dark grayish brown (10YR 4/2) silt loam; massive with weak thin alluvial stratification; very friable; common very fine tubular pores; common fine and medium prominent yellowish brown (10YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; clear smooth boundary.

4C7—62 to 72 inches; about 85 percent dark grayish brown (10YR 4/2) and 15 percent grayish brown (10YR 5/2) silt loam; massive with weak thin alluvial stratification; very friable; common very fine tubular pores; common fine prominent yellowish brown (10YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; clear smooth boundary.

4C8—72 to 80 inches; dark grayish brown (10YR 4/2) and grayish brown (10YR 5/2) silt loam; massive with weak thin alluvial stratification; very friable;

common very fine tubular pores; many fine prominent strong brown (7.5YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline.

Range in Characteristics

Depth to loamy alluvium: 18 to 36 inches
Depth to carbonates: Less than 10 inches

Ap or A horizon:
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—2 to 4
Texture—very fine sandy loam, sandy loam, loamy fine sand, fine sandy loam, or fine sand
Reaction—neutral to moderately alkaline

C horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 or 3
Texture—fine sand, sand, loamy fine sand, loamy sand, loamy very fine sand, or fine sandy loam
Reaction—slightly alkaline or moderately alkaline

2C horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—loam, silt loam, very fine sandy loam, or fine sandy loam
Reaction—slightly alkaline or moderately alkaline

3C horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—loamy very fine sand, loamy fine sand, fine sand, very fine sandy loam, or fine sandy loam
Reaction—slightly alkaline or moderately alkaline

4C horizon:
Hue—10YR or 2.5Y
Value—4 to 6
Chroma—2 to 4
Texture—silt loam, silty clay loam, or silty clay
Reaction—slightly alkaline or moderately alkaline

Taxadjunct features: The representative pedon for the Ticonic series in Woodbury County, Iowa, is a taxadjunct because it has an 8-inch-thick surface horizon that is darker than is defined as the range for the series.

Tieville Series

Typical Pedon

Tieville silty clay, 0 to 2 percent slopes, rarely flooded, in a cultivated field on a flood plain in Monona County, Iowa, about 2,500 feet north and 300 feet west of the southeast corner of sec. 15, T. 85 N., R. 45 W.; USGS Hornick topographic quadrangle; lat. 42 degrees 10 minutes 38.0 seconds N. and long. 96 degrees 03 minutes 36.1 seconds W., NAD 83:

Ap—0 to 7 inches; black (10YR 2/1) silty clay, dark gray (10YR 4/1) dry; weak fine subangular blocky structure; firm; few fine roots; slightly effervescent; slightly alkaline; abrupt smooth boundary.

Ak—7 to 22 inches; black (10YR 2/1) silty clay, dark gray (10YR 4/1) dry; moderate medium subangular blocky structure; firm; few very fine and fine roots between peds; few fine irregular masses of carbonate; strongly effervescent; slightly alkaline; clear smooth boundary.

Bkg1—22 to 30 inches; dark gray (10YR 4/1) and very dark gray (10YR 3/1) silty clay; moderate medium subangular blocky structure; firm; few fine irregular masses of carbonate; strongly effervescent; slightly alkaline; clear smooth boundary.

Bkg2—30 to 38 inches; dark gray (10YR 4/1) silty clay; moderate medium subangular blocky structure; firm; few fine irregular masses of carbonate and few fine and medium rounded carbonate concretions; common fine prominent brown (7.5YR 4/4) redoximorphic concentrations; violently effervescent; moderately alkaline; clear smooth boundary.

BCkg—38 to 43 inches; gray (10YR 5/1) silty clay; weak coarse prismatic structure; firm; few fine irregular carbonate concretions; common medium and coarse prominent yellowish brown (10YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; clear smooth boundary.

Cg—43 to 60 inches; gray (10YR 5/1) silty clay; massive; firm; few fine irregular carbonate concretions; common medium and coarse prominent yellowish brown (10YR 5/6) redoximorphic concentrations; strongly effervescent; moderately alkaline.

Range in Characteristics

Depth to carbonates: 0 to 10 inches
Thickness of the mollic epipedon: 18 to 24 inches

Ap or Ak horizon:
Hue—10YR or 2.5Y
Value—2 or 3
Chroma—1 or 2
Texture—silty clay or clay
Reaction—slightly alkaline or moderately alkaline

Bg or Bkg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—2 to 4
Chroma—1 or 2
Texture—silty clay or clay
Reaction—slightly alkaline to strongly alkaline

BCg or BCkg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—3 to 5
Chroma—1 or 2
Texture—silty clay or clay
Reaction—moderately alkaline or strongly alkaline

Cg horizon:
Hue—10YR or 2.5Y
Value—3 to 5
Chroma—1 or 2
Texture—silty clay or clay
Reaction—moderately alkaline or strongly alkaline

Wilsey Series

Typical Pedon

Wilsey silt loam, 0 to 2 percent slopes, occasionally flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 300 feet north and 1,140 feet east of the southwest corner of sec. 32, T. 89 N., R. 45 W.; USGS Lawton topographic quadrangle; lat. 42 degrees 28 minutes 33.8 seconds N. and long. 96 degrees 11 minutes 21.6 seconds W., NAD 83:

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, brown (10YR 5/3) dry; weak very fine subangular blocky structure; friable; common very fine and fine roots; common very fine and fine tubular pores; very slightly effervescent; slightly alkaline; abrupt smooth boundary.

C1—7 to 17 inches; about 90 percent very dark grayish brown (10YR 3/2) and 10 percent brown (10YR 4/3) silt loam; massive with weak thin alluvial stratification; friable; common very fine and fine roots; common very fine and fine tubular pores; very slightly effervescent; moderately alkaline; gradual smooth boundary.

C2—17 to 34 inches; about 90 percent brown (10YR 4/3) and 10 percent very dark grayish brown (10YR 3/2) silt loam; massive with weak thin alluvial stratification; friable; common very fine and fine roots; many very fine and fine tubular pores; very slightly effervescent; moderately alkaline; gradual smooth boundary.

C3—34 to 54 inches; about 90 percent very dark grayish brown (10YR 3/2) and 10 percent dark brown (10YR 3/3) silt loam; massive with weak thin alluvial stratification; friable; few very fine and fine roots; many very fine and fine tubular pores; very slightly effervescent; slightly alkaline; abrupt smooth boundary.

2Ab1—54 to 63 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; weak very fine and fine subangular blocky structure; friable; many very fine and fine tubular pores; slightly alkaline; gradual smooth boundary.

2Ab2—63 to 73 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; weak fine subangular blocky structure; friable; many very fine and fine tubular pores; neutral; gradual smooth boundary.

2Ab3—73 to 80 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; weak fine and medium subangular blocky structure; friable; many very fine and fine tubular pores; neutral.

Range in Characteristics

Depth to the buried soil: More than 40 inches
Depth to carbonates: 0 to 10 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—2 or 3
Texture—silt loam or silty clay loam
Reaction—slightly alkaline or moderately alkaline

C horizon:
Hue—10YR
Value—3 to 5
Chroma—2 to 4
Texture—silt loam or silty clay loam
Reaction—slightly alkaline or moderately alkaline

2Ab horizon:
Hue—10YR or N
Value—2
Chroma—0 or 1
Texture—silty clay loam or silt loam
Reaction—neutral to moderately alkaline

Woodbury Series

Typical Pedon

Woodbury silty clay, 0 to 2 percent slopes, rarely flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 2,490 feet west and 1,300 feet north of the southeast corner of sec. 11, T. 87 N., R. 47 W.; USGS Salix topographic quadrangle; lat. 42 degrees 21 minutes 46.4 seconds N. and long. 96 degrees 16 minutes 50.6 seconds W., NAD 83:

Ap—0 to 8 inches; very dark gray (10YR 3/1) silty clay, dark gray (10YR 4/1) dry; moderate medium subangular blocky and moderate very fine and fine subangular blocky structure; firm; common very fine and fine roots; common very fine and fine tubular pores; moderately acid; abrupt smooth boundary.

A1—8 to 17 inches; very dark gray (10YR 3/1) silty clay, dark gray (10YR 4/1) dry; weak fine and medium subangular blocky structure; firm; common very fine and fine roots; many very fine and few fine tubular pores; slightly acid; clear smooth boundary.

A2—17 to 24 inches; very dark gray (10YR 3/1) silty clay, dark gray (10YR 4/1) dry; weak fine prismatic structure parting to moderate very fine and fine subangular blocky; firm; common very fine and fine roots; many very fine and few fine tubular pores; common fine distinct dark brown (10YR 3/3) redoximorphic concentrations; slightly acid; clear smooth boundary.

Bg1—24 to 31 inches; dark gray (2.5Y 4/1) silty clay; moderate fine prismatic structure parting to moderate very fine and fine subangular blocky; firm; few very fine and fine roots; many very fine and few fine tubular pores; common distinct very dark gray (10YR 3/1) organic coatings on faces of peds; common fine prominent dark yellowish brown (10YR 3/4) redoximorphic concentrations; neutral; clear smooth boundary.

Bg2—31 to 37 inches; dark gray (2.5Y 4/1) and gray (2.5Y 5/1) silty clay; weak fine and medium subangular blocky structure; firm; many very fine and common fine tubular pores; common fine prominent dark yellowish brown (10YR 3/6) redoximorphic concentrations; neutral; clear smooth boundary.

BCg—37 to 46 inches; grayish brown (2.5Y 5/2) silty clay loam; weak fine and medium subangular blocky structure; firm; many very fine and common fine tubular pores; common fine prominent dark yellowish brown (10YR 3/6) redoximorphic concentrations; neutral; clear smooth boundary.

Cg1—46 to 58 inches; light olive brown (2.5Y 5/3) silt loam; massive; very friable; common very fine and fine tubular pores; common fine light brownish gray (10YR 6/2) carbonate concretions; many fine prominent dark yellowish brown (10YR 4/6) redoximorphic concentrations; strongly effervescent; moderately alkaline; clear smooth boundary.

Cg2—58 to 68 inches; light olive brown (2.5Y 5/3) silt loam; massive; very friable; common very fine and fine tubular pores; few fine light brownish gray (10YR 6/2) carbonate concretions; common fine prominent dark brown (7.5YR 3/3) and many fine faint light olive brown (2.5Y 5/4) redoximorphic concentrations; strongly effervescent; moderately alkaline; gradual smooth boundary.

Cg3—68 to 80 inches; light olive brown (2.5Y 5/3) silt loam; massive; very friable; common very fine and fine tubular pores; few fine light brownish gray (10YR 6/2) carbonate concretions; many fine and medium faint light olive brown (2.5Y 5/4) and common fine prominent dark brown (7.5YR 3/3) redoximorphic concentrations; strongly effervescent; moderately alkaline.

Range in Characteristics

Depth to carbonates: 36 to 60 inches
Thickness of the mollic epipedon: 16 to 24 inches

Ap or A horizon:
Hue—10YR
Value—2 or 3
Chroma—1
Texture—silty clay
Reaction—moderately acid or slightly acid

Bg horizon:
Hue—2.5Y or 5Y
Value—4 or 5
Chroma—1 or 2
Texture—silty clay
Reaction—slightly acid or neutral

BCg horizon:
Hue—2.5Y or 5Y
Value—4 or 5
Chroma—2 to 4
Texture—silty clay loam
Reaction—neutral

Cg horizon:
Hue—2.5Y or 5Y
Value—4 or 5
Chroma—2 to 4
Texture—silt loam
Reaction—neutral to moderately alkaline

Zook Series

Typical Pedon

Zook silty clay loam, 0 to 2 percent slopes, occasionally flooded, in a cultivated field on a flood plain in Woodbury County, Iowa, about 2,200 feet east and 150 feet south of the northwest corner of sec. 36, T. 86 N., R. 44 W.; USGS Smithland topographic quadrangle; lat. 42 degrees 13 minutes 32.0 seconds N. and long. 95 degrees 54 minutes 55.0 seconds W., NAD 83:

Ap—0 to 9 inches; black (10YR 2/1) silty clay loam, very dark gray (10YR 3/1) dry; weak medium subangular blocky and weak fine granular structure; friable; many very fine and fine roots; few fine and many very fine tubular pores; moderately acid; clear smooth boundary.

A1—9 to 18 inches; black (N 2/0) silty clay loam, very dark gray (10YR 3/1) dry; weak fine subangular blocky and weak very fine and fine granular structure; friable; many fine roots; many very fine and fine tubular pores; slightly acid; clear smooth boundary.

A2—18 to 26 inches; black (N 2/0) silty clay loam, very dark gray (10YR 3/1) dry; weak fine subangular blocky and weak fine granular structure; friable; many very fine and fine roots; many very fine and fine tubular pores; slightly acid; gradual smooth boundary.

A3—26 to 39 inches; black (10YR 2/1) silty clay, very dark gray (10YR 3/1) dry; weak fine prismatic structure parting to weak fine subangular blocky; friable; many very fine and fine roots; many very fine and fine tubular pores; common fine prominent dark brown (7.5YR 3/4) redoximorphic concentrations; slightly acid; gradual smooth boundary.

Bg1—39 to 46 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; moderate fine and medium prismatic structure parting to weak very fine and fine subangular blocky; friable; many very fine and fine tubular pores; common fine prominent brown (7.5YR 4/4) redoximorphic concentrations; neutral; gradual smooth boundary.

Bg2—46 to 55 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; weak medium prismatic structure parting to weak fine and medium subangular blocky; firm; many very fine and fine tubular pores; common fine prominent dark brown (7.5YR 3/4) and brown (7.5YR 4/4) redoximorphic concentrations; neutral; clear smooth boundary.

Bg3—55 to 71 inches; very dark gray (10YR 3/1) silty clay, dark gray (10YR 4/1) dry; weak medium prismatic structure parting to weak medium subangular blocky; firm; many very fine and fine tubular pores; common fine prominent brown (7.5YR 4/4) redoximorphic concentrations; neutral; clear smooth boundary.

Cg—71 to 80 inches; very dark gray (10YR 3/1) silty clay loam; massive; friable; many very fine tubular pores; common fine prominent dark reddish brown (5YR 3/3), many fine prominent olive brown (2.5Y 4/4), and few fine prominent yellowish red (5YR 5/6) redoximorphic concentrations; neutral.

Range in Characteristics

Thickness of the mollic epipedon: More than 36 inches

Ap or A horizon:
Hue—10YR or N
Value—2
Chroma—0 or 1
Texture—silty clay loam or silty clay
Reaction—moderately acid to slightly alkaline

Bg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—2 to 5
Chroma—1
Texture—silty clay loam or silty clay
Reaction—slightly acid or neutral

Cg horizon:
Hue—10YR, 2.5Y, or 5Y
Value—2 to 5
Chroma—1
Texture—silty clay loam
Reaction—slightly acid or neutral

Formation of the Soils

This section relates the major factors of soil formation to the soils in Woodbury County. It also describes the major processes of soil formation.

Factors of Soil Formation

Soil is a natural body of mineral and organic constituents that has formed over time through a process of chemical and physical weathering and that is influenced by climatic conditions. Five major factors interact to influence the development a soil: (1) parent material; (2) the climate under which the soils developed; (3) the biological processes of plant and animals in and on the soil; (4) relief, or topography; and (5) the length of time the forces have acted on the parent materials (Jenny, 1941). Human activities have also had a significant effect on the formation of soils.

Climate and biological processes are the active factors of soil genesis. They act on the parent material that has accumulated through the weathering of rocks and slowly change it into a natural body that has genetically related horizons. The effects of climate and biological processes are conditioned by relief. The parent material also affects the kind of profile that can be formed; in extreme cases, parent material can determine the kind of profile that forms almost entirely. Finally, time is needed for changing the parent material into a soil. Usually, a long time is required for the development of distinct horizons.

The factors of soil genesis are so closely interrelated that few generalizations can be made regarding the effect of any one factor unless conditions are specified for the others.

Climate

The soils in Woodbury County formed under variable climatic conditions. During the post-Carey glaciation period, from about 13,000 to 10,500 years ago, the climate in central Iowa was cool and the vegetation was dominantly conifers. During the period from 10,500 to 8,000 years ago, a warming trend took place and the vegetation changed from conifers to mixed forest dominated by hardwoods. Beginning about 8,000 years ago, the climate became even warmer and drier. Herbaceous prairie vegetation became dominant. The forest-prairie transition of central Iowa changed in post-glacial climate from relatively dry prairie to more moist conditions. This change may have taken place about 3,000 years ago. The present climate is midcontinental subhumid.

Nearly uniform climate prevails throughout the county. The influence of the general climate, however, is modified by local conditions. Microclimates are a result of topography and vegetation. For example, in areas of Hamburg soils on the very steep bluffs, most of the water runs off or infiltrates rapidly into the soil. This characteristic results in a warmer, drier climate than that of nearby less sloping areas. On south-facing slopes the effect is similar. North- and east-facing slopes tend to be cooler and moister than south-facing slopes and are more likely to support natural stands of trees. Low-lying or depressional areas of poorly drained or very poorly drained soils are wetter and colder than most areas around them.

The general climate has had an important overall influence on the characteristics of the soils but has not caused major differences among them. The local climate differences influence the characteristics of the soils and account for some of the differences in soils within the same climatic region.

Weathering of the parent material by water and air is activated by changes in temperature. As a result of weathering, changes caused by both physical and chemical actions take place. Rainfall has influenced the formation of the soils through its effect on the amount of leaching in soils and on the kinds of plants that grow.

Some variations in plant and animal life are caused by variations in temperature or by the action of other climatic forces on the soil material. To that extent, climate influences changes in soils that are brought about by differences in plant and animal populations.

Living Organisms

Biological processes of plants and animals greatly affect soil formation. Burrowing animals, worms, crayfish, and micro-organisms, such as fungus, actinomycetes, and bacteria, influence soil properties.

Differences in the kinds of vegetation can commonly cause marked differences in soil properties and development. Human activities have greatly affected soil properties since the settlement of Woodbury County.

Burrowing animals, such as badgers and pocket gophers, move large amounts of soil from the subsoil to the soil surface. They are active in relatively small areas. In most places in Woodbury County, the soils appear undisturbed by burrowing animals. Earthworms and soil insects have a widespread effect. Earthworms move up and down in soils as soil moisture or temperature changes. In most of the soil profiles examined in the county, earthworms had moved materials from one soil horizon to another. Earthworms are beneficial in several ways. The worm channels they leave improve soil aeration and the rate of infiltration. Earthworm castings, except when they are fresh, enhance the stability of soil aggregates (Shipitalo and Protz, 1988).

Micro-organisms, such as bacteria and fungi, modify plant residues into humus and release plant nutrients. Individual genera of bacteria and fungi tend to colonize and decompose specific plant residues and to prefer specific soil temperature and moisture states (Broder and Wagner, 1988). The diversity of bacteria and fungi genera in a soil, however, ensures that plant residues are continually being decomposed, except when the soil is frozen.

Tall grasses were the dominant vegetation when Woodbury County was settled. Trees grew in places, mainly in steep areas within a few miles of the Missouri River Valley and along streams. The thickest stands were on north- and east-facing slopes.

Because grasses have many roots and tops that decay, soils that formed on prairies typically have a thicker, darker surface layer than that of the soils that formed under trees. The organic matter in the soils that formed under trees is derived principally from fallen leaves. These soils generally are more acid than the soils that formed under grasses. Monona and Galva soils are typical prairie soils. The stands of trees on these soils have not been in place long enough to affect soil formation significantly.

Important soil changes took place when human activities began in the settlement of the survey area. Some had little effect on soil productivity, but others had more dramatic results. Changes caused by water erosion and drainage generally are the most significant.

Breaking of the sod, removal of the protective vegetative cover, and cultivation made the sloping areas more susceptible to erosion. Surface runoff increased, and the rate at which water moved into the soil decreased. As a result, accelerated erosion has removed part or all of the original surface layer of the sloping soils and has reduced fertility and the content of organic matter.

Erosion has not only changed the thickness and organic matter content of the surface soil, it has also changed the soil structure. Slightly eroded soils exhibit mostly granular structure, but as erosion becomes more pronounced, the soil develops subangular structure and finally deteriorates to a cloddy, structureless condition in areas that are severely eroded.

Prior to recent human occupation and the widespread denudation of the soil surface, the loess-covered area experienced periods of downcutting of streams, healing over, sedimentation, and downcutting again. This process was accelerated after agriculture was established in the survey area. New gullies can occur quickly, but it takes many years for the scars to heal themselves.

Gullies develop in stages. These stages have been described as channel erosion by downward scour, headward erosion and enlargement, healing, and stabilization. Generally, headward erosion is a process of soil sloughing that works from the water course and up the hillside, sometimes with costly results. Bridges, roads that parallel streams and rivers, and driveways and building sites are often threatened or damaged by such erosion.

Soils that are not subject to erosion have shown signs of compaction by heavy agricultural equipment. Compaction destroys soil structure. When they are wet, soils in compacted areas are subject to puddling and are less permeable than the soils in areas where traffic is managed properly.

In many low areas, dark soils have received lighter colored, calcareous deposition. Rawles and Wilsey soils formed in this recent alluvium. These soils show the influence of human activity. They have strata of light and dark materials that were washed from the hillsides and deposited by floods. This erosion has taken place since cultivation of the hillsides began.

Human activities have also done much to increase soil productivity. Agricultural terraces (fig. 18), erosion-control structures, diversion ditches, and ponds are being used in some places to control runoff and erosion. Installing drainage ditches and levees has helped to minimize the effects of flooding, lowered the water table, and prevented the subsequent deposition of alluvium. The application of commercial fertilizers and lime has helped to correct deficiencies in plant nutrients. As a result, large areas on flood plains and

Figure 18.—Terraces conserve topsoil and reduce the runoff rate in this area of Monona and Ida soils. Ida silt loam, 9 to 14 percent slopes, severely eroded, is in the foreground. Monona silty clay loam, 5 to 9 percent slopes, moderately eroded, is in the background. The Monona soil is on summits and the upper side slopes, and the Ida soil is on the steeper parts of side slopes.

in the uplands are now suitable for cultivation and are more productive than they were in their natural state.

Topography

Topography refers to the lay of the land. The topography of Woodbury County ranges from the nearly level bottom land along the Missouri River Valley flood plain in the west, to the steep angular loess hills and bluffs at the juncture of the uplands and the bottom land, to rolling hills in the east. The vertical interval between the Missouri River Valley and the loess-covered uplands generally ranges from 200 to 400 feet. The lowest part of the county is along the Missouri River in the southwest corner of the county. The highest level in the county, about 1,460 feet above sea level, is in several places in the eastern half of the county.

In addition to the Missouri River, the major rivers in the county are the Little Sioux, the Maple, and the Floyd Rivers. These rivers join with a network of drainage ditches as they cross the Missouri River bottom land before they outlet into the Missouri River. The Missouri River Valley currently has an extensive network of field surface drains and drainage ditches that connect with the major drainage ditches. This drainage network has changed the use and management of the Old Bottom Land area and has made farming possible. This area had not been farmed previously because it was too wet or was subject to frequent flooding.

In Woodbury County, the slope ranges from nearly level to very steep. Relief is an important factor in soil formation because it affects drainage, runoff, the depth to the water table, and erosion and sedimentation. A difference in topography is the basic reason for the differing soil properties of some of the soils in the county.

Topography influences soils that formed in similar parent material, as evidenced by the soil colors, the thickness of the solum, and the horizonation of the soils. Ida and Monona soils are examples of soils that formed in similar parent material but differ in characteristics mainly related to relief. Some water runs off the well drained, sloping Monona soils, but more water runs off the more strongly sloping Ida soils. Water has eroded the Ida soils at such a rate that little development has taken place. The surface layer of the Monona soils is thicker and darker than that of the Ida soils and is leached of carbonates, whereas Ida soils are calcareous at or near the surface. Slope also affects the thickness of the solum. The steeper and more convex the slope, the thinner the solum.

Relief affects the color of the B horizon through its effect on drainage and soil aeration. The subsoil of a soil that has good drainage generally is brown because iron compounds are oxidized and are well distributed throughout the horizon. Conversely, the subsoil of soils that have restricted drainage generally is grayish and mottled. The subsoil of the low-lying, poorly drained and very poorly drained, clayey Luton soils on the Missouri River Old Bottom Land, for example, is gray and olive gray. In contrast, the Keg soils, which are at a slightly higher elevation, are well drained and have a brownish subsoil.

Parent Material

The soils in Woodbury County formed in three main types of parent material. These are loess, alluvium, and till.

Loess is the most extensive parent material in the county. It is a yellowish brown, wind-deposited material that consists mainly of silt particles and small amounts of clay and sand. Small calcium carbonate concretions also are common in the unleached loess. Most of the upland soils formed in Wisconsin loess. Ida and Monona soils are the most extensive of these.

Hamburg soils are on bluffs adjacent to the Missouri River Valley. The loess is thickest on the bluffs and becomes thinner toward the east. It ranges from about 200 feet thick at the bluffs on the western side of the county to less than 50 feet thick on the eastern side of the county. In the northeast corner of the county, where Galva soils occur, the thickness of the loess is about 10 feet.

Alluvium is the second most extensive parent material in the county. The largest area is in the Missouri River Valley. Alluvium consists of sediment deposited along major streams and narrow upland drainageways and on low terraces. It varies in texture because of the manner in which it was deposited and can range from sandy to clayey.

The soils that formed in alluvium are in two broad categories. One group formed in alluvium that has been in place long enough to have been affected by the soil-forming processes. Examples are Blencoe, Cooper, Keg, Lakeport, Luton, Salix, and Zook soils. The second group formed in recent alluvium. Examples are Albaton, Blake, Haynie, Onawa, Sarpy, and Wilsey soils. Because of the accumulation of organic matter, the first group is darker in the upper part than the second group and is darker to a greater depth.

The texture of the soils that formed in alluvium varies widely. Albaton and Luton soils formed entirely in clayey alluvium; Sarpy soils are loamy and sandy throughout. Haynie, Keg, Kennebec, and Wilsey soils are dominantly silt loam throughout. Lakeport and Smithland soils are dominantly silty clay loam throughout. Some soils have layers of different textures. Examples are Blencoe, Blake, Modale, Onawa, and Percival soils.

Local alluvium has been transported only short distances and retains the characteristics of the parent material of the soil from which it was transported, either by wind or water or both. Napier soils are examples of soils that formed in local alluvium. They are generally at the base of slopes, lower than the soils that formed in loess. Castana soils formed partly in colluvium that was moved downslope by gravity. All of the soils at the base of slopes have textures similar to those of the adjacent soils on hillsides.

Till is the least extensive parent material in the county. It is a grayish brown to yellowish brown, calcareous material that was deposited by glacial ice. It consists of nearly equal amounts of sand, silt, and clay with variable amounts of rock fragments ranging from very fine gravel to boulders. Soils that formed in till have a higher bulk density, slower permeability, and a lower cation-exchange capacity than the adjacent loess soils. Burchard and Liston soils formed in till. They are on very steep side slopes and nose slopes, where the loess surface has been removed by geologic erosion and the till is exposed.

Time

The length of time that the soil material is acted on by soil-forming processes affects the kind of soil that forms. The older soils have strongly expressed genetic horizons. Luton and Monona soils are examples. Some soils show little or no evidence of development because they have not been in place long enough for the formation of distinct horizons. Albaton and Wilsey soils are examples.

An older soil generally has a higher content of clay in the subsoil than a younger soil that formed in similar kinds of parent material. As a soil forms, clay is moved from the surface layer to the subsoil. This transfer increases the content of clay in the subsoil. The process is more evident in nearly level soils than in the more sloping soils.

In the steeper areas, the soil material is generally removed before enough time has passed for the development of a thick profile that has distinct horizons. Even if the soil material has been in place a long time, the soil can exhibit little development because much of the water runs off the slopes rather than through the soil material.

Processes of Soil Formation

Horizons are differentiated from each other when four basic kinds of change take place. These are additions, removals, transfers, and transformations. Each of these kinds of change affects many substances in the soils, such as organic matter, soluble salts, carbonates, sesquioxides, and silicate clay materials. Most of these processes tend to promote horizon differentiation, but some tend to offset or retard it.

The processes and the resulting changes occur simultaneously in soils. The ultimate nature of the profile is governed by the balance of these changes within the soil.

An accumulation of organic matter generally is an early phase of horizon differentiation. It has been an important process in the differentiation of horizons in the soils of Woodbury County. The amount of organic matter that has accumulated in the surface layer of the soils ranges from high to very low. In some soils the content of organic matter formerly was fairly high but is now low because of erosion.

The removal of substances from parts of the soil profile is important in the differentiation of horizons. The downward movement of calcium carbonates and bases is an example. The upper part of the soils in Woodbury County has been leached of calcium carbonate. Many soils have been so strongly leached that they are strongly acid or very strongly acid even in the subsoil.

Phosphorus is removed from the subsoil by plant roots and transferred to the parts of the plant growing above the ground. It is then returned to the surface layer in the plant residue. This process affects the form and distribution of phosphorus in the profile.

The translocation of silicate clay minerals is another important process. The clay minerals in the surface layer are carried downward in suspension by percolating water. They accumulate in the subsoil as fillings in pores and root channels and as clay films. This process has affected many of the soils in the county. In other soils, however, the clay content of the surface layer is not markedly different from that of the underlying layer and other evidence of clay movement is minimal.

Another kind of transfer occurs when cracks form as a result of shrinking and swelling. Because of the cracks, some of the material from the surface layer is transferred to the lower parts of the profile. This transfer is minimal in most soils. It is most common in very clayey soils. It can occur in Luton and Tieville soils.

Transformations are physical and chemical. The weathering of soil particles to smaller sizes is an example of transformation. The reduction of iron is another example. This process is called gleying. It occurs when the soil is saturated for long periods. The soil contains enough organic matter for biological activity to take place during periods of saturation. Gleying is evidenced by ferrous iron and gray colors in the soil. It is characteristic of poorly drained soils. The content of reductive extractable iron, or free iron, generally is lower in somewhat poorly drained soils. Another kind of transformation is the weathering of the primary apatite minerals in the parent material to secondary phosphorus compounds.

References

Abbot, P.J., S.M. Nusser, T.E. Fenton, P. Cowsert, and J. Hempel. 1999. Statistical sampling approaches for soil survey updates.

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.

Broder, M.W., and G.H. Wagner. 1988. Microbial colonization and decomposition of corn, wheat, and soybean residue. Soil Science Society of America Journal 48(5): 1107–1114.

Jenny, Hans. 1941. Factors of soil formation.

Ruhe, Robert V., and P.H. Walker. 1968. Hillslope models and soil formation: I, Open systems. Transactions of the 9th International Congress of Soil Science, Adelaide, Australia, volume 4, pp. 551–560.

Shipitalo, M.J., and R. Protz. 1988. Factors influencing the dispersibility of clay in worm casts. Soil Science Society of America Journal 52(3): 764–769.

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.

United States Department of Agriculture. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210.

United States Department of Agriculture. 1981. Land resource regions and major land resource areas of the United States. Soil Conservation Service. U.S. Department of Agriculture Handbook 296.

United States Department of Agriculture. 1997. Iowa agricultural statistics. U.S. Department of Agriculture Publication 39.

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430–VI. [http://soils.usda.gov/technical/]

Warner and Company. 1891. History of Woodbury and Plymouth Counties.

Worster, J.R., E.H. Harvey, and L.T. Hanson. 1972. Soil survey of Woodbury County, Iowa. U.S. Department of Agriculture, Soil Conservation Service.

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).

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.

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.

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.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available 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 (fig. 19). In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

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 (fig. 19) consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Beach deposits. Material, such as sand and gravel, that is generally laid down parallel to an active or relict shoreline of a post-glacial or glacial lake.

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.

Bedrock. The solid rock that underlies the soil and

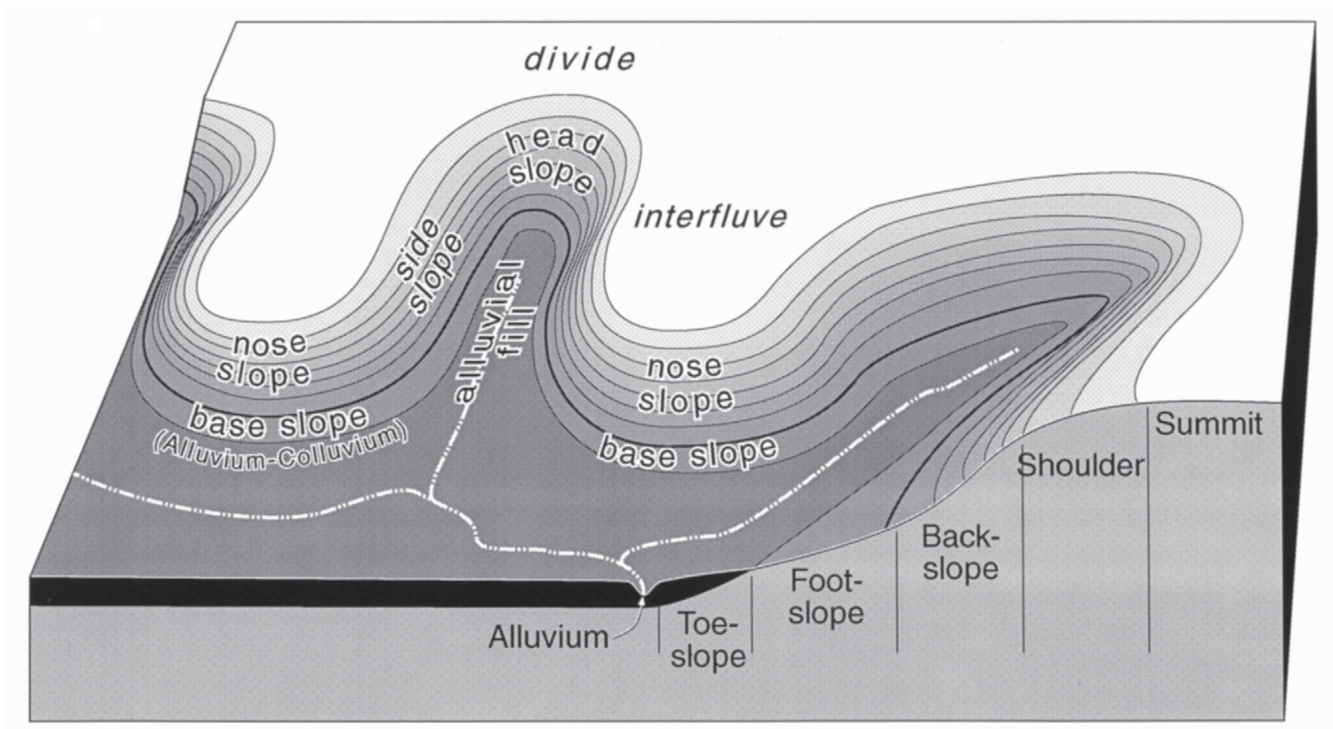


Figure 19.—Landscape relationship of geomorphic components and hillslope positions (modified after Ruhe and Walker, 1968).

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.

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.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Catsteps. See Terracettes.

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.

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.

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.

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.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divide. (a) The line of separation, or (b) the summit area, or narrow tract of higher ground that constitutes the watershed boundary between two adjacent drainage basins (fig. 19); it divides the surface waters that flow naturally in one direction from those that flow in the opposite direction.

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.

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.

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.

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.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion pavement. A surficial lag concentration or layer of gravel and other rock fragments that remains on the soil surface after sheet or rill erosion or wind has removed the finer soil particles and that tends to protect the underlying soil from further erosion.

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*.

Fine textured soil. Sandy clay, silty clay, or clay.

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 (fig. 19). 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.

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.

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.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A small channel with steep sides caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim (in tables). Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head slope (geomorphology). A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway (fig. 19). The overland waterflow is converging.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A 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 (fig. 19).

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.

Ice-walled lake plain. A relict surface marking the floor of an extinct lake basin that was formed on solid ground and surrounded by stagnant ice in a stable or unstable superglacial environment on stagnation moraines. As the ice melted, the lake plain became perched above the adjacent landscape. The lake plain is well sorted, generally fine textured, stratified deposits.

Igneous rock. Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Interfluve. A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology). A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill (fig. 19); shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream. A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. See Redoximorphic features.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

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.

Kame moraine. An end moraine that contains numerous kames. A group of kames along the front of a stagnant glacier, commonly comprising the slumped remnants of a formerly continuous outwash plain built up over the foot of rapidly wasting or stagnant ice.

Karst (topography). A kind of topography that formed in limestone, gypsum, or other soluble rocks by dissolution and that is characterized by closed depressions, sinkholes, caves, and underground drainage.

Knoll. A small, low, rounded hill rising above adjacent landforms.

K_{sat}. Saturated hydraulic conductivity. (See Permeability.)

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake bed. The bottom of a lake; a lake basin.

Lake plain. A nearly level surface marking the floor of an extinct lake filled by well sorted, generally fine textured, stratified deposits, commonly containing varves.

Lake terrace. A narrow shelf, partly cut and partly built, produced along a lakeshore in front of a scarp line of low cliffs and later exposed when the water level falls.

Landslide. A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Material transported and deposited by wind and consisting dominantly of silt-sized particles.

Low strength. The soil is not strong enough to support loads.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions; formed primarily under freshwater lacustrine conditions but also formed in more saline environments.

Masses. See Redoximorphic features.

Meander belt. The zone within which migration of a meandering channel occurs; the flood-plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.

Meander scar. A crescent-shaped, concave or linear mark on the face of a bluff or valley wall, produced by the lateral erosion of a meandering stream that impinged upon and undercut the bluff.

Meander scroll. One of a series of long, parallel, close-fitting, crescent-shaped ridges and troughs formed along the inner bank of a stream meander as the channel migrated laterally down-valley and toward the outer bank.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

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.

MLRA (major land resource area). A geographic area characterized by a particular pattern of land uses, elevation and topography, soils, climate, water resources, and potential natural 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.)

Mudstone. A blocky or massive, fine grained sedimentary rock in which the proportions of clay and silt are approximately equal. Also, a general term for such material as clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon. A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. See Redoximorphic features.

Nose slope (geomorphology). A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside (fig. 19). 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.

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.

Parts per million (ppm). The concentration of a substance in the soil, such as phosphorus or potassium, in one million parts of air-dried soil on a weight per weight basis.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment. A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on and is being (or was) transported across a gently sloping erosional surface at the foot of a receding hill or mountain slope.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

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.

Phosphorus. The amount of phosphorus available to plants at a depth of 30 to 42 inches is expressed in parts per million and based on the weighted average of air-dried soil samples. Terms describing the amount of available phosphorus are:

Very low	less than 7.5 ppm
Low	7.5 to 13.0 ppm
Medium	13.0 to 22.5 ppm
High	more than 22.5 ppm

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitted outwash plain. An outwash plain marked by many irregular depressions, such as kettles, shallow pits, and potholes, which formed by melting of incorporated ice masses.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plateau (geomorphology). A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.

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.

Potassium. The amount of potassium available to plants at a depth of 12 to 24 inches is expressed in parts per million and based on the weighted average of air-dried soil samples. Terms describing the amount of available potassium are:

Very low	less than 50 ppm
Low	50 to 79 ppm
Medium	79 to 125 ppm
High	more than 125 ppm

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.

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.

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.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturated hydraulic conductivity (K_{sat}). See Permeability.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

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 (fig. 19). 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 (fig. 19). 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.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole. A closed, circular or elliptical depression, commonly funnel shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock (e.g., limestone, gypsum, or salt) or by collapse of underlying caves within bedrock. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.

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 (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slope alluvium. Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

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.

Stagnation moraine. A body of drift released by the melting of a glacier that ceased flowing. Commonly but not always occurs near ice margins; composed of till, ice-contact stratified drift, and small areas of glacial lake sediment. Typical landforms are knob-and-kettle topography, locally including ice-walled lake plains.

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.

Summit. The topographically highest position of a hillslope (fig. 19). 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.

Swale. A slight depression in the midst of generally level land. A shallow depression in an undulating ground moraine caused by uneven glacial deposition.

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."

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 (fig. 19). 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.

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. The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve. A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering. All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1971-2000 at Sioux City, Iowa)

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----	28.4	9.1	18.7	58	-18	0	0.59	0.26	0.87	1	6.3
February---	34.6	15.9	25.3	67	-17	0	.62	.25	.93	1	5.5
March------	47.1	26.3	36.7	80	-3	17	2.00	.70	3.07	4	5.6
April------	61.5	37.8	49.6	90	16	112	2.75	1.27	4.03	5	1.7
May--------	72.8	49.7	61.3	93	30	354	3.75	2.43	4.95	7	.0
June-------	82.1	59.3	70.7	100	42	623	3.61	1.91	5.10	6	.0
July-------	85.8	64.0	74.9	101	48	773	3.30	1.42	4.91	5	.0
August-----	83.4	61.9	72.6	98	46	701	2.90	1.16	4.37	5	.0
September--	75.9	51.4	63.7	96	30	416	2.42	1.08	3.56	4	.0
October----	63.6	39.0	51.3	88	18	135	1.99	.62	3.10	3	.8
November---	44.7	25.6	35.1	73	-1	10	1.40	.47	2.16	3	4.6
December---	31.4	13.4	22.4	60	-15	0	.66	.31	.96	1	6.2
Yearly:											
Average---	59.3	37.8	48.5	---	---	---	---	---	---	---	---
Extreme---	108	-24	---	103	-22	---	---	---	---	---	---
Total-----	---	---	---	---	---	3,141	25.99	21.00	30.72	45	30.8

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

Table 2.--Freeze Dates in Spring and Fall

(Recorded in the period 1971-2000 at Sioux City, Iowa)

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. 16	Apr. 30	May 9
2 years in 10 later than--	Apr. 12	Apr. 25	May 5
5 years in 10 later than--	Apr. 4	Apr. 16	Apr. 25
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 12	Sept. 29	Sept. 19
2 years in 10 earlier than--	Oct. 17	Oct. 4	Sept. 23
5 years in 10 earlier than--	Oct. 27	Oct. 14	Oct. 2

Table 3.--Growing Season

(Recorded in the period 1971-2000 at Sioux City, Iowa)

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	187	161	140
8 years in 10	193	168	146
5 years in 10	205	179	159
2 years in 10	217	191	172
1 year in 10	223	198	178

Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
1B3	Ida silt loam, 2 to 5 percent slopes, severely eroded	440	*
1C	Ida silt loam, 5 to 9 percent slopes	1	*
1C3	Ida silt loam, 5 to 9 percent slopes, severely eroded	36,687	6.5
1D3	Ida silt loam, 9 to 14 percent slopes, severely eroded	58,564	10.4
1E3	Ida silt loam, 14 to 20 percent slopes, severely eroded	47,887	8.5
1F	Ida silt loam, 20 to 30 percent slopes	4	*
1F3	Ida silt loam, 20 to 30 percent slopes, severely eroded	12,137	2.2
1G	Ida silt loam, 30 to 40 percent slopes	1,226	0.2
2G	Hamburg silt loam, 40 to 75 percent slopes	2,827	0.5
3D	Castana silt loam, 9 to 14 percent slopes	48	*
3E	Castana silt loam, 14 to 20 percent slopes	1,692	0.3
8B	Judson silty clay loam, 2 to 5 percent slopes	11,057	2.0
8C	Judson silty clay loam, 5 to 9 percent slopes	14,907	2.7
10B	Monona silt loam, 2 to 5 percent slopes	439	*
10B2	Monona silt loam, 2 to 5 percent slopes, moderately eroded	1,368	0.2
10C2	Monona silt loam, 5 to 9 percent slopes, moderately eroded	9,463	1.7
10D2	Monona silt loam, 9 to 14 percent slopes, moderately eroded	13,300	2.4
10D3	Monona silt loam, 9 to 14 percent slopes, severely eroded	1,714	0.3
10E	Monona silt loam, 14 to 20 percent slopes	26	*
10E3	Monona silt loam, 14 to 20 percent slopes, severely eroded	774	0.1
10F	Monona silt loam, 20 to 30 percent slopes	3,024	0.5
12B	Napier silt loam, 2 to 5 percent slopes	10,379	1.8
12C	Napier silt loam, 5 to 9 percent slopes	29,849	5.3
17B	Napier-Kennebec-Colo complex, 0 to 5 percent slopes	90	*
26	Kennebec silty clay loam, 0 to 2 percent slopes, occasionally flooded	2,361	0.4
35F	Liston-Burchard complex, 18 to 25 percent slopes	1,636	0.3
35G	Liston-Burchard complex, 25 to 40 percent slopes	3,199	0.6
36	Salix silt loam, 0 to 2 percent slopes, rarely flooded	4,471	0.8
46	Keg loam, 0 to 2 percent slopes, rarely flooded	3,749	0.7
47B	Napier-Rawles complex, 2 to 5 percent slopes	9,602	1.7
54	Zook silty clay loam, 0 to 2 percent slopes, occasionally flooded	968	0.2
59E	Burchard clay loam, 9 to 18 percent slopes	318	*
66	Luton silty clay, 0 to 2 percent slopes, rarely flooded	22,672	4.0
67	Woodbury silty clay, 0 to 2 percent slopes, rarely flooded	5,725	1.0
100B	Monona silty clay loam, 2 to 5 percent slopes	6,548	1.2
100C2	Monona silty clay loam, 5 to 9 percent slopes, moderately eroded	17,853	3.2
100D2	Monona silty clay loam, 9 to 14 percent slopes, moderately eroded	24,313	4.3
100E2	Monona silty clay loam, 14 to 20 percent slopes, moderately eroded	2,651	0.5
101E2	Monona-Ida silt loams, 14 to 20 percent slopes, moderately eroded	4,180	0.7
123	Grantcenter silty clay loam, 0 to 2 percent slopes, rarely flooded	1,165	0.2
137	Haynie silt loam, 0 to 2 percent slopes, rarely flooded	6,147	1.1
144	Blake silty clay loam, 0 to 2 percent slopes, rarely flooded	3,186	0.6
156	Albaton silty clay, 0 to 2 percent slopes, rarely flooded	7,771	1.4
170E	Napier-Castana silt loams, 9 to 20 percent slopes	7,049	1.3
212	Kennebec silt loam, 0 to 2 percent slopes, occasionally flooded	4,756	0.8
212+	Kennebec silt loam, 0 to 2 percent slopes, occasionally flooded, overwash	891	0.2
220	Nodaway silty clay loam, 0 to 2 percent slopes, occasionally flooded	838	0.1
237	Sarpy loamy fine sand, 0 to 2 percent slopes, rarely flooded	224	*
237B	Sarpy loamy fine sand, 2 to 5 percent slopes, rarely flooded	761	0.1
244	Blend silty clay, 0 to 2 percent slopes, rarely flooded	5,431	1.0
255	Cooper silty clay loam, 0 to 2 percent slopes, rarely flooded	1,259	0.2
266	Smithland silty clay loam, 0 to 2 percent slopes, occasionally flooded	2,380	0.4
266+	Smithland silt loam, 0 to 2 percent slopes, occasionally flooded, overwash	1,492	0.3
277B	Deloit loam, 2 to 5 percent slopes	164	*
277C	Deloit loam, 5 to 9 percent slopes	910	0.2
277E	Deloit loam, 9 to 18 percent slopes	156	*
310B	Galva silty clay loam, 2 to 5 percent slopes	9,948	1.8
310C2	Galva silty clay loam, 5 to 9 percent slopes, moderately eroded	12,567	2.2
366	Luton silty clay loam, 0 to 2 percent slopes, rarely flooded	506	*
436	Lakeport silty clay loam, 0 to 2 percent slopes, rarely flooded	1,819	0.3
446	Burcham silt loam, 0 to 2 percent slopes, rarely flooded	15	*

See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
465	Tieville silty clay, 0 to 2 percent slopes, rarely flooded	6,544	1.2
485	Spillville loam, 0 to 2 percent slopes, occasionally flooded	504	*
510	Monona silt loam, bench, 0 to 2 percent slopes	1,523	0.3
510B	Monona silt loam, bench, 2 to 5 percent slopes	2,636	0.5
510B2	Monona silt loam, bench, 2 to 5 percent slopes, moderately eroded	1,228	0.2
510C2	Monona silt loam, bench, 5 to 9 percent slopes, moderately eroded	2,668	0.5
515	Percival silty clay, 0 to 2 percent slopes, rarely flooded	1,165	0.2
518	Morconick fine sandy loam, 0 to 2 percent slopes, rarely flooded	1,015	0.2
527	Anthon silty clay loam, 0 to 2 percent slopes	1,425	0.3
527B	Anthon silty clay loam, 2 to 5 percent slopes	467	*
549	Modale complex, 0 to 2 percent slopes, occasionally flooded	115	*
552	Owego silty clay, 0 to 2 percent slopes, rarely flooded	2,985	0.5
630	Danbury silt loam, 0 to 2 percent slopes, occasionally flooded	1,999	0.4
666B	Smithland-Danbury-Judson complex, 2 to 5 percent slopes	5,021	0.9
670	Rawles silt loam, 0 to 2 percent slopes, occasionally flooded	16,987	3.0
700	Monona silty clay loam, bench, 0 to 2 percent slopes	2,098	0.4
700B	Monona silty clay loam, bench, 2 to 5 percent slopes	700	0.1
700C2	Monona silty clay loam, bench, 5 to 9 percent slopes, moderately eroded	889	0.2
700D2	Monona silty clay loam, bench, 9 to 14 percent slopes, moderately eroded	742	0.1
701	Wilsey silt loam, 0 to 2 percent slopes, occasionally flooded	8,619	1.5
709	Fairhaven silt loam, 32 to 40 inches to sand and gravel, 0 to 2 percent slopes	537	*
709B	Fairhaven silt loam, 32 to 40 inches to sand and gravel, 2 to 5 percent slopes	1,103	0.2
717D	Napier-Gullied land complex, 5 to 14 percent slopes	2,919	0.5
733	Calco silty clay loam, 0 to 2 percent slopes, occasionally flooded	232	*
734	Holly Springs silty clay loam, 0 to 2 percent slopes, rarely flooded	3,365	0.6
734+	Holly Springs silty clay loam, 0 to 2 percent slopes, rarely flooded, overwash	1,354	0.2
740C	Hawick sandy loam, 5 to 9 percent slopes	29	*
740D	Hawick sandy loam, 9 to 14 percent slopes	51	*
740E	Hawick sandy loam, 14 to 18 percent slopes	79	*
740F	Hawick sandy loam, 18 to 25 percent slopes	18	*
750	Ticonic very fine sandy loam, 0 to 2 percent slopes, rarely flooded	664	0.1
754	Larpenteur loam, 0 to 2 percent slopes, rarely flooded	659	0.1
810B	Galva silty clay loam, bench, 2 to 5 percent slopes	464	*
810C2	Galva silty clay loam, bench, 5 to 9 percent slopes, moderately eroded	124	*
847B	Judson-Rawles complex, 2 to 5 percent slopes	3,617	0.6
945	Albaton silty clay, depressional, drained, 0 to 1 percent slopes, frequently flooded	687	0.1
1137	Haynie silt loam, 0 to 2 percent slopes, occasionally flooded	212	*
1144	Blake silty clay loam, 0 to 2 percent slopes, occasionally flooded	68	*
1146	Onawa silty clay, 0 to 2 percent slopes, occasionally flooded	502	*
1220	Nodaway silty clay loam, channeled, 0 to 2 percent slopes, frequently flooded	254	*
1237B	Sarpy loamy fine sand, 2 to 5 percent slopes, occasionally flooded	265	*
1237C	Sarpy loamy fine sand, 5 to 9 percent slopes, occasionally flooded	79	*
1238	Sarpy-Morconick complex, 0 to 2 percent slopes, occasionally flooded	632	0.1
1513	Grable-Morconick complex, 0 to 2 percent slopes, occasionally flooded	330	*
1524	Morconick fine sandy loam, 0 to 2 percent slopes, occasionally flooded	831	0.1
1525	Scroll silty clay, 0 to 2 percent slopes, occasionally flooded	491	*
2515	Percival-Albaton complex, 0 to 2 percent slopes, occasionally flooded	1,339	0.2
3146	Onawa-Albaton complex, 0 to 2 percent slopes, rarely flooded	4,080	0.7
3275	Moville-Holly Springs, overwash, complex, 0 to 2 percent slopes, rarely flooded	2,245	0.4
3440	Blencoe-Woodbury silty clays, 0 to 2 percent slopes, rarely flooded	3,058	0.5
3513	Grable-Morconick complex, 0 to 2 percent slopes, rarely flooded	768	0.1
3549	Modale complex, 0 to 2 percent slopes, rarely flooded	4,543	0.8
3686	Napa-Luton-Tieville silty clays, 0 to 2 percent slopes, rarely flooded	2,024	0.4
4000	Urban land	1,161	0.2
4001C	Ida-Urban land complex, 5 to 9 percent slopes	244	*

See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
4001D	Ida-Urban land complex, 9 to 14 percent slopes	958	0.2
4001E	Ida-Urban land complex, 14 to 20 percent slopes	2,279	0.4
4001F	Ida-Urban land complex, 20 to 30 percent slopes	730	0.1
4010B	Monona-Urban land complex, 2 to 5 percent slopes	645	0.1
4010C	Monona-Urban land complex, 5 to 9 percent slopes	1,658	0.3
4010D	Monona-Urban land complex, 9 to 14 percent slopes	977	0.2
4010E	Monona-Urban land complex, 14 to 20 percent slopes	124	*
4012B	Napier-Urban land complex, 2 to 5 percent slopes	984	0.2
4012C	Napier-Urban land complex, 5 to 9 percent slopes	2,115	0.4
4170D	Napier-Castana-Urban land complex, 9 to 14 percent slopes	228	*
4600	Percival-Haynie-Urban land complex, 0 to 2 percent slopes, rarely flooded	1,424	0.3
4670	Rawles-Urban land complex, 0 to 2 percent slopes	1,363	0.2
5010	Pits, sand and gravel	932	0.2
5040	Udorthents, loamy	2,467	0.4
5044	Fluvaquents, 0 to 2 percent slopes, frequently flooded	3,029	0.5
5060	Pits, clay	48	*
5080	Udorthents, sanitary landfill	83	*
SL	Sewage lagoons	263	*
W	Water	5,251	0.9
	Total	561,500	100.0

* Less than 0.1 percent.

Table 5.--Cropland Management Considerations

(See text for a description of the considerations listed in this table)

Map symbol and soil name	Cropland management considerations
1B3:	
Ida, severely eroded	Lime content Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion Wind erosion
1C:	
Ida	Lime content Potential for surface-water contamination Water erosion Wind erosion
1C3:	
Ida, severely eroded	Lime content Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion Wind erosion
1D3:	
Ida, severely eroded	Lime content Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion Wind erosion
1E3:	
Ida, severely eroded	Slope Lime content Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion Wind erosion
1F:	
Ida	Slope Lime content Potential for surface-water contamination Water erosion Wind erosion
1F3:	
Ida, severely eroded	Slope Lime content Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion Wind erosion
1G:	
Ida	Slope Lime content Potential for surface-water contamination Water erosion Wind erosion

Table 5.--Cropland Management Considerations--Continued

Map symbol and soil name	Cropland management considerations
2G:	
Hamburg	Slope Lime content Limited content of organic matter Potential for surface-water contamination Water erosion Wind erosion
3D:	
Castana	Lime content Potential for surface-water contamination Water erosion Wind erosion
3E:	
Castana	Slope Lime content Potential for surface-water contamination Water erosion Wind erosion
8B:	
Judson	Potential poor tilth and compaction Potential for surface-water contamination Water erosion
8C:	
Judson	Potential poor tilth and compaction Potential for surface-water contamination Water erosion
10B:	
Monona	Potential for surface-water contamination Water erosion
10B2:	
Monona, moderately eroded	Potential for surface-water contamination Previously eroded Water erosion
10C2:	
Monona, moderately eroded	Potential for surface-water contamination Previously eroded Water erosion
10D2:	
Monona, moderately eroded	Potential for surface-water contamination Previously eroded Water erosion
10D3:	
Monona, severely eroded	Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
10E:	
Monona	Slope Potential for surface-water contamination Water erosion

Table 5.--Cropland Management Considerations--Continued

Map symbol and soil name	Cropland management considerations
10E3:	
Monona, severely eroded	Slope Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
10F:	
Monona	Slope Potential for surface-water contamination Water erosion
12B:	
Napier	Potential for surface-water contamination Water erosion
12C:	
Napier	Potential for surface-water contamination Water erosion
17B:	
Napier	Potential for surface-water contamination Water erosion
Kennebec	Flooding Potential for surface-water contamination
Colo	Flooding Potential for ground-water contamination Potential for surface-water contamination Seasonal high water table
26:	
Kennebec	Flooding Potential poor tilth and compaction Potential for surface-water contamination
35F:	
Liston	Slope Lime content Potential for surface-water contamination Water erosion Wind erosion
Burchard	Slope Potential for surface-water contamination Water erosion
35G:	
Liston	Slope Lime content Potential for surface-water contamination Water erosion Wind erosion
Burchard	Slope Potential for surface-water contamination Water erosion
36:	
Salix	No major considerations

Table 5.--Cropland Management Considerations--Continued

Map symbol and soil name	Cropland management considerations
46:	
Keg	No major considerations
47B:	
Napier	Potential for surface-water contamination Water erosion
Rawles	Flooding Lime content Potential for ground-water contamination Potential for surface-water contamination Wind erosion
54:	
Zook	Flooding Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Seasonal high water table
59E:	
Burchard	Slope Potential for surface-water contamination Water erosion
66:	
Luton	Potential poor tilth and compaction Potential for ground-water contamination Restricted permeability Seasonal high water table
67:	
Woodbury	Potential poor tilth and compaction Potential for ground-water contamination Seasonal high water table
100B:	
Monona	Potential poor tilth and compaction Potential for surface-water contamination Water erosion
100C2:	
Monona, moderately eroded	Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Water erosion
100D2:	
Monona, moderately eroded	Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Water erosion
100E2:	
Monona, moderately eroded	Slope Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Water erosion

Table 5.--Cropland Management Considerations--Continued

Map symbol and soil name	Cropland management considerations
101E2:	
Monona, moderately eroded	Slope Potential for surface-water contamination Previously eroded Water erosion
Ida, moderately eroded	Slope Lime content Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion Wind erosion
123:	
Grantcenter	Potential for ground-water contamination Seasonal high water table
137:	
Haynie	Lime content Wind erosion
144:	
Blake	Lime content Potential poor tilth and compaction Potential for ground-water contamination Seasonal high water table Wind erosion
156:	
Albaton	Potential poor tilth and compaction Potential for ground-water contamination Restricted permeability Seasonal high water table
170E:	
Napier	Potential for surface-water contamination Water erosion
Castana	Slope Lime content Potential for surface-water contamination Water erosion Wind erosion
212:	
Kennebec	Flooding Potential for surface-water contamination
212+:	
Kennebec, overwash	Flooding Potential for surface-water contamination
220:	
Nodaway	Flooding Potential for surface-water contamination
237:	
Sarpy	Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Wind erosion

Table 5.--Cropland Management Considerations--Continued

Map symbol and soil name	Cropland management considerations
237B:	
Sarpy	Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Wind erosion
244:	
Blend	Potential poor tilth and compaction Potential for ground-water contamination Seasonal high water table
255:	
Cooper	Potential for ground-water contamination Seasonal high water table
266:	
Smithland	Flooding Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Seasonal high water table
266+:	
Smithland, overwash	Flooding Potential for ground-water contamination Potential for surface-water contamination Seasonal high water table
277B:	
Deloit	Potential for surface-water contamination Water erosion
277C:	
Deloit	Potential for surface-water contamination Water erosion
277E:	
Deloit	Slope Potential for surface-water contamination Water erosion
310B:	
Galva	Potential poor tilth and compaction Potential for surface-water contamination Water erosion
310C2:	
Galva, moderately eroded	Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Water erosion
366:	
Luton	Potential poor tilth and compaction Potential for ground-water contamination Seasonal high water table
436:	
Lakeport	Potential poor tilth and compaction Potential for ground-water contamination Seasonal high water table

Table 5.--Cropland Management Considerations--Continued

Map symbol and soil name	Cropland management considerations
446:	
Burcham	Potential for ground-water contamination Restricted permeability Seasonal high water table
465:	
Tieville	Lime content Potential poor tilth and compaction Potential for ground-water contamination Restricted permeability Seasonal high water table Wind erosion
485:	
Spillville	Flooding Potential for ground-water contamination Potential for surface-water contamination Seasonal high water table
510:	
Monona, bench	No major considerations
510B:	
Monona, bench	Potential for surface-water contamination Water erosion
510B2:	
Monona, bench, moderately eroded	Potential for surface-water contamination Previously eroded Water erosion
510C2:	
Monona, bench, moderately eroded	Potential for surface-water contamination Previously eroded Water erosion
515:	
Percival	Excessive permeability Lime content Limited available water capacity Potential poor tilth and compaction Potential for ground-water contamination Seasonal high water table
518:	
Morconick	Excessive permeability Lime content Limited available water capacity Potential for ground-water contamination Wind erosion
527:	
Anthon	Excessive permeability Potential for ground-water contamination
527B:	
Anthon	Excessive permeability Potential for ground-water contamination Potential for surface-water contamination Water erosion

Table 5.--Cropland Management Considerations--Continued

Map symbol and soil name	Cropland management considerations
549:	
Modale silt loam	Flooding Lime content Potential for ground-water contamination Potential for surface-water contamination Restricted permeability Seasonal high water table Wind erosion
Modale silty clay loam	Flooding Lime content Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Seasonal high water table Wind erosion
552:	
Owego	Potential poor tilth and compaction Potential for ground-water contamination Restricted permeability Seasonal high water table
630:	
Danbury	Flooding Potential for ground-water contamination Potential for surface-water contamination
666B:	
Smithland	Flooding Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Seasonal high water table
Danbury	Flooding Potential for ground-water contamination Potential for surface-water contamination
Judson	Potential poor tilth and compaction Potential for surface-water contamination Water erosion
670:	
Rawles	Flooding Lime content Potential for ground-water contamination Potential for surface-water contamination Wind erosion
700:	
Monona, bench	Potential poor tilth and compaction
700B:	
Monona, bench	Potential poor tilth and compaction Potential for surface-water contamination Water erosion
700C2:	
Monona, bench, moderately eroded	Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Water erosion

Table 5.--Cropland Management Considerations--Continued

Map symbol and soil name	Cropland management considerations
700D2:	
Monona, bench, moderately eroded	Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Water erosion
701:	
Wilsey	Flooding Lime content Limited content of organic matter Potential for surface-water contamination Wind erosion
709:	
Fairhaven, 32 to 40 inches to sand and gravel	Excessive permeability Potential for ground-water contamination
709B:	
Fairhaven, 32 to 40 inches to sand and gravel	Excessive permeability Potential for ground-water contamination Potential for surface-water contamination Water erosion
717D:	
Napier	Gullied Potential for surface-water contamination Water erosion
Gullied land.	
733:	
Calco	Flooding Lime content Potential for ground-water contamination Potential for surface-water contamination Seasonal high water table Wind erosion
734:	
Holly Springs	Lime content Potential poor tilth and compaction Potential for ground-water contamination Restricted permeability Seasonal high water table Wind erosion
734+:	
Holly Springs, overwash	Lime content Potential poor tilth and compaction Potential for ground-water contamination Restricted permeability Seasonal high water table Wind erosion
740C:	
Hawick	Excessive permeability Limited available water capacity Potential for ground-water contamination Potential for surface-water contamination Water erosion Wind erosion

Table 5.--Cropland Management Considerations--Continued

Map symbol and soil name	Cropland management considerations
740D:	
Hawick	Excessive permeability Limited available water capacity Potential for ground-water contamination Potential for surface-water contamination Water erosion Wind erosion
740E:	
Hawick	Slope Excessive permeability Limited available water capacity Potential for ground-water contamination Potential for surface-water contamination Water erosion Wind erosion
740F:	
Hawick	Slope Excessive permeability Limited available water capacity Potential for ground-water contamination Potential for surface-water contamination Water erosion Wind erosion
750:	
Ticonic	Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Wind erosion
754:	
Larpenteur	Potential for ground-water contamination Seasonal high water table
810B:	
Galva, bench	Potential poor tilth and compaction Potential for surface-water contamination Water erosion
810C2:	
Galva, bench, moderately eroded	Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Water erosion
847B:	
Judson	Potential poor tilth and compaction Potential for surface-water contamination Water erosion
Rawles	Flooding Lime content Potential for ground-water contamination Potential for surface-water contamination Wind erosion

Table 5.--Cropland Management Considerations--Continued

Map symbol and soil name	Cropland management considerations
945:	
Albaton, depressional, drained	Flooding Ponding Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Restricted permeability Seasonal high water table
1137:	
Haynie	Flooding Lime content Potential for surface-water contamination Wind erosion
1144:	
Blake	Flooding Lime content Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Seasonal high water table Wind erosion
1146:	
Onawa	Flooding Lime content Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Seasonal high water table
1220:	
Nodaway, channeled	Flooding Channeled Potential for surface-water contamination
1237B:	
Sarpy	Flooding Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Wind erosion
1237C:	
Sarpy	Flooding Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Wind erosion
1238:	
Sarpy	Flooding Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Wind erosion

Table 5.--Cropland Management Considerations--Continued

Map symbol and soil name	Cropland management considerations
1238:	
Morconick	Flooding Excessive permeability Lime content Limited available water capacity Potential for ground-water contamination Potential for surface-water contamination Wind erosion
1513:	
Grable	Flooding Excessive permeability Lime content Potential for ground-water contamination Potential for surface-water contamination Wind erosion
Morconick	Flooding Excessive permeability Lime content Limited available water capacity Potential for ground-water contamination Potential for surface-water contamination Wind erosion
1524:	
Morconick	Flooding Excessive permeability Lime content Limited available water capacity Potential for ground-water contamination Potential for surface-water contamination Wind erosion
1525:	
Scroll	Flooding Excessive permeability Lime content Limited available water capacity Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Seasonal high water table
2515:	
Percival	Flooding Excessive permeability Lime content Limited available water capacity Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Seasonal high water table
Albaton	Flooding Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Restricted permeability Seasonal high water table

Table 5.--Cropland Management Considerations--Continued

Map symbol and soil name	Cropland management considerations
3146:	
Onawa	Lime content Potential poor tilth and compaction Potential for ground-water contamination Seasonal high water table
Albaton	Potential poor tilth and compaction Potential for ground-water contamination Restricted permeability Seasonal high water table
3275:	
Moville	Lime content Potential for ground-water contamination Restricted permeability Seasonal high water table Wind erosion
Holly Springs, overwash	Lime content Potential poor tilth and compaction Potential for ground-water contamination Restricted permeability Seasonal high water table Wind erosion
3440:	
Blencoe	Potential poor tilth and compaction Potential for ground-water contamination Seasonal high water table
Woodbury	Potential poor tilth and compaction Potential for ground-water contamination Seasonal high water table
3513:	
Grable	Excessive permeability Lime content Potential for ground-water contamination Wind erosion
Morconick	Excessive permeability Lime content Limited available water capacity Potential for ground-water contamination Wind erosion
3549:	
Modale silty clay loam	Lime content Potential for ground-water contamination Restricted permeability Seasonal high water table Wind erosion
Modale silt loam	Lime content Potential for ground-water contamination Restricted permeability Seasonal high water table Wind erosion

Table 5.--Cropland Management Considerations--Continued

Map symbol and soil name	Cropland management considerations
3686:	
Napa	Lime content Limited content of organic matter Potential poor tilth and compaction Potential for ground-water contamination Restricted permeability Salt content Surface crusting Seasonal high water table
Luton	Potential poor tilth and compaction Potential for ground-water contamination Restricted permeability Seasonal high water table
Tieville	Lime content Potential poor tilth and compaction Potential for ground-water contamination Restricted permeability Seasonal high water table Wind erosion
4000. Urban land	
4001C:	
Ida	Lime content Potential for surface-water contamination Water erosion Wind erosion
Urban land.	
4001D:	
Ida	Lime content Limited content of organic matter Potential for surface-water contamination Water erosion Wind erosion
Urban land.	
4001E:	
Ida	Slope Lime content Limited content of organic matter Potential for surface-water contamination Water erosion Wind erosion
Urban land.	
4001F:	
Ida	Slope Lime content Potential for surface-water contamination Water erosion Wind erosion
Urban land.	

Table 5.--Cropland Management Considerations--Continued

Map symbol and soil name	Cropland management considerations
4010B:	
Monona	Potential for surface-water contamination Water erosion
Urban land.	
4010C:	
Monona	Potential for surface-water contamination Water erosion
Urban land.	
4010D:	
Monona	Potential for surface-water contamination Water erosion
Urban land.	
4010E:	
Monona	Slope Potential for surface-water contamination Water erosion
Urban land.	
4012B:	
Napier	Potential for surface-water contamination Water erosion
Urban land.	
4012C:	
Napier	Potential for surface-water contamination Water erosion
Urban land.	
4170D:	
Napier	Potential for surface-water contamination Water erosion
Castana	Lime content Potential for surface-water contamination Water erosion Wind erosion
Urban land.	
4600:	
Percival	Excessive permeability Lime content Limited available water capacity Potential poor tilth and compaction Potential for ground-water contamination Seasonal high water table
Haynie	Lime content Wind erosion
Urban land.	

Table 5.--Cropland Management Considerations--Continued

Map symbol and soil name	Cropland management considerations
4670:	
Rawles	Flooding Lime content Potential for ground-water contamination Potential for surface-water contamination Wind erosion
Urban land.	
5010.	
Pits, sand and gravel	
5040.	
Udorthents, loamy	
5044:	
Fluvaquents	Flooding Ponding Potential for ground-water contamination Potential for surface-water contamination Seasonal high water table
5060.	
Pits, clay	
5080.	
Udorthents, sanitary landfill	
SL.	
Sewage lagoons	
W.	
Water	

Table 6.--Land Capability, Corn Suitability Rating, Subsoil Nutrients, and Yields per Acre of Crops

(Yields are those that can be expected under a high level of management. They are for nonirrigated areas. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil. See text for explanations of terms used in this table)

Map symbol and soil name	Land capability	Corn suitability rating	Subsoil phosphorus	Subsoil potassium	Corn	Oats	Soybeans
					Bu	Bu	Bu
1B3 Ida, severely eroded	2e	65	Low	Low	110	60	37
1C Ida	3e	51	Low	Low	115	63	39
1C3 Ida, severely eroded	3e	46	Low	Low	102	56	34
1D3 Ida, severely eroded	3e	37	Low	Low	94	52	32
1E3 Ida, severely eroded	4e	28	Low	Low	79	43	27
1F Ida	6e	14	Low	Low	---	---	---
1F3 Ida, severely eroded	6e	9	Low	Low	---	---	---
1G Ida	7e	5	Low	Low	---	---	---
2G Hamburg	7e	5	Low	Low	---	---	---
3D Castana	3e	39	Low	Low	102	56	34
3E Castana	4e	30	Low	Low	87	48	29
8B Judson	2e	79	Low	Low	139	76	47
8C Judson	3e	64	Low	Low	134	74	45
10B Monona	2e	74	Low	Low	131	72	44
10B2 Monona, moderately eroded	2e	72	Low	Low	127	70	43
10C2 Monona, moderately eroded	3e	57	Low	Low	120	66	40
10D2 Monona, moderately eroded	3e	47	Low	Low	110	60	37
10D3 Monona, severely eroded	3e	44	Low	Low	101	55	34

Table 6.--Land Capability, Corn Suitability Rating, Subsoil Nutrients, and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability	Corn suitability rating	Subsoil phosphorus	Subsoil potassium	Corn	Oats	Soybeans
					Bu	Bu	Bu
10E---------------------- Monona	4e	42	Low	Low	104	57	35
10E3--------------------- Monona, severely eroded	4e	34	Low	Low	83	46	28
10F---------------------- Monona	6e	22	Low	Low	---	---	---
12B---------------------- Napier	2e	72	Low	Low	122	67	41
12C---------------------- Napier	2e	58	Low	Low	117	64	39
17B----------------------		57	Low	Low	112	61	38
Napier------------------	2e						
Kennebec----------------	2w						
Colo--------------------	2w						
26----------------------- Kennebec	1	76	Low	Low	126	69	42
35F----------------------		15	Low	Low	---	---	---
Liston------------------	6e						
Burchard----------------	6e						
35G----------------------		5	Low	Low	---	---	---
Liston------------------	7e						
Burchard----------------	7e						
36----------------------- Salix	1	79	Low	Low	135	74	45
46----------------------- Keg	1	84	Low	Low	142	78	48
47B----------------------		59	Low	Low	109	60	37
Napier------------------	2e						
Rawles------------------	2w						
54----------------------- Zook	2w	65	Low	Low	117	64	39
59E---------------------- Burchard	3e	28	Low	Low	77	42	26
66----------------------- Luton	3w	37	Low	Low	74	41	25
67----------------------- Woodbury	3w	51	Low	Low	93	51	31
100B--------------------- Monona	3e	72	Low	Low	129	71	43
100C2-------------------- Monona, moderately eroded	3e	57	Low	Low	120	66	40

Table 6.--Land Capability, Corn Suitability Rating, Subsoil Nutrients, and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability	Corn suitability rating	Subsoil phosphorus	Subsoil potassium	Corn	Oats	Soybeans
					Bu	Bu	Bu
100D2-------------------- Monona, moderately eroded	3e	47	Low	Low	111	61	37
100E2-------------------- Monona, moderately eroded	3e	37	Low	Low	94	52	32
101E2--------------------		35	Low	Low	90	49	30
Monona, moderately eroded-----------------	4e						
Ida, moderately eroded--	4e						
123---------------------- Grantcenter	1	77	Low	Low	131	72	44
137---------------------- Haynie	1	65	Low	Low	117	64	39
144---------------------- Blake	1	70	Low	Low	121	66	41
156---------------------- Albaton	3w	51	Low	Low	93	51	31
170E---------------------		34	Low	Low	89	49	30
Napier------------------	2e						
Castana-----------------	4e						
212---------------------- Kennebec	2w	80	Low	Low	144	79	48
212+--------------------- Kennebec, overwash	2w	80	Low	Low	144	79	48
220---------------------- Nodaway	2w	79	Low	Low	143	79	48
237---------------------- Sarpy	4s	9	Low	Low	---	---	---
237B--------------------- Sarpy	4s	5	Low	Low	---	---	---
244---------------------- Blend	3w	47	Low	Low	92	51	31
255---------------------- Cooper	2w	65	Low	Low	117	64	39
266---------------------- Smithland	2w	76	Low	Low	129	71	43
266+--------------------- Smithland, overwash	2w	76	Low	Low	129	71	43
277B--------------------- Deloit	2e	77	Low	Low	136	75	46
277C--------------------- Deloit	3e	62	Low	Low	131	72	44

Table 6.--Land Capability, Corn Suitability Rating, Subsoil Nutrients, and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability	Corn suitability rating	Subsoil phosphorus	Subsoil potassium	Corn	Oats	Soybeans
					Bu	Bu	Bu
277E-------------------- Deloit	4e	42	Low	Low	105	58	35
310B-------------------- Galva	2e	71	Low	Low	131	72	44
310C2------------------- Galva, moderately eroded	3e	56	Low	Low	122	67	41
366--------------------- Luton	3w	42	Low	Low	83	46	28
436--------------------- Lakeport	1	74	Low	Low	128	70	43
446--------------------- Burcham	1	79	Low	Low	135	74	45
465--------------------- Tieville	3w	33	Low	Low	69	38	23
485--------------------- Spillville	2w	80	Low	Low	140	77	47
510--------------------- Monona, bench	1	79	Low	Low	135	74	45
510B-------------------- Monona, bench	1	74	Low	Low	131	72	44
510B2------------------- Monona, bench, moderately eroded	2e	72	Low	Low	127	70	43
510C2------------------- Monona, bench, moderately eroded	3e	58	Low	Low	122	67	41
515--------------------- Percival	2w	51	Low	Low	93	51	31
518--------------------- Morconick	3s	22	Low	Low	40	22	13
527--------------------- Anthon	2e	75	Low	Low	128	70	43
527B-------------------- Anthon	2e	70	Low	Low	124	68	42
549---------------------		63	Low	Low	115	63	39
Modale silt loam--------	1						
Modale silty clay loam--	2s						
552--------------------- Owego	3w	42	Low	Low	102	56	34
630--------------------- Danbury	2w	79	Low	Low	141	77	47

Table 6.--Land Capability, Corn Suitability Rating, Subsoil Nutrients, and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability	Corn suitability rating	Subsoil phosphorus	Subsoil potassium	Corn	Oats	Soybeans
					Bu	Bu	Bu
666B		64	Low	Low	119	65	40
Smithland	2w						
Danbury	2w						
Judson	2e						
670 Rawles	2w	73	Low	Low	134	74	45
700 Monona, bench	2e	77	Low	Low	134	74	45
700B Monona, bench	2e	72	Low	Low	129	71	43
700C2 Monona, bench, moderately eroded	2e	57	Low	Low	120	66	40
700D2 Monona, bench, moderately eroded	3e	47	Low	Low	111	61	37
701 Wilsey	1	74	Low	Low	126	69	42
709 Fairhaven, 32 to 40 inches to sand and gravel	2s	68	Low	Low	98	54	35
709B Fairhaven, 32 to 40 inches to sand and gravel	2e	63	Low	Low	95	52	32
717D		5	Low	Low	---	---	---
Napier	2e						
Gullied land	7e						
733 Calco	2w	70	Low	Low	121	66	41
734 Holly Springs	2w	56	Low	Low	108	59	36
734+ Holly Springs, overwash	2w	61	Low	Low	117	64	39
740C Hawick	4s	5	Low	Low	---	---	---
740D Hawick	4s	5	Low	Low	---	---	---
740E Hawick	6s	5	Low	Low	---	---	---
740F Hawick	7s	5	Low	Low	---	---	---
750 Ticonic	3s	33	Low	Low	58	32	19

Table 6.--Land Capability, Corn Suitability Rating, Subsoil Nutrients, and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability	Corn suitability rating	Subsoil phosphorus	Subsoil potassium	Corn	Oats	Soybeans
					Bu	Bu	Bu
754--------------------- Larpenteur	1	74	Low	Low	126	69	42
810B-------------------- Galva, bench	2e	71	Low	Low	131	72	44
810C2------------------- Galva, bench, moderately eroded	3e	56	Low	Low	122	67	41
847B--------------------		61	Low	Low	113	62	38
Judson------------------	2e						
Rawles------------------	2w						
945--------------------- Albaton, depressional, drained	4w	37	Low	Low	69	38	23
1137-------------------- Haynie	2w	61	Low	Low	116	64	39
1144-------------------- Blake	2w	66	Low	Low	121	66	41
1146-------------------- Onawa	2w	58	Low	Low	111	61	37
1220-------------------- Nodaway, channeled	3w	25	Low	Low	---	---	---
1237B------------------- Sarpy	4s	5	Low	Low	---	---	---
1237C------------------- Sarpy	4s	5	Low	Low	---	---	---
1238--------------------		18	Low	Low	33	18	11
Sarpy-------------------	4s						
Morconick---------------	3s						
1513--------------------		36	Low	Low	72	40	24
Grable------------------	2s						
Morconick---------------	3s						
1524-------------------- Morconick	3s	17	Low	Low	61	33	20
1525-------------------- Scroll	2w	35	Low	Low	61	33	20
2515--------------------		46	Low	Low	93	51	31
Percival----------------	2w						
Albaton-----------------	3w						
3146--------------------		57	Low	Low	101	55	34
Onawa-------------------	2w						
Albaton-----------------	3w						
3275--------------------		65	Low	Low	116	64	39
Moville-----------------	2w						
Holly Springs, overwash	2w						

Table 6.--Land Capability, Corn Suitability Rating, Subsoil Nutrients, and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability	Corn suitability rating	Subsoil phosphorus	Subsoil potassium	Corn	Oats	Soybeans
					Bu	Bu	Bu
3440		63	Low	Low	110	60	37
Blencoe	2w						
Woodbury	3w						
3513		44	Low	Low	83	46	28
Grable	2s						
Morconick	3s						
3549		63	Low	Low	117	64	39
Modale silty clay loam	1						
Modale silt loam	1						
3686		39	Low	Low	71	39	24
Napa	4w						
Luton	3w						
Tieville	3w						
4000. Urban land							
4001C		---	---	---	---	---	---
Ida	3e						
Urban land.							
4001D		---	---	---	---	---	---
Ida	3e						
Urban land.							
4001E		---	---	---	---	---	---
Ida	4e						
Urban land.							
4001F		---	---	---	---	---	---
Ida	6e						
Urban land.							
4010B		---	---	---	---	---	---
Monona	2e						
Urban land.							
4010C		---	---	---	---	---	---
Monona	3e						
Urban land.							
4010D		---	---	---	---	---	---
Monona	3e						
Urban land.							
4010E		---	---	---	---	---	---
Monona	4e						
Urban land.							
4012B		---	---	---	---	---	---
Napier	2e						
Urban land.							
4012C		---	---	---	---	---	---
Napier	2e						
Urban land.							

Table 6.--Land Capability, Corn Suitability Rating, Subsoil Nutrients, and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability	Corn suitability rating	Subsoil phosphorus	Subsoil potassium	Corn	Oats	Soybeans
					Bu	Bu	Bu
4170D		---	---	---	---	---	---
Napier	2e						
Castana	3e						
Urban land.							
4600		---	---	---	---	---	---
Percival	2w						
Haynie	1						
Urban land.							
4670		---	---	---	---	---	---
Rawles	2w						
Urban land.							
5010. Pits, sand and gravel							
5040. Udorthents, loamy							
5044 Fluvaquents	---	---	Low	Low	---	---	---
5060. Pits, clay							
5080. Udorthents, sanitary landfill							
SL. Sewage lagoons							
W. Water							

Table 7.--Land Capability and Yields per Acre of 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	Bromegrass-alfalfa hay	Smooth bromegrass	Kentucky bluegrass	Bromegrass-alfalfa
		Tons	AUM*	AUM*	AUM*
1B3---------------------- Ida, severely eroded	2e	5.0	4.9	3.0	5.1
1C----------------------- Ida	3e	5.2	5.1	3.1	5.3
1C3---------------------- Ida, severely eroded	3e	4.7	4.6	2.7	4.8
1D3---------------------- Ida, severely eroded	3e	4.3	4.2	2.5	4.4
1E3---------------------- Ida, severely eroded	4e	3.6	3.5	2.1	3.6
1F----------------------- Ida	6e	3.7	3.6	2.2	3.7
1F3---------------------- Ida, severely eroded	6e	3.2	3.2	1.9	3.2
1G----------------------- Ida	7e	---	3.0	2.0	---
2G----------------------- Hamburg	7e	---	2.5	1.5	---
3D----------------------- Castana	3e	4.6	4.5	2.7	4.7
3E----------------------- Castana	4e	3.9	3.8	2.3	3.9
8B----------------------- Judson	2e	6.2	6.2	3.7	6.3
8C----------------------- Judson	3e	6.0	5.6	3.5	6.1
10B---------------------- Monona	2e	6.0	5.8	3.5	6.0
10B2--------------------- Monona, moderately eroded	2e	5.8	5.6	3.4	5.9
10C2--------------------- Monona, moderately eroded	3e	5.6	5.5	3.3	5.6
10D2--------------------- Monona, moderately eroded	3e	5.2	5.1	3.1	5.2

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Pasture--Continued

Map symbol and soil name	Land capability	Bromegrass-alfalfa hay	Smooth bromegrass	Kentucky bluegrass	Bromegrass-alfalfa
		Tons	AUM*	AUM*	AUM*
10D3 Monona, severely eroded	3e	4.8	4.7	2.8	4.9
10E Monona	4e	4.7	4.6	2.7	4.8
10E3 Monona, severely eroded	4e	4.1	4.0	2.4	4.2
10F Monona	6e	4.2	4.1	2.5	4.3
12B Napier	2e	5.5	5.3	3.2	5.6
12C Napier	2e	5.3	5.1	3.1	5.4
17B		5.5	5.3	3.2	5.6
Napier	2e				
Kennebec	2w				
Colo	2w				
26 Kennebec	1	6.7	6.5	3.9	6.8
35F		---	2.5	1.5	---
Liston	6e				
Burchard	6e				
35G		---	2.2	1.4	---
Liston	7e				
Burchard	7e				
36 Salix	1	6.1	5.9	3.6	6.2
46 Keg	1	6.4	6.2	3.7	6.5
47B		5.1	4.9	3.0	5.2
Rawles	2w				
Napier	2e				
54 Zook	2w	3.8	5.2	3.1	3.8
59E Burchard	3e	4.3	4.2	2.6	4.4
66 Luton	3w	2.4	3.3	2.0	2.4
67 Woodbury	3w	3.0	4.1	2.5	3.0
100B Monona	3e	6.0	5.8	3.5	6.0

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Pasture--Continued

Map symbol and soil name	Land capability	Bromegrass-alfalfa hay	Smooth bromegrass	Kentucky bluegrass	Bromegrass-alfalfa
		Tons	AUM*	AUM*	AUM*
100C2: Monona, moderately eroded	3e	5.6	5.5	3.3	5.6
100D2: Monona, moderately eroded	3e	5.2	5.1	3.1	5.2
100E2: Monona, moderately eroded	3e	4.5	4.4	2.6	4.6
101E2:		4.2	4.1	2.4	4.3
Monona, moderately eroded	4e				
Ida, moderately eroded	4e				
123: Grantcenter	1	6.1	6.9	3.8	6.2
137: Haynie	1	5.3	5.2	3.1	5.4
144: Blake	1	5.2	5.3	3.2	5.3
156: Albaton	3w	3.0	4.1	2.5	3.0
170E:		5.1	4.6	3.0	5.2
Napier	2e				
Castana	4e				
212: Kennebec	2w	6.8	6.6	4.0	6.9
212+: Kennebec, overwash	2w	6.8	6.6	4.0	6.9
220: Nodaway	2w	6.1	5.9	4.0	6.2
237: Sarpy	4s	1.5	3.0	1.1	1.5
237B: Sarpy	4s	1.4	3.0	1.0	1.4
244: Blend	3w	3.0	4.1	2.5	3.0
255: Cooper	2w	5.0	5.2	3.1	5.1
266: Smithland	2w	4.3	5.9	3.6	4.4
266+: Smithland, overwash	2w	4.3	5.9	3.6	4.4

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Pasture--Continued

Map symbol and soil name	Land capability	Bromegrass-alfalfa hay	Smooth bromegrass	Kentucky bluegrass	Bromegrass-alfalfa
		Tons	AUM*	AUM*	AUM*
277B--------------------- Deloit	2e	5.3	5.3	3.1	5.4
277C--------------------- Deloit	3e	5.1	5.1	3.0	5.2
277E--------------------- Deloit	4e	4.7	4.7	2.8	4.8
310B--------------------- Galva	2e	5.9	5.8	3.5	6.0
310C2-------------------- Galva, moderately eroded	3e	5.6	5.4	3.3	5.7
366---------------------- Luton	3w	2.7	3.7	2.2	2.7
436---------------------- Lakeport	1	5.5	5.7	3.4	5.6
446---------------------- Burcham	1	5.8	6.0	3.6	5.9
465---------------------- Tieville	3w	2.4	3.3	2.0	2.4
485---------------------- Spillville	2w	6.0	5.5	3.5	6.1
510---------------------- Monona, bench	1	6.1	6.0	3.6	6.2
510B--------------------- Monona, bench	1	6.0	5.8	3.5	6.0
510B2-------------------- Monona, bench, moderately eroded	2e	5.8	5.6	3.4	5.9
510C2-------------------- Monona, bench, moderately eroded	3e	5.6	5.5	3.3	5.6
515---------------------- Percival	2w	4.0	4.1	2.5	4.1
518---------------------- Morconick	3s	2.3	2.2	1.4	2.3
527---------------------- Anthon	2e	5.1	5.6	3.0	5.1
527B--------------------- Anthon	2e	4.9	5.5	2.9	5.0
549----------------------		5.6	5.2	3.3	5.6
Modale silt loam--------	1				
Modale silty clay loam--	2s				

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Pasture--Continued

Map symbol and soil name	Land capability	Bromegrass-alfalfa hay	Smooth bromegrass	Kentucky bluegrass	Bromegrass-alfalfa
		Tons	AUM*	AUM*	AUM*
552---------------------- Owego	3w	3.3	4.5	2.7	3.3
630---------------------- Danbury	2w	4.8	4.6	2.8	4.9
666B---------------------		6.0	5.3	3.2	6.1
Smithland---------------	2w				
Judson------------------	2e				
Danbury-----------------	2w				
670---------------------- Rawles	2w	4.6	4.5	2.7	4.7
700---------------------- Monona, bench	2e	6.1	6.0	3.6	6.2
700B--------------------- Monona, bench	2e	6.0	5.8	3.5	6.1
700C2-------------------- Monona, bench, moderately eroded	2e	5.6	5.5	3.3	5.6
700D2-------------------- Monona, bench, moderately eroded	3e	5.2	5.2	3.1	5.2
701---------------------- Wilsey	1	4.7	4.6	2.8	4.8
709---------------------- Fairhaven, 32 to 40 inches to sand and gravel	2s	4.0	3.9	2.4	4.1
709B--------------------- Fairhaven, 32 to 40 inches to sand and gravel	2e	3.9	3.7	2.3	3.9
717D---------------------		---	---	---	---
Napier------------------	2e				
Gullied land------------	7e				
733---------------------- Calco	2w	3.9	5.4	3.2	3.9
734---------------------- Holly Springs	2w	3.3	3.9	2.3	3.4
734+--------------------- Holly Springs, overwash	2w	3.9	4.0	2.4	3.9
740C--------------------- Hawick	4s	1.3	1.3	0.8	1.3
740D--------------------- Hawick	4s	1.1	0.9	0.6	1.1

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Pasture--Continued

Map symbol and soil name	Land capability	Bromegrass-alfalfa hay	Smooth bromegrass	Kentucky bluegrass	Bromegrass-alfalfa
		Tons	AUM*	AUM*	AUM*
740E-------------------- Hawick	6s	1.0	0.5	0.5	1.0
740F-------------------- Hawick	7s	---	0.4	0.4	---
750--------------------- Ticonic	3s	2.9	3.3	1.3	2.9
754--------------------- Larpenteur	1	5.4	6.5	3.9	5.5
810B-------------------- Galva, bench	2e	5.7	5.6	3.1	5.8
810C2------------------- Galva, bench, moderately eroded	3e	5.3	5.2	3.1	5.4
847B--------------------		5.8	5.3	3.4	5.9
Judson------------------	2e				
Rawles------------------	2w				
945--------------------- Albaton, depressional, drained	4w	1.5	2.0	1.2	1.5
1137-------------------- Haynie	2w	5.3	5.2	3.1	5.4
1144-------------------- Blake	2w	4.7	5.0	3.5	4.8
1146-------------------- Onawa	2w	3.5	4.6	2.9	3.5
1220-------------------- Nodaway, channeled	3w	4.2	6.2	2.5	4.3
1237B------------------- Sarpy	4s	0.9	1.8	1.0	0.9
1237C------------------- Sarpy	4s	0.9	1.8	1.0	0.9
1238--------------------		1.5	2.0	1.1	1.5
Sarpy-------------------	4s				
Morconick---------------	3s				
1513--------------------		3.1	3.1	1.8	3.1
Grable------------------	2s				
Morconick---------------	3s				
1524-------------------- Morconick	3s	2.6	2.7	1.6	2.6
1525-------------------- Scroll	2w	2.6	2.7	1.6	2.6

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Pasture--Continued

Map symbol and soil name	Land capability	Bromegrass-alfalfa hay	Smooth bromegrass	Kentucky bluegrass	Bromegrass-alfalfa
		Tons	AUM*	AUM*	AUM*
2515---------------------		3.6	3.2	1.8	3.6
Percival----------------	2w				
Albaton-----------------	3w				
3146---------------------		3.2	4.4	2.7	3.2
Onawa-------------------	2w				
Albaton-----------------	3w				
3275---------------------		5.4	4.5	3.3	5.5
Moville-----------------	2w				
Holly Springs, overwash	2w				
3440---------------------		3.3	4.5	2.7	3.3
Blencoe-----------------	2w				
Woodbury----------------	3w				
3513---------------------		3.1	3.1	1.9	3.1
Grable------------------	2s				
Morconick---------------	3s				
3549---------------------		5.0	5.2	3.1	5.1
Modale silty clay loam--	1				
Modale silt loam--------	1				
3686---------------------		2.4	3.2	1.9	2.4
Napa--------------------	4w				
Luton-------------------	3w				
Tieville----------------	3w				
4000.					
Urban land					
4001C--------------------		---	---	---	---
Ida---------------------	3e				
Urban land.					
4001D--------------------		---	---	---	---
Ida---------------------	3e				
Urban land.					
4001E--------------------		---	---	---	---
Ida---------------------	4e				
Urban land.					
4001F--------------------		---	---	---	---
Ida---------------------	6e				
Urban land.					
4010B--------------------		---	---	---	---
Monona------------------	2e				
Urban land.					
4010C--------------------		---	---	---	---
Monona------------------	3e				
Urban land.					
4010D--------------------		---	---	---	---
Monona------------------	3e				
Urban land.					

See footnote at end of table.

Table 7.--Land Capability and Yields per Acre of Pasture--Continued

Map symbol and soil name	Land capability	Bromegrass-alfalfa hay	Smooth bromegrass	Kentucky bluegrass	Bromegrass-alfalfa
		Tons	AUM*	AUM*	AUM*
4010E		---	---	---	---
Monona	4e				
Urban land.					
4012B		---	---	---	---
Napier	2e				
Urban land.					
4012C		---	---	---	---
Napier	2e				
Urban land.					
4170D		---	---	---	---
Napier	2e				
Castana	3e				
Urban land.					
4600		---	---	---	---
Percival	2w				
Haynie	1				
Urban land.					
4670		---	---	---	---
Rawles	2w				
Urban land.					
5010. Pits, sand and gravel					
5040. Udorthents, loamy					
5044. Fluvaquents					
5060 Pits, clay					
5080. Udorthents, sanitary landfill					
SL. Sewage lagoons					
W. Water					

* Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) 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	Map unit name
10B	Monona silt loam, 2 to 5 percent slopes
10B2	Monona silt loam, 2 to 5 percent slopes, moderately eroded
12B	Napier silt loam, 2 to 5 percent slopes
17B	Napier-Kennebec-Colo complex, 0 to 5 percent slopes (where drained)
26	Kennebec silty clay loam, 0 to 2 percent slopes, occasionally flooded
36	Salix silt loam, 0 to 2 percent slopes, rarely flooded
46	Keg loam, 0 to 2 percent slopes, rarely flooded
54	Zook silty clay loam, 0 to 2 percent slopes, occasionally flooded (where drained)
100B	Monona silty clay loam, 2 to 5 percent slopes
123	Grantcenter silty clay loam, 0 to 2 percent slopes, rarely flooded
137	Haynie silt loam, 0 to 2 percent slopes, rarely flooded
144	Blake silty clay loam, 0 to 2 percent slopes, rarely flooded
212	Kennebec silt loam, 0 to 2 percent slopes, occasionally flooded
212+	Kennebec silt loam, 0 to 2 percent slopes, occasionally flooded, overwash
220	Nodaway silty clay loam, 0 to 2 percent slopes, occasionally flooded
255	Cooper silty clay loam, 0 to 2 percent slopes, rarely flooded
266	Smithland silty clay loam, 0 to 2 percent slopes, occasionally flooded
266+	Smithland silt loam, 0 to 2 percent slopes, occasionally flooded, overwash
277B	Deloit loam, 2 to 5 percent slopes
310B	Galva silty clay loam, 2 to 5 percent slopes
436	Lakeport silty clay loam, 0 to 2 percent slopes, rarely flooded
446	Burcham silt loam, 0 to 2 percent slopes, rarely flooded
485	Spillville loam, 0 to 2 percent slopes, occasionally flooded
510	Monona silt loam, bench, 0 to 2 percent slopes
510B	Monona silt loam, bench, 2 to 5 percent slopes
510B2	Monona silt loam, bench, 2 to 5 percent slopes, moderately eroded
515	Percival silty clay, 0 to 2 percent slopes, rarely flooded
527	Anthon silty clay loam, 0 to 2 percent slopes
527B	Anthon silty clay loam, 2 to 5 percent slopes
549	Modale complex, 0 to 2 percent slopes, occasionally flooded
630	Danbury silt loam, 0 to 2 percent slopes, occasionally flooded
666B	Smithland-Danbury-Judson complex, 2 to 5 percent slopes
670	Rawles silt loam, 0 to 2 percent slopes, occasionally flooded
700	Monona silty clay loam, bench, 0 to 2 percent slopes
700B	Monona silty clay loam, bench, 2 to 5 percent slopes
701	Wilsey silt loam, 0 to 2 percent slopes, occasionally flooded
709	Fairhaven silt loam, 32 to 40 inches to sand and gravel, 0 to 2 percent slopes
709B	Fairhaven silt loam, 32 to 40 inches to sand and gravel, 2 to 5 percent slopes
733	Calco silty clay loam, 0 to 2 percent slopes, occasionally flooded (where drained)
754	Larpenteur loam, 0 to 2 percent slopes, rarely flooded
810B	Galva silty clay loam, bench, 2 to 5 percent slopes
847B	Judson-Rawles complex, 2 to 5 percent slopes
1137	Haynie silt loam, 0 to 2 percent slopes, occasionally flooded
1144	Blake silty clay loam, 0 to 2 percent slopes, occasionally flooded
1146	Onawa silty clay, 0 to 2 percent slopes, occasionally flooded
1513	Grable-Morconick complex, 0 to 2 percent slopes, occasionally flooded
2515	Percival-Albaton complex, 0 to 2 percent slopes, occasionally flooded
3146	Onawa-Albaton complex, 0 to 2 percent slopes, rarely flooded
3513	Grable-Morconick complex, 0 to 2 percent slopes, rarely flooded
3549	Modale complex, 0 to 2 percent slopes, rarely flooded

Table 9.--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
1B3:					
Ida, severely eroded	American plum, Siberian peashrub, choke cherry, gray dogwood, ninebark, skunkbush sumac	Rocky Mountain juniper, eastern redcedar, nannyberry	Common hackberry, green ash, ponderosa pine, Scotch pine, jack pine	Siberian elm, bur oak, green ash	Cottonwood
1C:					
Ida	American plum, Siberian peashrub, choke cherry, gray dogwood, ninebark, skunkbush sumac	Rocky Mountain juniper, eastern redcedar, nannyberry	Common hackberry, green ash, ponderosa pine, Scotch pine, jack pine	Siberian elm, bur oak, green ash	Cottonwood
1C3:					
Ida, severely eroded	American plum, Siberian peashrub, choke cherry, gray dogwood, ninebark, skunkbush sumac	Rocky Mountain juniper, eastern redcedar, nannyberry	Common hackberry, green ash, ponderosa pine, Scotch pine, jack pine	Siberian elm, bur oak, green ash	Cottonwood
1D3:					
Ida, severely eroded	American plum, Siberian peashrub, choke cherry, gray dogwood, ninebark, skunkbush sumac	Rocky Mountain juniper, eastern redcedar, nannyberry	Common hackberry, green ash, ponderosa pine, Scotch pine, jack pine	Siberian elm, bur oak, green ash	Cottonwood
1E3:					
Ida, severely eroded	American plum, Siberian peashrub, gray dogwood, silver buffaloberry	Rocky Mountain juniper, common hackberry, eastern redcedar	Green ash, ponderosa pine	Siberian elm, bur oak	---
1F:					
Ida	American plum, Siberian peashrub, gray dogwood, silver buffaloberry	Rocky Mountain juniper, common hackberry, eastern redcedar	Green ash, ponderosa pine	Siberian elm, bur oak	---

Table 9.--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
1F3:					
Ida, severely eroded	American plum, Siberian peashrub, gray dogwood, silver buffaloberry	Rocky Mountain juniper, common hackberry, eastern redcedar	Green ash, ponderosa pine	Siberian elm, bur oak	---
1G:					
Ida	American plum, Siberian peashrub, gray dogwood, silver buffaloberry	Rocky Mountain juniper, common hackberry, eastern redcedar	Green ash, ponderosa pine	Siberian elm, bur oak	---
2G:					
Hamburg	Siberian peashrub	Washington hawthorn, eastern redcedar, osageorange	Northern catalpa, green ash	Siberian elm	---
3D:					
Castana	American plum, Siberian peashrub, cotoneaster, silver buffaloberry, skunkbush sumac	Rocky Mountain juniper, common hackberry, eastern redcedar	Green ash, ponderosa pine	Siberian elm, bur oak	---
3E:					
Castana	American plum, Siberian peashrub, cotoneaster, silver buffaloberry	Rocky Mountain juniper, common hackberry, eastern redcedar	Green ash, ponderosa pine	Siberian elm, bur oak	---
8B:					
Judson	Arrowhead, common lilac	Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
8C:					
Judson	Common lilac	Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
10B:					
Monona	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---

Table 9.--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
10B2: Monona, moderately eroded	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
10C2: Monona, moderately eroded	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
10D2: Monona, moderately eroded	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
10D3: Monona, severely eroded	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
10E: Monona	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
10E3: Monona, severely eroded	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
10F: Monona	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---

Table 9.--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
12B:					
Napier	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
12C:					
Napier	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
17B:					
Napier	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
Kennebec	Peking cotoneaster	American plum, Siberian peashrub, common lilac	Manchurian crabapple, eastern redcedar, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood
Colo	---	American plum, redosier dogwood	Amur maple, white fir, white spruce, common hackberry, tall purple willow	Golden willow	Green ash, silver maple, eastern cottonwood
26:					
Kennebec	Peking cotoneaster	American plum, Siberian peashrub, common lilac	Manchurian crabapple, eastern redcedar, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood
35F:					
Liston	American plum, Peking cotoneaster	Common lilac	Russian mulberry, bur oak, common hackberry, eastern redcedar	Austrian pine, Scotch pine, green ash, honeylocust	---
Burchard.					
35G:					
Liston	American plum, Peking cotoneaster	Common lilac	Russian mulberry, bur oak, common hackberry, eastern redcedar	Austrian pine, Scotch pine, green ash, honeylocust	---

Table 9.--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
35G:					
Burchard	Amur honeysuckle, common lilac	Amur maple, autumn olive	Russian olive, bur oak, common hackberry, eastern redcedar	Austrian pine, eastern white pine, green ash, honeylocust	---
36:					
Salix	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
46:					
Keg	Peking cotoneaster	American plum, Siberian peashrub, common lilac	Manchurian crabapple, eastern redcedar, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood
47B:					
Napier	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
Rawles	Blackhaw	Siberian peashrub	Washington hawthorn, eastern redcedar, osageorange	Bur oak, common hackberry, green ash	Eastern cottonwood
54:					
Zook	American plum, redosier dogwood	Common chokecherry	Common hackberry, eastern redcedar	Austrian pine, green ash, northern red oak, golden willow, silver maple	Eastern cottonwood
59E:					
Burchard	American plum, Peking cotoneaster	Common lilac	Russian mulberry, bur oak, common hackberry, eastern redcedar	Austrian pine, Scotch pine, green ash	---
66:					
Luton	Siberian peashrub, common lilac	---	Eastern redcedar, blue spruce, common hackberry, ponderosa pine	Green ash, golden willow, silver maple	Eastern cottonwood

Table 9.--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
67:					
Woodbury	Siberian peashrub, common lilac	---	Eastern redcedar, blue spruce, common hackberry, ponderosa pine	Green ash, golden willow, silver maple	Eastern cottonwood
100B:					
Monona	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
100C2:					
Monona, moderately eroded	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
100D2:					
Monona, moderately eroded	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
100E2:					
Monona, moderately eroded	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
101E2:					
Monona, moderately eroded	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
Ida, moderately eroded	American plum, Siberian peashrub, gray dogwood, silver buffaloberry	Rocky Mountain juniper, common hackberry, eastern redcedar	Green ash, ponderosa pine	Siberian elm, bur oak	---

Table 9.--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
123: Grantcenter	---	Siberian peashrub, common lilac	Russian olive, eastern redcedar	Bur oak, common hackberry, eastern white pine, green ash, ponderosa pine, golden willow	Eastern cottonwood
137: Haynie	---	Siberian peashrub, common lilac	Eastern redcedar, Russian olive, bur oak, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood
144: Blake	Blackhaw	Siberian peashrub	Washington hawthorn, eastern redcedar, osageorange	Bur oak, common hackberry, green ash	Eastern cottonwood
156: Albaton	Siberian peashrub, common lilac	---	Eastern redcedar, blue spruce, common hackberry, ponderosa pine	Green ash, golden willow	Eastern cottonwood
170E: Napier	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
Castana	American plum, Siberian peashrub, cotoneaster, silver buffaloberry	Rocky Mountain juniper, Russian olive, common hackberry, eastern redcedar	Green ash, ponderosa pine, honeylocust	Siberian elm	---
212: Kennebec	Peking cotoneaster	American plum, Siberian peashrub, common lilac	Manchurian crabapple, eastern redcedar, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood
212+: Kennebec, overwash	Peking cotoneaster	American plum, Siberian peashrub, common lilac	Manchurian crabapple, eastern redcedar, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood

Table 9.--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
220:					
Nodaway	---	Amur honeysuckle, common lilac, Amur maple, autumn olive	Eastern redcedar	Common hackberry, green ash, Austrian pine, eastern white pine, pin oak	Eastern cottonwood
237:					
Sarpy	Blackhaw	Siberian peashrub, Washington hawthorn	Russian olive, eastern redcedar, osageorange	Bur oak, common hackberry, green ash	Eastern cottonwood
237B:					
Sarpy	Blackhaw	Siberian peashrub, Washington hawthorn	Eastern redcedar, osageorange	Bur oak, common hackberry, green ash	Eastern cottonwood
244:					
Blend	Siberian peashrub, common lilac	---	Eastern redcedar, blue spruce, common hackberry, ponderosa pine	Green ash, golden willow, silver maple	Eastern cottonwood
255:					
Cooper	---	Amur honeysuckle, common lilac, Amur maple, autumn olive	Eastern redcedar	Common hackberry, green ash, Austrian pine, eastern white pine, pin oak	Eastern cottonwood
266:					
Smithland	---	American plum, redosier dogwood	Amur maple, white fir, white spruce, common hackberry, tall purple willow	Golden willow	Green ash, silver maple, eastern cottonwood
266+:					
Smithland, overwash	---	American plum, redosier dogwood	Amur maple, white fir, white spruce, common hackberry, tall purple willow	Golden willow	Green ash, silver maple, eastern cottonwood
277B:					
Deloit	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---

Table 9.--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
277C:					
Deloit	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
277E:					
Deloit	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
310B:					
Galva	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
310C2:					
Galva, moderately eroded	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
366:					
Luton	Siberian peashrub, common lilac	---	Eastern redcedar, blue spruce, common hackberry, ponderosa pine	Green ash, golden willow, silver maple	Eastern cottonwood
436:					
Lakeport	Peking cotoneaster	American plum, Siberian peashrub, common lilac	Manchurian crabapple, eastern redcedar, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood
446:					
Burcham	---	Siberian peashrub, common lilac	Eastern redcedar, bur oak, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood
465:					
Tieville	American plum, redosier dogwood	Common chokecherry	Common hackberry, eastern redcedar	Austrian pine, green ash, northern red oak, golden willow, silver maple	Eastern cottonwood

Table 9.--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
485: Spillville	---	Common lilac, redosier dogwood	Eastern arborvitae, white spruce, Amur maple, blue spruce	Austrian pine, eastern white pine, common hackberry, green ash	Silver maple
510: Monona, bench	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, Russian olive, blue spruce, common hackberry	Green ash, ponderosa pine, honeylocust	---
510B: Monona, bench	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, Russian olive, blue spruce, common hackberry	Green ash, ponderosa pine, honeylocust	---
510B2: Monona, bench, moderately eroded	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
510C2: Monona, bench, moderately eroded	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, Russian olive, blue spruce, common hackberry	Green ash, ponderosa pine, honeylocust	---
515: Percival	---	Siberian peashrub, common lilac	Eastern redcedar, Russian olive, bur oak, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood
518: Morconick	---	Siberian peashrub, common lilac	Eastern redcedar, Russian olive, bur oak, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood
527: Anthon	Common lilac	Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine, honeylocust	---

Table 9.--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
527B:					
Anthon	Common lilac	Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
549:					
Modale silt loam	---	Siberian peashrub, common lilac	Eastern redcedar, bur oak, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood
Modale silty clay loam	---	Siberian peashrub, common lilac	Eastern redcedar, Russian olive, bur oak, ponderosa pine	Common hackberry, green ash, honeylocust, golden willow	Eastern cottonwood
552:					
Owego	---	Siberian peashrub, common lilac	Eastern redcedar, bur oak, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood
630:					
Danbury	---	Common lilac, redosier dogwood	Eastern arborvitae, white spruce, Amur maple, blue spruce	Austrian pine, eastern white pine, common hackberry, green ash	Silver maple
666B:					
Smithland	---	American plum, redosier dogwood	Amur maple, white fir, white spruce, common hackberry, tall purple willow	Golden willow	Green ash, silver maple, eastern cottonwood
Danbury	---	Common lilac, redosier dogwood	Eastern arborvitae, white spruce, Amur maple, blue spruce	Austrian pine, eastern white pine, common hackberry, green ash	Silver maple
Judson	Common lilac	Siberian peashrub	Bur oak, eastern redcedar, Russian olive, blue spruce, common hackberry	Green ash, ponderosa pine, honeylocust	---
670:					
Rawles	Blackhaw	Siberian peashrub	Washington hawthorn, eastern redcedar, osageorange	Bur oak, common hackberry, green ash	Eastern cottonwood

Table 9.--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
700:					
Monona, bench	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
700B:					
Monona, bench	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
700C2:					
Monona, bench, moderately eroded	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
700D2:					
Monona, bench, moderately eroded	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
701:					
Wilsey	---	Siberian peashrub, common lilac	Eastern redcedar, Russian olive, bur oak, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood
709:					
Fairhaven, 32 to 40 inches to sand and gravel	Siberian peashrub, common lilac	Eastern redcedar	Manchurian crabapple, bur oak, common hackberry, green ash, eastern white pine, jack pine	---	---

Table 9.--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
709B:					
Fairhaven, 32 to 40 inches to sand and gravel	Siberian peashrub, common lilac	Eastern redcedar	Manchurian crabapple, bur oak, common hackberry, green ash, eastern white pine, jack pine	---	---
717D:					
Napier	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
Gullied land.					
733:					
Calco	Amur honeysuckle, Siberian peashrub, common lilac	---	Eastern redcedar, common hackberry, ponderosa pine	Green ash, golden willow	Eastern cottonwood
734:					
Holly Springs	Siberian peashrub, common lilac	---	Eastern redcedar, blue spruce, common hackberry, ponderosa pine	Golden willow, green ash	Eastern cottonwood
734+:					
Holly Springs, overwash	Siberian peashrub, common lilac	---	Eastern redcedar, blue spruce, common hackberry, ponderosa pine	Golden willow, green ash	Eastern cottonwood
740C:					
Hawick	Siberian peashrub, honeysuckle, late lilac	---	Austrian pine, eastern redcedar, green ash, jack pine, thornless honeylocust	Siberian elm, eastern white pine, red pine	---

Table 9.--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
740D:					
Hawick	Siberian peashrub, honeysuckle, late lilac	---	Austrian pine, eastern redcedar, green ash, jack pine, thornless honeylocust	Siberian elm, eastern white pine, red pine	---
740E:					
Hawick	Siberian peashrub, honeysuckle, late lilac	---	Austrian pine, eastern redcedar, green ash, jack pine, thornless honeylocust	Siberian elm, eastern white pine, red pine	---
740F:					
Hawick	Siberian peashrub, honeysuckle, late lilac	---	Austrian pine, eastern redcedar, green ash, jack pine, thornless honeylocust	Siberian elm, eastern white pine, red pine	---
750:					
Ticonic	Siberian peashrub, common lilac	Washington hawthorn	Scotch pine, eastern redcedar, bur oak, eastern white pine, osageorange, common hackberry, green ash	---	---
754:					
Larpenteur	Peking cotoneaster	American plum, Siberian peashrub, common lilac	Manchurian crabapple, eastern redcedar, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood
810B:					
Galva, bench	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
810C2:					
Galva, bench, moderately eroded	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---

Table 9.--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
847B:					
Judson	Common lilac	Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
Rawles	Blackhaw	Siberian peashrub	Washington hawthorn, eastern redcedar, osageorange	Bur oak, common hackberry, green ash	Eastern cottonwood
945:					
Albaton, depressional, drained	Siberian peashrub, common lilac	---	---	Golden willow	Eastern cottonwood
1137:					
Haynie	---	Siberian peashrub, common lilac	Eastern redcedar, bur oak, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood
1144:					
Blake	Blackhaw	Siberian peashrub	Washington hawthorn, eastern redcedar, osageorange	Bur oak, common hackberry, green ash	Eastern cottonwood
1146:					
Onawa	---	Siberian peashrub, common lilac	Eastern redcedar, bur oak, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood
1220:					
Nodaway, channeled	---	Amur honeysuckle, common lilac, Amur maple, autumn olive	Eastern redcedar	Common hackberry, green ash, Austrian pine, eastern white pine, pin oak	Eastern cottonwood
1237B:					
Sarpy	Blackhaw	Siberian peashrub	Washington hawthorn, eastern redcedar, osageorange	Bur oak, common hackberry, green ash	Eastern cottonwood
1237C:					
Sarpy	Blackhaw	Siberian peashrub, Washington hawthorn	Eastern redcedar, osageorange	Bur oak, common hackberry, green ash	Eastern cottonwood

Table 9.--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
1238:					
Sarpy	Blackhaw	Siberian peashrub	Washington hawthorn, eastern redcedar, osageorange	Bur oak, common hackberry, green ash	Eastern cottonwood
Morconick	---	Siberian peashrub, common lilac	Eastern redcedar, Russian olive, bur oak, ponderosa pine	Common hackberry, green ash, honeylocust, golden willow	Eastern cottonwood
1513:					
Grable	---	Siberian peashrub, common lilac	Eastern redcedar, bur oak, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood
Morconick	---	Siberian peashrub, common lilac	Eastern redcedar, Russian olive, bur oak, ponderosa pine	Common hackberry, green ash, honeylocust, golden willow	Eastern cottonwood
1524:					
Morconick	---	Siberian peashrub, common lilac	Eastern redcedar, bur oak, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood
1525:					
Scroll	---	Siberian peashrub, common lilac	Eastern redcedar, bur oak, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood
2515:					
Percival	---	Siberian peashrub, common lilac	Eastern redcedar, bur oak, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood
Albaton	Siberian peashrub, common lilac	---	Eastern redcedar, Russian olive, blue spruce, common hackberry, ponderosa pine	Green ash, golden willow, honeylocust	Eastern cottonwood
3146:					
Onawa	---	Siberian peashrub, common lilac	Eastern redcedar, bur oak, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood

Table 9.--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
3146:					
Albaton	Siberian peashrub, common lilac	---	Eastern redcedar, Russian olive, blue spruce, common hackberry, ponderosa pine	Green ash, golden willow, honeylocust	Eastern cottonwood
3275:					
Moville	---	Siberian peashrub, common lilac	Eastern redcedar, bur oak, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood
Holly Springs, overwash	Siberian peashrub, common lilac	---	Eastern redcedar, Russian olive, blue spruce, common hackberry, ponderosa pine	Golden willow, green ash, honeylocust	Eastern cottonwood
3440:					
Blencoe	---	Amur honeysuckle, common lilac, Amur maple, autumn olive	Eastern redcedar	Common hackberry, green ash, Austrian pine, eastern white pine, pin oak	Eastern cottonwood
Woodbury	Siberian peashrub, common lilac	---	Eastern redcedar, blue spruce, common hackberry, ponderosa pine	Green ash, golden willow, honeylocust, silver maple	Eastern cottonwood
3513:					
Grable	---	Siberian peashrub, common lilac	Eastern redcedar, bur oak, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood
Morconick	---	Siberian peashrub, common lilac	Eastern redcedar, Russian olive, bur oak, ponderosa pine	Common hackberry, green ash, honeylocust, golden willow	Eastern cottonwood
3549:					
Modale silty clay loam	---	Siberian peashrub, common lilac	Eastern redcedar, bur oak, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood
Modale silt loam	---	Siberian peashrub, common lilac	Eastern redcedar, bur oak, ponderosa pine	Common hackberry, green ash, golden willow	Eastern cottonwood

Table 9.--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
3686:					
Napa	Common lilac, silver buffaloberry, Rocky Mountain juniper, Siberian peashrub, eastern redcedar	Green ash, ponderosa pine, Siberian elm	---	---	---
Luton	Siberian peashrub, common lilac	---	Eastern redcedar, blue spruce, common hackberry, ponderosa pine	Green ash, golden willow, honeylocust, silver maple	Eastern cottonwood
Tieville	American plum, redosier dogwood	Common chokecherry	Common hackberry, eastern redcedar	Austrian pine, green ash, northern red oak, golden willow, honeylocust, silver maple	Eastern cottonwood
4000. Urban land					
4001C:					
Ida	American plum, Siberian peashrub, choke cherry, gray dogwood, ninebark, skunkbush sumac	Rocky Mountain juniper, eastern redcedar, nannyberry	Common hackberry, green ash, ponderosa pine, Scotch pine, jack pine	Siberian elm, bur oak, green ash	Cottonwood
Urban land.					
4001D:					
Ida	American plum, Siberian peashrub, choke cherry, gray dogwood, ninebark, skunkbush sumac	Rocky Mountain juniper, eastern redcedar, nannyberry	Common hackberry, green ash, ponderosa pine, Scotch pine, jack pine	Siberian elm, bur oak, green ash	Cottonwood
Urban land.					
4001E:					
Ida	American plum, Siberian peashrub, gray dogwood, silver buffaloberry	Rocky Mountain juniper, common hackberry, eastern redcedar	Green ash, ponderosa pine	Siberian elm, bur oak	---
Urban land.					

Table 9.--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
4001F:					
Ida	American plum, Siberian peashrub, gray dogwood, silver buffaloberry	Rocky Mountain juniper, common hackberry, eastern redcedar	Green ash, ponderosa pine	Siberian elm, bur oak	---
Urban land.					
4010B:					
Monona	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
Urban land.					
4010C:					
Monona	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
Urban land.					
4010D:					
Monona	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
Urban land.					
4010E:					
Monona	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
Urban land.					
4012B:					
Napier	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
Urban land.					

Table 9.--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
4012C:					
Napier	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
Urban land.					
4170D:					
Napier	Common lilac	American plum, Siberian peashrub	Bur oak, eastern redcedar, blue spruce, common hackberry	Green ash, ponderosa pine	---
Castana	American plum, Siberian peashrub, cotoneaster, silver buffaloberry, skunkbush sumac	Rocky Mountain juniper, common hackberry, eastern redcedar	Green ash, ponderosa pine	Siberian elm, bur oak	---
Urban land.					
4600:					
Percival	---	Siberian peashrub, common lilac	Eastern redcedar, Russian olive, bur oak, ponderosa pine	Common hackberry, green ash, honeylocust, golden willow	Eastern cottonwood
Haynie	---	Siberian peashrub, common lilac	Eastern redcedar, Russian olive, bur oak, ponderosa pine	Common hackberry, green ash, honeylocust, golden willow	Eastern cottonwood
Urban land.					
4670:					
Rawles	Blackhaw	Siberian peashrub	Washington hawthorn, eastern redcedar, osageorange	Bur oak, common hackberry, green ash	Eastern cottonwood
Urban land.					
5010. Pits, sand and gravel					
5040. Udorthents, loamy					

Table 9.--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
5044. Fluvaquents					
5060. Pits, clay					
5080. Udorthents, sanitary landfill					
SL. Sewage lagoons					
W. Water					

Table 10a.--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. "Not rated" indicates that data are not available or that no rating is applicable. 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
1B3:						
Ida, severely eroded	Not limited		Not limited		Somewhat limited	
					Slope	0.50
1C:						
Ida	Not limited		Not limited		Very limited	
					Slope	1.00
1C3:						
Ida, severely eroded	Not limited		Not limited		Very limited	
					Slope	1.00
1D3:						
Ida, severely eroded	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
1E3:						
Ida, severely eroded	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
1F:						
Ida	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
1F3:						
Ida, severely eroded	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
1G:						
Ida	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
2G:						
Hamburg	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
3D:						
Castana	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
3E:						
Castana	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
8B:						
Judson	Not limited		Not limited		Somewhat limited	
					Slope	0.12
8C:						
Judson	Not limited		Not limited		Very limited	
					Slope	1.00
10B:						
Monona	Not limited		Not limited		Somewhat limited	
					Slope	0.50

Table 10a.--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
10B2:						
Monona, moderately eroded	Not limited		Not limited		Somewhat limited	
					Slope	0.50
10C2:						
Monona, moderately eroded	Not limited		Not limited		Very limited	
					Slope	1.00
10D2:						
Monona, moderately eroded	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
10D3:						
Monona, severely eroded	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
10E:						
Monona	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
10E3:						
Monona, severely eroded	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
10F:						
Monona	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
12B:						
Napier	Not limited		Not limited		Somewhat limited	
					Slope	0.50
12C:						
Napier	Not limited		Not limited		Very limited	
					Slope	1.00
17B:						
Napier	Not limited		Not limited		Somewhat limited	
					Slope	0.50
Kennebec	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.40	Flooding	1.00
Colo	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
26:						
Kennebec	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60

Table 10a.--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
35F:						
Liston	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.15	Restricted permeability	0.15	Restricted permeability	0.15
Burchard	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
35G:						
Liston	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.15	Restricted permeability	0.15	Restricted permeability	0.15
Burchard	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
36:						
Salix	Very limited		Not limited		Not limited	
	Flooding	1.00				
46:						
Keg	Very limited		Not limited		Not limited	
	Flooding	1.00				
47B:						
Napier	Not limited		Not limited		Somewhat limited	
					Slope	0.50
Rawles	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.40	Flooding	1.00
54:						
Zook	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Restricted permeability	0.96	Restricted permeability	0.96
	Restricted permeability	0.96			Flooding	0.60
59E:						
Burchard	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.96	Slope	0.96	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
66:						
Luton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Restricted permeability	1.00	Too clayey	1.00	Too clayey	1.00

Table 10a.--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
67:						
Woodbury	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	Too clayey	1.00
	Too clayey	1.00	Restricted permeability	0.94	Restricted permeability	0.94
100B:						
Monona	Not limited		Not limited		Somewhat limited	
					Slope	0.12
100C2:						
Monona, moderately eroded	Not limited		Not limited		Very limited	
					Slope	1.00
100D2:						
Monona, moderately eroded	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
100E2:						
Monona, moderately eroded	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
101E2:						
Monona, moderately eroded	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Ida, moderately eroded	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
123:						
Grantcenter	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				
137:						
Haynie	Very limited		Not limited		Not limited	
	Flooding	1.00				
144:						
Blake	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				
156:						
Albaton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Restricted permeability	1.00	Too clayey	1.00	Too clayey	1.00

Table 10a.--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
170E:						
Napier	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
Castana	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
212:						
Kennebec	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
212+:						
Kennebec, overwash	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
220:						
Nodaway	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
237:						
Sarpy	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Too sandy	0.49	Too sandy	0.49
	Too sandy	0.49				
237B:						
Sarpy	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Too sandy	0.49	Slope	0.50
	Too sandy	0.49			Too sandy	0.49
244:						
Blend	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	Too clayey	1.00
	Too clayey	1.00	Restricted permeability	0.96	Restricted permeability	0.96
255:						
Cooper	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Restricted permeability	0.94	Restricted permeability	0.94
	Restricted permeability	0.94				
266:						
Smithland	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00			Flooding	0.60
266+:						
Smithland, overwash	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00			Flooding	0.60
277B:						
Deloit	Not limited		Not limited		Somewhat limited	
					Slope	0.50

Table 10a.--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
277C:						
Deloit	Not limited		Not limited		Very limited	
					Slope	1.00
277E:						
Deloit	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.96	Slope	0.96	Slope	1.00
310B:						
Galva	Not limited		Not limited		Somewhat limited	
					Slope	0.50
310C2:						
Galva, moderately eroded	Not limited		Not limited		Very limited	
					Slope	1.00
366:						
Luton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Restricted permeability	0.60	Restricted permeability	0.60
	Restricted permeability	0.60				
436:						
Lakeport	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				
446:						
Burcham	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Restricted permeability	0.94	Restricted permeability	0.94
	Restricted permeability	0.94				
465:						
Tieville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Restricted permeability	1.00	Too clayey	1.00	Too clayey	1.00
485:						
Spillville	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	0.19	Flooding	0.60
	Depth to saturated zone	0.39			Depth to saturated zone	0.39
510:						
Monona, bench	Not limited		Not limited		Not limited	
510B:						
Monona, bench	Not limited		Not limited		Somewhat limited	
					Slope	0.12

Table 10a.--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
510B2:						
Monona, bench, moderately eroded	Not limited		Not limited		Somewhat limited	
					Slope	0.12
510C2:						
Monona, bench, moderately eroded	Not limited		Not limited		Very limited	
					Slope	1.00
515:						
Percival	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	Too clayey	1.00
	Too clayey	1.00	Restricted permeability	0.94	Restricted permeability	0.94
518:						
Morconick	Very limited		Not limited		Not limited	
	Flooding	1.00				
527:						
Anthon	Not limited		Not limited		Not limited	
527B:						
Anthon	Not limited		Not limited		Somewhat limited	
					Slope	0.50
549:						
Modale silt loam	Very limited		Very limited		Very limited	
	Flooding	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Restricted permeability	1.00	Depth to saturated zone	0.19	Flooding	0.60
	Depth to saturated zone	0.39			Depth to saturated zone	0.39
Modale silty clay loam	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Restricted permeability	0.94	Restricted permeability	0.94
	Restricted permeability	0.94	Depth to saturated zone	0.19	Flooding	0.60
	Depth to saturated zone	0.39			Depth to saturated zone	0.39
552:						
Owego	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Restricted permeability	1.00	Too clayey	1.00	Too clayey	1.00
630:						
Danbury	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Restricted permeability	0.21	Flooding	0.60
	Restricted permeability	0.21			Restricted permeability	0.21

Table 10a.--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
666B:						
Smithland	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00			Flooding	0.60
Danbury	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Restricted permeability	0.21	Flooding	0.60
	Restricted permeability	0.21			Restricted permeability	0.21
Judson	Not limited		Not limited		Somewhat limited	
					Slope	0.50
670:						
Rawles	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
700:						
Monona, bench	Not limited		Not limited		Not limited	
700B:						
Monona, bench	Not limited		Not limited		Somewhat limited	
					Slope	0.50
700C2:						
Monona, bench, moderately eroded	Not limited		Not limited		Very limited	
					Slope	1.00
700D2:						
Monona, bench, moderately eroded	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
701:						
Wilsey	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
709:						
Fairhaven, 32 to 40 inches to sand and gravel	Not limited		Not limited		Not limited	
709B:						
Fairhaven, 32 to 40 inches to sand and gravel	Not limited		Not limited		Somewhat limited	
					Slope	0.12
717D:						
Napier	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.04	Slope	0.04	Slope	1.00
Gullied land	Not rated		Not rated		Not rated	
733:						
Calco	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00			Flooding	0.60

Table 10a.--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
734:						
Holly Springs-------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Restricted permeability	0.94	Restricted permeability	0.94
	Restricted permeability	0.94				
734+:						
Holly Springs, overwash-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Restricted permeability	1.00				
740C:						
Hawick--------------	Not limited		Not limited		Very limited	
					Slope	1.00
					Gravel content	0.04
740D:						
Hawick--------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
					Gravel content	0.04
740E:						
Hawick--------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Gravel content	0.04
740F:						
Hawick--------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					Gravel content	0.04
750:						
Ticonic-------------	Very limited		Not limited		Not limited	
	Flooding	1.00				
754:						
Larpenteur----------	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				
810B:						
Galva, bench--------	Not limited		Not limited		Somewhat limited	
					Slope	0.12
810C2:						
Galva, bench, moderately eroded--	Not limited		Not limited		Very limited	
					Slope	1.00
847B:						
Judson--------------	Not limited		Not limited		Somewhat limited	
					Slope	0.50
Rawles--------------	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.40	Flooding	1.00

Table 10a.--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
945:						
Albaton, depressional, drained	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Restricted permeability	1.00	Flooding	1.00
	Restricted permeability	1.00	Too clayey	1.00	Restricted permeability	1.00
1137:						
Haynie	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
1144:						
Blake	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00			Flooding	0.60
1146:						
Onawa	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	Too clayey	1.00
	Too clayey	1.00	Restricted permeability	0.94	Restricted permeability	0.94
1220:						
Nodaway, channeled	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Flooding	0.40	Flooding	1.00
1237B:						
Sarpy	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Too sandy	0.49	Flooding	0.60
	Too sandy	0.49			Slope	0.50
					Too sandy	0.49
1237C:						
Sarpy	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Too sandy	0.49	Slope	1.00
	Too sandy	0.49			Flooding	0.60
					Too sandy	0.49
1238:						
Sarpy	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Too sandy	0.49	Flooding	0.60
	Too sandy	0.49			Too sandy	0.49
Morconick	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
1513:						
Grable	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
Morconick	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60

Table 10a.--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
1524:						
Morconick	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
1525:						
Scroll	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	Too clayey	1.00
	Too clayey	1.00	Restricted permeability	0.96	Restricted permeability	0.96
2515:						
Percival	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	Too clayey	1.00
	Too clayey	1.00	Restricted permeability	0.94	Restricted permeability	0.94
Albaton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Restricted permeability	1.00	Too clayey	1.00	Too clayey	1.00
3146:						
Onawa	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	Too clayey	1.00
	Too clayey	1.00	Restricted permeability	0.94	Restricted permeability	0.94
Albaton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Restricted permeability	1.00	Too clayey	1.00	Too clayey	1.00
3275:						
Moville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Restricted permeability	1.00				
Holly Springs, overwash	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Restricted permeability	1.00				

Table 10a.--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
3440:						
Blencoe	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	Too clayey	1.00
	Too clayey	1.00	Restricted permeability	0.94	Restricted permeability	0.94
Woodbury	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	Too clayey	1.00
	Too clayey	1.00	Restricted permeability	0.94	Restricted permeability	0.94
3513:						
Grable	Very limited		Not limited		Not limited	
	Flooding	1.00				
Morconick	Very limited		Not limited		Not limited	
	Flooding	1.00				
3549:						
Modale silty clay loam	Very limited		Very limited		Very limited	
	Flooding	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Restricted permeability	1.00	Depth to saturated zone	0.19	Depth to saturated zone	0.39
	Depth to saturated zone	0.39				
Modale silt loam	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Restricted permeability	0.94	Restricted permeability	0.94
	Restricted permeability	0.94				
3686:						
Napa	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Too clayey	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Too clayey	1.00	Restricted permeability	1.00	Restricted permeability	1.00
Luton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Restricted permeability	1.00	Too clayey	1.00	Too clayey	1.00
Tieville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Restricted permeability	1.00	Too clayey	1.00	Too clayey	1.00

Table 10a.--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
4000:						
Urban land----------	Not rated		Not rated		Not rated	
4001C:						
Ida-----------------	Not limited		Not limited		Very limited	
					Slope	1.00
Urban land----------	Not rated		Not rated		Not rated	
4001D:						
Ida-----------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
Urban land----------	Not rated		Not rated		Not rated	
4001E:						
Ida-----------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Urban land----------	Not rated		Not rated		Not rated	
4001F:						
Ida-----------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Urban land----------	Not rated		Not rated		Not rated	
4010B:						
Monona--------------	Not limited		Not limited		Somewhat limited	
					Slope	0.50
Urban land----------	Not rated		Not rated		Not rated	
4010C:						
Monona--------------	Not limited		Not limited		Very limited	
					Slope	1.00
Urban land----------	Not rated		Not rated		Not rated	
4010D:						
Monona--------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
Urban land----------	Not rated		Not rated		Not rated	
4010E:						
Monona--------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Urban land----------	Not rated		Not rated		Not rated	
4012B:						
Napier--------------	Not limited		Not limited		Somewhat limited	
					Slope	0.50
Urban land----------	Not rated		Not rated		Not rated	
4012C:						
Napier--------------	Not limited		Not limited		Very limited	
					Slope	1.00
Urban land----------	Not rated		Not rated		Not rated	

Table 10a.--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
4170D:						
Napier	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
Castana	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
Urban land	Not rated		Not rated		Not rated	
4600:						
Percival	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	Too clayey	1.00
	Too clayey	1.00	Restricted permeability	0.94	Restricted permeability	0.94
Haynie	Very limited		Not limited		Not limited	
	Flooding	1.00				
Urban land	Not rated		Not rated		Not rated	
4670:						
Rawles	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
Urban land	Not rated		Not rated		Not rated	
5010:						
Pits, sand and gravel	Not rated		Not rated		Not rated	
5040:						
Udorthents, loamy	Not rated		Not rated		Not rated	
5044:						
Fluvaquents	Not rated		Not rated		Not rated	
5060:						
Pits, clay	Not rated		Not rated		Not rated	
5080:						
Udorthents, sanitary landfill	Not rated		Not rated		Not rated	
SL:						
Sewage lagoons	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	

Table 10b.--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. "Not rated" indicates that data are not available or that no rating is applicable. 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
1B3:						
Ida, severely eroded	Not limited		Not limited		Not limited	
1C:						
Ida	Not limited		Not limited		Not limited	
1C3:						
Ida, severely eroded	Not limited		Not limited		Not limited	
1D3:						
Ida, severely eroded	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.63
1E3:						
Ida, severely eroded	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.08				
1F:						
Ida	Very limited		Not limited		Very limited	
	Slope	1.00			Slope	1.00
1F3:						
Ida, severely eroded	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	1.00				
1G:						
Ida	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Slope	0.78	Slope	1.00
2G:						
Hamburg	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Water erosion	1.00	Water erosion	1.00		
3D:						
Castana	Not limited		Not limited		Somewhat limited	
					Slope	0.63
3E:						
Castana	Somewhat limited		Not limited		Very limited	
	Slope	0.08			Slope	1.00
8B:						
Judson	Not limited		Not limited		Not limited	
8C:						
Judson	Not limited		Not limited		Not limited	
10B:						
Monona	Not limited		Not limited		Not limited	

Table 10b.--Recreational Development--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Paths and trails: Value	Off-road motorcycle trails: Rating class and limiting features	Off-road motorcycle trails: Value	Golf fairways: Rating class and limiting features	Golf fairways: Value
10B2:						
Monona, moderately eroded	Not limited		Not limited		Not limited	
10C2:						
Monona, moderately eroded	Not limited		Not limited		Not limited	
10D2:						
Monona, moderately eroded	Not limited		Not limited		Somewhat limited	
					Slope	0.63
10D3:						
Monona, severely eroded	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.63
10E:						
Monona	Somewhat limited		Not limited		Very limited	
	Slope	0.08			Slope	1.00
10E3:						
Monona, severely eroded	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.08				
10F:						
Monona	Very limited		Not limited		Very limited	
	Slope	1.00			Slope	1.00
12B:						
Napier	Not limited		Not limited		Not limited	
12C:						
Napier	Not limited		Not limited		Not limited	
17B:						
Napier	Not limited		Not limited		Not limited	
Kennebec	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00
Colo	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
26:						
Kennebec	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
35F:						
Liston	Somewhat limited		Not limited		Very limited	
	Slope	0.68			Slope	1.00
Burchard	Somewhat limited		Not limited		Very limited	
	Slope	0.68			Slope	1.00

Table 10b.--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
35G:						
Liston	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Slope	0.56	Slope	1.00
Burchard	Very limited		Somewhat limited		Very limited	
	Slope	1.00	Slope	0.56	Slope	1.00
36:						
Salix	Not limited		Not limited		Not limited	
46:						
Keg	Not rated		Not rated		Not limited	
47B:						
Napier	Not limited		Not limited		Not limited	
Rawles	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00
54:						
Zook	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Flooding	0.60
59E:						
Burchard	Not limited		Not limited		Somewhat limited	
					Slope	0.96
66:						
Luton	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	Too clayey	1.00	Too clayey	1.00
67:						
Woodbury	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	Too clayey	1.00	Too clayey	1.00
100B:						
Monona	Not limited		Not limited		Not limited	
100C2:						
Monona, moderately eroded	Not limited		Not limited		Not limited	
100D2:						
Monona, moderately eroded	Not limited		Not limited		Somewhat limited	
					Slope	0.63
100E2:						
Monona, moderately eroded	Somewhat limited		Not limited		Very limited	
	Slope	0.08			Slope	1.00

Table 10b.--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
101E2:						
Monona, moderately eroded	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.08				
Ida, moderately eroded	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.08				
123:						
Grantcenter	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
137:						
Haynie	Not limited		Not limited		Not limited	
144:						
Blake	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
156:						
Albaton	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	Too clayey	1.00	Too clayey	1.00
170E:						
Napier	Not limited		Not limited		Somewhat limited	
					Slope	0.63
Castana	Somewhat limited		Not limited		Very limited	
	Slope	0.08			Slope	1.00
212:						
Kennebec	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
212+:						
Kennebec, overwash	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
220:						
Nodaway	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
237:						
Sarpy	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.49	Too sandy	0.49	Droughty	0.69
237B:						
Sarpy	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.49	Too sandy	0.49	Droughty	0.69

Table 10b.--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
244:						
Blend	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	Too clayey	1.00	Too clayey	1.00
255:						
Cooper	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
266:						
Smithland	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Flooding	0.60
266+:						
Smithland, overwash	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Flooding	0.60
277B:						
Deloit	Not limited		Not limited		Not limited	
277C:						
Deloit	Not limited		Not limited		Not limited	
277E:						
Deloit	Not limited		Not limited		Somewhat limited	
					Slope	0.96
310B:						
Galva	Not limited		Not limited		Not limited	
310C2:						
Galva, moderately eroded	Not limited		Not limited		Not limited	
366:						
Luton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
436:						
Lakeport	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
446:						
Burcham	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
465:						
Tieville	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	Too clayey	1.00	Too clayey	1.00

Table 10b.--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
485:						
Spillville----------	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
					Depth to saturated zone	0.19
510:						
Monona, bench-------	Not limited		Not limited		Not limited	
510B:						
Monona, bench-------	Not limited		Not limited		Not limited	
510B2:						
Monona, bench, moderately eroded--	Not limited		Not limited		Not limited	
510C2:						
Monona, bench, moderately eroded--	Not rated		Not rated		Not limited	
515:						
Percival------------	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	Too clayey	1.00	Too clayey	1.00
					Droughty	0.38
518:						
Morconick-----------	Not limited		Not limited		Not limited	
527:						
Anthon--------------	Not limited		Not limited		Not limited	
527B:						
Anthon--------------	Not limited		Not limited		Not limited	
549:						
Modale silt loam----	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
					Depth to saturated zone	0.19
Modale silty clay loam---------------	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
					Depth to saturated zone	0.19
552:						
Owego---------------	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	Too clayey	1.00	Too clayey	1.00
630:						
Danbury-------------	Not rated		Not rated		Somewhat limited	
					Flooding	0.60

Table 10b.--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
666B:						
Smithland	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Flooding	0.60
Danbury	Not rated		Not rated		Somewhat limited	
					Flooding	0.60
Judson	Not limited		Not limited		Not limited	
670:						
Rawles	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
700:						
Monona, bench	Not limited		Not limited		Not limited	
700B:						
Monona, bench	Not limited		Not limited		Not limited	
700C2:						
Monona, bench, moderately eroded	Not limited		Not limited		Not limited	
700D2:						
Monona, bench, moderately eroded	Not limited		Not limited		Somewhat limited	
					Slope	0.63
701:						
Wilsey	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
709:						
Fairhaven, 32 to 40 inches to sand and gravel	Not limited		Not limited		Not limited	
709B:						
Fairhaven, 32 to 40 inches to sand and gravel	Not limited		Not limited		Not limited	
717D:						
Napier	Not limited		Not limited		Somewhat limited	
					Slope	0.04
Gullied land	Not rated		Not rated		Not rated	
733:						
Calco	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Flooding	0.60
734:						
Holly Springs	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

Table 10b.--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
734+:						
Holly Springs, overwash	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
740C:						
Hawick	Not limited		Not limited		Somewhat limited	
					Droughty	0.95
740D:						
Hawick	Not limited		Not limited		Somewhat limited	
					Droughty	0.95
					Slope	0.63
740E:						
Hawick	Somewhat limited		Not limited		Very limited	
	Slope	0.02			Slope	1.00
					Droughty	0.95
740F:						
Hawick	Somewhat limited		Not limited		Very limited	
	Slope	0.82			Slope	1.00
					Droughty	0.95
750:						
Ticonic	Not rated		Not rated		Somewhat limited	
					Droughty	0.69
754:						
Larpenteur	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
810B:						
Galva, bench	Not limited		Not limited		Not limited	
810C2:						
Galva, bench, moderately eroded	Not limited		Not limited		Not limited	
847B:						
Judson	Not limited		Not limited		Not limited	
Rawles	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00
945:						
Albaton, depressional, drained	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
1137:						
Haynie	Not limited		Not limited		Somewhat limited	
					Flooding	0.60

Table 10b.--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
1144:						
Blake	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Flooding	0.60
1146:						
Onawa	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	Too clayey	1.00	Too clayey	1.00
					Flooding	0.60
1220:						
Nodaway, channeled	Somewhat limited		Somewhat limited		Very limited	
	Flooding	0.40	Flooding	0.40	Flooding	1.00
1237B:						
Sarpy	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.49	Too sandy	0.49	Droughty	0.69
					Flooding	0.60
1237C:						
Sarpy	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.49	Too sandy	0.49	Droughty	0.69
					Flooding	0.60
1238:						
Sarpy	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.49	Too sandy	0.49	Droughty	0.69
					Flooding	0.60
Morconick	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
1513:						
Grable	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
Morconick	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
1524:						
Morconick	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
1525:						
Scroll	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	Too clayey	1.00	Too clayey	1.00
					Droughty	0.88
2515:						
Percival	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	Too clayey	1.00	Too clayey	1.00
					Flooding	0.60

Table 10b.--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
2515:						
Albaton	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	Too clayey	1.00	Too clayey	1.00
					Flooding	0.60
3146:						
Onawa	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	Too clayey	1.00	Too clayey	1.00
Albaton	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	Too clayey	1.00	Too clayey	1.00
3275:						
Moville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Holly Springs, overwash	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
3440:						
Blencoe	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	Too clayey	1.00	Too clayey	1.00
Woodbury	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	Too clayey	1.00	Too clayey	1.00
3513:						
Grable	Not limited		Not limited		Not limited	
Morconick	Not limited		Not limited		Not limited	
3549:						
Modale silty clay loam	Not limited		Not limited		Somewhat limited	
					Depth to saturated zone	0.19
Modale silt loam	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
3686:						
Napa	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Too clayey	1.00	Too clayey	1.00	Depth to saturated zone	1.00
					Salinity	1.00

Table 10b.--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
3686:						
Luton	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	Too clayey	1.00	Too clayey	1.00
Tieville	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	Too clayey	1.00	Too clayey	1.00
4000:						
Urban land	Not rated		Not rated		Not rated	
4001C:						
Ida	Not limited		Not limited		Not limited	
Urban land	Not rated		Not rated		Not rated	
4001D:						
Ida	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.63
Urban land	Not rated		Not rated		Not rated	
4001E:						
Ida	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	1.00
	Slope	0.08				
Urban land	Not rated		Not rated		Not rated	
4001F:						
Ida	Very limited		Not limited		Very limited	
	Slope	1.00			Slope	1.00
Urban land	Not rated		Not rated		Not rated	
4010B:						
Monona	Not limited		Not limited		Not limited	
Urban land	Not rated		Not rated		Not rated	
4010C:						
Monona	Not limited		Not limited		Not limited	
Urban land	Not rated		Not rated		Not rated	
4010D:						
Monona	Not limited		Not limited		Somewhat limited	
					Slope	0.63
Urban land	Not rated		Not rated		Not rated	
4010E:						
Monona	Somewhat limited		Not limited		Very limited	
	Slope	0.08			Slope	1.00
Urban land	Not rated		Not rated		Not rated	

Table 10b.--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
4012B:						
Napier	Not limited		Not limited		Not limited	
Urban land	Not rated		Not rated		Not rated	
4012C:						
Napier	Not limited		Not limited		Not limited	
Urban land	Not rated		Not rated		Not rated	
4170D:						
Napier	Not limited		Not limited		Somewhat limited	
					Slope	0.63
Castana	Not limited		Not limited		Somewhat limited	
					Slope	0.63
Urban land	Not rated		Not rated		Not rated	
4600:						
Percival	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	Too clayey	1.00	Too clayey	1.00
					Droughty	0.38
Haynie	Not rated		Not rated		Not limited	
Urban land	Not rated		Not rated		Not rated	
4670:						
Rawles	Not limited		Not limited		Somewhat limited	
					Flooding	0.60
Urban land	Not rated		Not rated		Not rated	
5010:						
Pits, sand and gravel	Not rated		Not rated		Not rated	
5040:						
Udorthents, loamy	Not rated		Not rated		Not rated	
5044:						
Fluvaquents	Not rated		Not rated		Not rated	
5060:						
Pits, clay	Not rated		Not rated		Not rated	
5080:						
Udorthents, sanitary landfill	Not rated		Not rated		Not rated	
SL:						
Sewage lagoons	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	

Table 11.--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 herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
1B3: Ida, severely eroded	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
1C: Ida	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
1C3: Ida, severely eroded	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
1D3: Ida, severely eroded	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
1E3: Ida, severely eroded	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor
1F: Ida	Poor	Fair	Good	Poor	Poor	Very poor	Very poor	Fair	Fair	Very poor
1F3: Ida, severely eroded	Poor	Fair	Good	Poor	Poor	Very poor	Very poor	Fair	Fair	Very poor
1G: Ida	Very poor	Very poor	Good	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
2G: Hamburg	Very poor	Poor	Fair	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
3D: Castana	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
3E: Castana	Poor	Good	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
8B: Judson	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
8C: Judson	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
10B: Monona	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor

Table 11.--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
10B2:										
Monona, moderately eroded	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
10C2:										
Monona, moderately eroded	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
10D2:										
Monona, moderately eroded	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
10D3:										
Monona, severely eroded	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
10E:										
Monona	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
10E3:										
Monona, severely eroded	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
10F:										
Monona	Poor	Fair	Good	Fair	Fair	Very poor	Very poor	Fair	Fair	Very poor
12B:										
Napier	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
12C:										
Napier	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
17B:										
Napier	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Kennebec	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
Colo	Good	Fair	Good	Fair	Poor	Good	Good	Fair	Fair	Good
26:										
Kennebec	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
35F:										
Liston	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
Burchard	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
35G:										
Liston	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor

Table 11.--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
35G:										
Burchard	Very poor	Poor	Fair	Fair	Fair	Very poor	Very poor	Poor	Fair	Very poor
36:										
Salix	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
46:										
Keg	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
47B:										
Napier	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Rawles	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
54:										
Zook	Good	Fair	Good	Fair	Poor	Good	Good	Fair	Fair	Good
59E:										
Burchard	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
66:										
Luton	Fair	Fair	Fair	Poor	Very poor	Good	Good	Fair	Poor	Good
67:										
Woodbury	Fair	Fair	Fair	Poor	Very poor	Good	Good	Fair	Poor	Good
100B:										
Monona	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
100C2:										
Monona, moderately eroded	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
100D2:										
Monona, moderately eroded	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
100E2:										
Monona, moderately eroded	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
101E2:										
Monona, moderately eroded	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Ida, moderately eroded	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor
123:										
Grantcenter	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair

Table 11.--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
137:										
Haynie	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
144:										
Blake	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
156:										
Albaton	Fair	Fair	Fair	Poor	Very poor	Good	Good	Fair	Poor	Good
170E:										
Napier	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Castana	Poor	Good	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
212:										
Kennebec	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
212+:										
Kennebec, overwash	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
220:										
Nodaway	Good	Good	Good	Good	Fair	Fair	Poor	Fair	Good	Fair
237:										
Sarpy	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
237B:										
Sarpy	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
244:										
Blend	Fair	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good
255:										
Cooper	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
266:										
Smithland	Good	Fair	Good	Fair	Poor	Good	Good	Fair	Fair	Good
266+:										
Smithland, overwash	Good	Fair	Good	Fair	Poor	Good	Good	Fair	Fair	Good
277B:										
Deloit	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
277C:										
Deloit	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
277E:										
Deloit	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
310B:										
Galva	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor

Table 11.--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
310C2:										
Galva, moderately eroded	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
366:										
Luton	Fair	Fair	Fair	Poor	Very poor	Good	Good	Fair	Poor	Good
436:										
Lakeport	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
446:										
Burcham	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
465:										
Tieville	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good
485:										
Spillville	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
510:										
Monona, bench	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
510B:										
Monona, bench	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
510B2:										
Monona, bench, moderately eroded	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
510C2:										
Monona, bench, moderately eroded	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
515:										
Percival	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Fair
518:										
Morconick	Good	Good	Good	Good	Fair	Poor	Very poor	Good	Good	Very poor
527:										
Anthon	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
527B:										
Anthon	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
549:										
Modale silt loam	Good	Good	Good	Good	Fair	Good	Good	Good	Good	Good
Modale silty clay loam	Good	Good	Good	Good	Fair	Good	Good	Good	Good	Good
552:										
Owego	Fair	Fair	Fair	Poor	Very poor	Good	Good	Fair	Poor	Good

Table 11.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hard-wood trees	Conif-erous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Open-land wild-life	Wood-land wild-life	Wetland wild-life
630:										
Danbury	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
666B:										
Smithland	Good	Fair	Good	Fair	Poor	Good	Good	Fair	Fair	Good
Danbury	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
Judson	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
670:										
Rawles	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
700:										
Monona, bench	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
700B:										
Monona, bench	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
700C2:										
Monona, bench, moderately eroded	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
700D2:										
Monona, bench, moderately eroded	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
701:										
Wilsey	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
709:										
Fairhaven, 32 to 40 inches to sand and gravel	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
709B:										
Fairhaven, 32 to 40 inches to sand and gravel	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
717D:										
Napier	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Gullied land.										
733:										
Calco	Good	Fair	Good	Poor	Very poor	Good	Good	Fair	Poor	Fair
734:										
Holly Springs	Fair	Fair	Fair	Poor	Very poor	Good	Good	Fair	Poor	Good

Table 11.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
734+:										
Holly Springs, overwash	Fair	Fair	Fair	Poor	Very poor	Good	Good	Fair	Poor	Good
740C:										
Hawick------------------	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
740D:										
Hawick------------------	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
740E:										
Hawick------------------	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
740F:										
Hawick------------------	Very poor	Very poor	Fair	Poor	Poor	Very poor	Very poor	Very poor	Poor	Very poor
750:										
Ticonic-----------------	Poor	Fair	Fair	Good	Good	Poor	Fair	Fair	Fair	Poor
754:										
Larpenteur--------------	Good	Good	Good	Good	Fair	Fair	Fair	Good	Good	Fair
810B:										
Galva, bench------------	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
810C2:										
Galva, bench, moderately eroded-----------------	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
847B:										
Judson------------------	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
Rawles------------------	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
945:										
Albaton, depressional, drained----------------	Very poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
1137:										
Haynie------------------	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
1144:										
Blake-------------------	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
1146:										
Onawa-------------------	Fair	Fair	Fair	Poor	Very poor	Good	Good	Fair	Poor	Good
1220:										
Nodaway, channeled------	Poor	Fair	Fair	Poor	Poor	Good	Fair	Poor	Poor	Fair
1237B:										
Sarpy-------------------	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor

Table 11.--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
1237C:										
Sarpy	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
1238:										
Sarpy	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
Morconick	Good	Good	Good	Good	Fair	Poor	Very poor	Good	Good	Very poor
1513:										
Grable	Good	Good	Good	Good	Fair	Poor	Very poor	Good	Good	Very poor
Morconick	Good	Good	Good	Good	Fair	Poor	Very poor	Good	Good	Very poor
1524:										
Morconick	Good	Good	Good	Good	Fair	Poor	Very poor	Good	Good	Very poor
1525:										
Scroll	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Fair
2515:										
Percival	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Fair
Albaton	Fair	Fair	Fair	Poor	Very poor	Good	Good	Fair	Poor	Good
3146:										
Onawa	Fair	Fair	Fair	Poor	Very poor	Good	Good	Fair	Poor	Good
Albaton	Fair	Fair	Fair	Poor	Very poor	Good	Good	Fair	Poor	Good
3275:										
Moville	Good	Good	Good	Good	Fair	Good	Good	Good	Good	Good
Holly Springs, overwash	Fair	Fair	Fair	Poor	Very poor	Good	Good	Fair	Poor	Good
3440:										
Blencoe	Good	Good	Good	Fair	Poor	Good	Good	Good	Fair	Good
Woodbury	Fair	Fair	Fair	Poor	Very poor	Good	Good	Fair	Poor	Good
3513:										
Grable	Good	Good	Good	Good	Fair	Poor	Very poor	Good	Good	Very poor
Morconick	Good	Good	Good	Good	Fair	Poor	Very poor	Good	Good	Very poor
3549:										
Modale silty clay loam	Good	Good	Good	Good	Fair	Good	Good	Good	Good	Good
Modale silt loam	Good	Good	Good	Good	Fair	Good	Good	Good	Good	Good

Table 11.--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	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life
3686:										
Napa	Very poor	Very poor	Fair	Poor	Very poor	Poor	Poor	Very poor	Very poor	Poor
Luton	Fair	Fair	Fair	Poor	Very poor	Good	Good	Fair	Poor	Good
Tieville	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good
4000. Urban land										
4001C:										
Ida	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Urban land.										
4001D:										
Ida	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Urban land.										
4001E:										
Ida	Fair	Good	Good	Fair	Fair	Very poor	Very poor	Good	Fair	Very poor
Urban land.										
4001F:										
Ida	Poor	Fair	Good	Poor	Poor	Very poor	Very poor	Fair	Fair	Very poor
Urban land.										
4010B:										
Monona	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Urban land.										
4010C:										
Monona	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Urban land.										
4010D:										
Monona	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Urban land.										
4010E:										
Monona	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Urban land.										

Table 11.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hard-wood trees	Conif-erous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Open-land wild-life	Wood-land wild-life	Wetland wild-life
4012B:										
Napier	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Urban land.										
4012C:										
Napier	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Urban land.										
4170D:										
Napier	Good	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Castana	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
Urban land.										
4600:										
Percival	Fair	Fair	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Fair
Haynie	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
Urban land.										
4670:										
Rawles	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
Urban land.										
5010. Pits, sand and gravel										
5040. Udorthents, loamy										
5044. Fluvaquents										
5060. Pits, clay										
5080. Udorthents, sanitary landfill										
SL. Sewage lagoons										
W. Water										

Table 12a.--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. "Not rated" indicates that data are not available or that no rating is applicable. 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
1B3:						
Ida, severely eroded	Not limited		Not limited		Not limited	
1C:						
Ida	Not limited		Not limited		Somewhat limited	
					Slope	0.88
1C3:						
Ida, severely eroded	Not limited		Not limited		Somewhat limited	
					Slope	0.88
1D3:						
Ida, severely eroded	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
1E3:						
Ida, severely eroded	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
1F:						
Ida	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
1F3:						
Ida, severely eroded	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
1G:						
Ida	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
2G:						
Hamburg	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
3D:						
Castana	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
3E:						
Castana	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
8B:						
Judson	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
8C:						
Judson	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Slope	0.88
					Shrink-swell	0.50

Table 12a.--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
10B:						
Monona	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
10B2:						
Monona, moderately eroded	Not limited		Not limited		Not limited	
10C2:						
Monona, moderately eroded	Not limited		Not limited		Somewhat limited	
					Slope	0.88
10D2:						
Monona, moderately eroded	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
10D3:						
Monona, severely eroded	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
10E:						
Monona	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50			Shrink-swell	0.50
10E3:						
Monona, severely eroded	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
10F:						
Monona	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50			Shrink-swell	0.50
12B:						
Napier	Not limited		Not limited		Not limited	
12C:						
Napier	Not limited		Not limited		Somewhat limited	
					Slope	0.88
17B:						
Napier	Not limited		Not limited		Not limited	
Kennebec	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
			Depth to saturated zone	0.16		
Colo	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50

Table 12a.--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
26:						
Kennebec------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	0.16		
35F:						
Liston--------------	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
Burchard------------	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
35G:						
Liston--------------	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
Burchard------------	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
36:						
Salix---------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	0.16		
46:						
Keg-----------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
47B:						
Napier--------------	Not limited		Not limited		Not limited	
Rawles--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Shrink-swell	0.50	Depth to saturated zone	0.95	Shrink-swell	0.50
			Shrink-swell	0.50		
54:						
Zook----------------	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
59E:						
Burchard------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.96	Slope	0.96	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
66:						
Luton---------------	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

Table 12a.--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
67:						
Woodbury------------	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
100B:						
Monona--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
100C2:						
Monona, moderately eroded------------	Not limited		Not limited		Somewhat limited	
					Slope	0.88
100D2:						
Monona, moderately eroded------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
100E2:						
Monona, moderately eroded------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
101E2:						
Monona, moderately eroded------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Ida, moderately eroded------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
123:						
Grantcenter---------	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
137:						
Haynie--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	0.16		
144:						
Blake---------------	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
156:						
Albaton-------------	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

Table 12a.--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
170E:						
Napier	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
Castana	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
212:						
Kennebec	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
			Depth to saturated zone	0.16		
212+:						
Kennebec, overwash	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
			Depth to saturated zone	0.16		
220:						
Nodaway	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
			Depth to saturated zone	0.16		
237:						
Sarpy	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
237B:						
Sarpy	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
244:						
Blend	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
255:						
Cooper	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
266:						
Smithland	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50

Table 12a.--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
266+:						
Smithland, overwash	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
277B:						
Deloit	Not limited		Not limited		Not limited	
277C:						
Deloit	Not limited		Not limited		Somewhat limited	
					Slope	0.88
277E:						
Deloit	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.96	Slope	0.96	Slope	1.00
310B:						
Galva	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
310C2:						
Galva, moderately eroded	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Slope	0.88
					Shrink-swell	0.50
366:						
Luton	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
436:						
Lakeport	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	0.50	Shrink-swell	1.00
446:						
Burcham	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	1.00	Shrink-swell	0.50
465:						
Tieville	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

Table 12a.--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
485:						
Spillville----------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
	Depth to saturated zone	0.39	Shrink-swell	0.50	Depth to saturated zone	0.39
510:						
Monona, bench-------	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
510B:						
Monona, bench-------	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
510B2:						
Monona, bench, moderately eroded--	Not limited		Not limited		Not limited	
510C2:						
Monona, bench, moderately eroded--	Not limited		Not limited		Somewhat limited	
					Slope	0.88
515:						
Percival------------	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
518:						
Morconick-----------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
527:						
Anthon--------------	Not limited		Not limited		Not limited	
527B:						
Anthon--------------	Not limited		Not limited		Not limited	
549:						
Modale silt loam----	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Shrink-swell	1.00	Depth to saturated zone	1.00	Shrink-swell	1.00
	Depth to saturated zone	0.39	Shrink-swell	1.00	Depth to saturated zone	0.39
Modale silty clay loam---------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Shrink-swell	1.00	Depth to saturated zone	1.00	Shrink-swell	1.00
	Depth to saturated zone	0.39	Shrink-swell	1.00	Depth to saturated zone	0.39
552:						
Owego---------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	1.00	Shrink-swell	0.50

Table 12a.--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
630:						
Danbury-------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Shrink-swell	0.50	Shrink-swell	1.00	Shrink-swell	0.50
			Depth to saturated zone	0.95		
666B:						
Smithland-----------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Danbury-------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Shrink-swell	0.50	Shrink-swell	1.00	Shrink-swell	0.50
			Depth to saturated zone	0.95		
Judson--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
670:						
Rawles--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Shrink-swell	0.50	Depth to saturated zone	0.95	Shrink-swell	0.50
			Shrink-swell	0.50		
700:						
Monona, bench-------	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
700B:						
Monona, bench-------	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
700C2:						
Monona, bench, moderately eroded--	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Slope	0.88
					Shrink-swell	0.50
700D2:						
Monona, bench, moderately eroded--	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
701:						
Wilsey--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
709:						
Fairhaven, 32 to 40 inches to sand and gravel-------------	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50

Table 12a.--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
709B:						
Fairhaven, 32 to 40 inches to sand and gravel	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
717D:						
Napier	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.04	Slope	0.04	Slope	1.00
Gullied land	Not rated		Not rated		Not rated	
733:						
Calco	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
734:						
Holly Springs	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
734+:						
Holly Springs, overwash	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
740C:						
Hawick	Not limited		Not limited		Somewhat limited	
					Slope	0.88
740D:						
Hawick	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
740E:						
Hawick	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
740F:						
Hawick	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
750:						
Ticonic	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
754:						
Larpenteur	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

Table 12a.--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
810B:						
Galva, bench--------	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
810C2:						
Galva, bench, moderately eroded--	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Slope	0.88
					Shrink-swell	0.50
847B:						
Judson--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Rawles--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Shrink-swell	0.50	Depth to saturated zone	0.95	Shrink-swell	0.50
			Shrink-swell	0.50		
945:						
Albaton, depressional, drained-----------	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
1137:						
Haynie--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	0.16		
1144:						
Blake---------------	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
1146:						
Onawa---------------	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
1220:						
Nodaway, channeled--	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
			Depth to saturated zone	0.16		
1237B:						
Sarpy---------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00

Table 12a.--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
1237C:						
Sarpy	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
					Slope	0.88
1238:						
Sarpy	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
Morconick	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
1513:						
Grable	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
Morconick	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
1524:						
Morconick	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
1525:						
Scroll	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
2515:						
Percival	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
Albaton	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
3146:						
Onawa	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
Albaton	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
3275:						
Moville	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		

Table 12a.--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
3275:						
Holly Springs, overwash	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
3440:						
Blencoe	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	0.50	Shrink-swell	1.00
Woodbury	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
3513:						
Grable	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
Morconick	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
3549:						
Modale silty clay loam	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Shrink-swell	1.00	Depth to saturated zone	1.00	Shrink-swell	1.00
	Depth to saturated zone	0.39	Shrink-swell	1.00	Depth to saturated zone	0.39
Modale silt loam	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
3686:						
Napa	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
Luton	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
Tieville	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

Table 12a.--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
4000:						
Urban land	Not rated		Not rated		Not rated	
4001C:						
Ida	Not limited		Not limited		Somewhat limited	
					Slope	0.88
Urban land	Not rated		Not rated		Not rated	
4001D:						
Ida	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
Urban land	Not rated		Not rated		Not rated	
4001E:						
Ida	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Urban land	Not rated		Not rated		Not rated	
4001F:						
Ida	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Urban land	Not rated		Not rated		Not rated	
4010B:						
Monona	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Shrink-swell	0.50
Urban land	Not rated		Not rated		Not rated	
4010C:						
Monona	Somewhat limited		Not limited		Somewhat limited	
	Shrink-swell	0.50			Slope	0.88
					Shrink-swell	0.50
Urban land	Not rated		Not rated		Not rated	
4010D:						
Monona	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
	Shrink-swell	0.50			Shrink-swell	0.50
Urban land	Not rated		Not rated		Not rated	
4010E:						
Monona	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50			Shrink-swell	0.50
Urban land	Not rated		Not rated		Not rated	
4012B:						
Napier	Not limited		Not limited		Not limited	
Urban land	Not rated		Not rated		Not rated	

Table 12a.--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
4012C:						
Napier	Not limited		Not limited		Somewhat limited	
					Slope	0.88
Urban land	Not rated		Not rated		Not rated	
4170D:						
Napier	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
Castana	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Slope	1.00
Urban land	Not rated		Not rated		Not rated	
4600:						
Percival	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
Haynie	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	0.16		
Urban land	Not rated		Not rated		Not rated	
4670:						
Rawles	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Shrink-swell	0.50	Depth to saturated zone	0.95	Shrink-swell	0.50
			Shrink-swell	0.50		
Urban land	Not rated		Not rated		Not rated	
5010:						
Pits, sand and gravel	Not rated		Not rated		Not rated	
5040:						
Udorthents, loamy	Not rated		Not rated		Not rated	
5044:						
Fluvaquents	Not rated		Not rated		Not rated	
5060:						
Pits, clay	Not rated		Not rated		Not rated	
5080:						
Udorthents, sanitary landfill	Not rated		Not rated		Not rated	
SL:						
Sewage lagoons	Not rated		Not rated		Not rated	

Table 12a.--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
W:						
Water---------------	Not rated		Not rated		Not rated	

Table 12b.--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. "Not rated" indicates that data are not available or that no rating is applicable. 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
1B3:						
Ida, severely eroded	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
1C:						
Ida	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Low strength	1.00				
1C3:						
Ida, severely eroded	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
1D3:						
Ida, severely eroded	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Slope	0.63	Slope	0.63
	Slope	0.63	Cutbanks cave	0.10		
1E3:						
Ida, severely eroded	Very limited		Very limited		Very limited	
	Frost action	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Cutbanks cave	0.10		
1F:						
Ida	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				
1F3:						
Ida, severely eroded	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	1.00	Cutbanks cave	0.10		
1G:						
Ida	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	1.00	Cutbanks cave	0.10		
2G:						
Hamburg	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	1.00	Cutbanks cave	0.10		
3D:						
Castana	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Slope	0.63	Slope	0.63
	Slope	0.63	Cutbanks cave	0.10		
3E:						
Castana	Very limited		Very limited		Very limited	
	Frost action	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Cutbanks cave	0.10		

Table 12b.--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
8B:						
Judson	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
8C:						
Judson	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
10B:						
Monona	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
10B2:						
Monona, moderately eroded	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
10C2:						
Monona, moderately eroded	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
10D2:						
Monona, moderately eroded	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Slope	0.63	Slope	0.63
	Slope	0.63	Cutbanks cave	0.10		
10D3:						
Monona, severely eroded	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Slope	0.63	Slope	0.63
	Slope	0.63	Cutbanks cave	0.10		
10E:						
Monona	Very limited		Very limited		Very limited	
	Frost action	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
10E3:						
Monona, severely eroded	Very limited		Very limited		Very limited	
	Frost action	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Cutbanks cave	0.10		
10F:						
Monona	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Frost action	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
12B:						
Napier	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		

Table 12b.--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
12C:						
Napier	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
17B:						
Napier	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
Kennebec	Very limited		Somewhat limited		Very limited	
	Frost action	1.00	Flooding	0.80	Flooding	1.00
	Flooding	1.00	Depth to saturated zone	0.16		
	Shrink-swell	0.50	Cutbanks cave	0.10		
Colo	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		
26:						
Kennebec	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Flooding	0.60	Flooding	0.60
	Flooding	1.00	Depth to saturated zone	0.16		
			Cutbanks cave	0.10		
35F:						
Liston	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Cutbanks cave	0.10		
	Frost action	0.50				
Burchard	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Cutbanks cave	0.10		
	Frost action	0.50				
35G:						
Liston	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Cutbanks cave	0.10		
	Frost action	0.50				
Burchard	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Cutbanks cave	0.10		
	Frost action	0.50				
36:						
Salix	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Depth to saturated zone	0.16		
	Flooding	0.40	Cutbanks cave	0.10		
46:						
Keg	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Flooding	0.40				

Table 12b.--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
47B:						
Napier--------------	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
Rawles--------------	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	0.95	Flooding	1.00
	Flooding	1.00				
	Shrink-swell	0.50	Flooding	0.80		
			Cutbanks cave	0.10		
54:						
Zook----------------	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	Flooding	0.60	Flooding	0.60
	Flooding	1.00	Cutbanks cave	0.10		
59E:						
Burchard------------	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.96	Slope	0.96	Slope	0.96
	Shrink-swell	0.50	Cutbanks cave	0.10		
	Frost action	0.50				
66:						
Luton---------------	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	Too clayey	1.00	Too clayey	1.00
	Frost action	0.50	Cutbanks cave	0.10		
67:						
Woodbury------------	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	Too clayey	0.12	Too clayey	1.00
	Shrink-swell	1.00	Cutbanks cave	0.10		
100B:						
Monona--------------	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Low strength	1.00				
	Shrink-swell	0.50				
100C2:						
Monona, moderately eroded------------	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Low strength	1.00				
100D2:						
Monona, moderately eroded------------	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Slope	0.63	Slope	0.63
	Low strength	1.00	Cutbanks cave	0.10		
	Slope	0.63				

Table 12b.--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
100E2:						
Monona, moderately eroded	Very limited		Very limited		Very limited	
	Frost action	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00	Cutbanks cave	0.10		
	Slope	1.00				
101E2:						
Monona, moderately eroded	Very limited		Very limited		Very limited	
	Frost action	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Cutbanks cave	0.10		
Ida, moderately eroded	Very limited		Very limited		Very limited	
	Frost action	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Cutbanks cave	0.10		
123:						
Grantcenter	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		
	Flooding	0.40				
137:						
Haynie	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Depth to saturated zone	0.16		
	Flooding	0.40	Cutbanks cave	0.10		
144:						
Blake	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		
	Flooding	0.40				
156:						
Albaton	Very limited		Very limited		Very limited	
	Shrink-swell	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Too clayey	0.50	Too clayey	1.00
	Frost action	0.50	Cutbanks cave	0.10		
170E:						
Napier	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Slope	0.63	Slope	0.63
	Slope	0.63	Cutbanks cave	0.10		
Castana	Very limited		Very limited		Very limited	
	Frost action	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Cutbanks cave	0.10		
212:						
Kennebec	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Flooding	0.60	Flooding	0.60
	Flooding	1.00	Depth to saturated zone	0.16		
	Shrink-swell	0.50	Cutbanks cave	0.10		

Table 12b.--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
212+:						
Kennebec, overwash--	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Flooding	0.60	Flooding	0.60
	Flooding	1.00	Depth to saturated zone	0.16		
	Shrink-swell	0.50	Cutbanks cave	0.10		
220:						
Nodaway-------------	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Flooding	0.60	Flooding	0.60
	Flooding	1.00	Depth to saturated zone	0.16		
	Shrink-swell	0.50	Cutbanks cave	0.10		
237:						
Sarpy---------------	Somewhat limited		Very limited		Somewhat limited	
	Flooding	0.40	Cutbanks cave	1.00	Droughty	0.69
237B:						
Sarpy---------------	Somewhat limited		Very limited		Somewhat limited	
	Flooding	0.40	Cutbanks cave	1.00	Droughty	0.69
244:						
Blend---------------	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	Too clayey	1.00	Too clayey	1.00
	Shrink-swell	0.50	Cutbanks cave	0.10		
255:						
Cooper--------------	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	Too clayey	0.50		
	Shrink-swell	1.00	Cutbanks cave	0.10		
266:						
Smithland-----------	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	Flooding	0.60	Flooding	0.60
	Flooding	1.00	Cutbanks cave	0.10		
266+:						
Smithland, overwash	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	Flooding	0.60	Flooding	0.60
	Flooding	1.00	Cutbanks cave	0.10		
277B:						
Deloit--------------	Somewhat limited		Somewhat limited		Not limited	
	Frost action	0.50	Cutbanks cave	0.10		
277C:						
Deloit--------------	Somewhat limited		Somewhat limited		Not limited	
	Frost action	0.50	Cutbanks cave	0.10		

Table 12b.--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
277E:						
Deloit--------------	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.96	Slope	0.96	Slope	0.96
	Frost action	0.50	Cutbanks cave	0.10		
310B:						
Galva---------------	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
310C2:						
Galva, moderately eroded------------	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
366:						
Luton---------------	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	Too clayey	0.95		
	Frost action	0.50	Cutbanks cave	0.10		
436:						
Lakeport------------	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		
	Shrink-swell	1.00	Too clayey	0.08		
446:						
Burcham-------------	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	Too clayey	0.12		
	Low strength	1.00	Cutbanks cave	0.10		
465:						
Tieville------------	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	Too clayey	1.00	Too clayey	1.00
	Frost action	0.50	Cutbanks cave	0.10		
485:						
Spillville----------	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	1.00	Flooding	0.60
	Low strength	1.00			Depth to saturated zone	0.19
	Shrink-swell	0.50	Flooding	0.60		
			Cutbanks cave	0.10		
510:						
Monona, bench-------	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
510B:						
Monona, bench-------	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				

Table 12b.--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
510B2:						
Monona, bench, moderately eroded--	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
510C2:						
Monona, bench, moderately eroded--	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
515:						
Percival------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	0.50	Depth to saturated zone	1.00	Too clayey	1.00
	Flooding	0.40	Too clayey	0.50	Droughty	0.38
518:						
Morconick-----------	Somewhat limited		Very limited		Not limited	
	Flooding	0.40	Cutbanks cave	1.00		
527:						
Anthon--------------	Very limited		Very limited		Not limited	
	Frost action	1.00	Cutbanks cave	1.00		
527B:						
Anthon--------------	Very limited		Very limited		Not limited	
	Frost action	1.00	Cutbanks cave	1.00		
549:						
Modale silt loam----	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Flooding	0.60
	Low strength	1.00	Too clayey	1.00	Depth to saturated zone	0.19
	Flooding	1.00	Flooding	0.60		
Modale silty clay loam---------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Flooding	0.60
	Low strength	1.00	Too clayey	0.88	Depth to saturated zone	0.19
	Flooding	1.00	Flooding	0.60		
552:						
Owego---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Too clayey	0.99	Too clayey	1.00
	Frost action	0.50	Cutbanks cave	0.10		
630:						
Danbury-------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	0.95	Flooding	0.60
	Flooding	1.00	Flooding	0.60		
	Shrink-swell	0.50	Cutbanks cave	0.10		

Table 12b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
666B:						
Smithland-----------	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	Flooding	0.60	Flooding	0.60
	Flooding	1.00	Cutbanks cave	0.10		
Danbury------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	0.95	Flooding	0.60
	Flooding	1.00				
	Shrink-swell	0.50	Flooding	0.60		
			Cutbanks cave	0.10		
Judson-------------	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
670:						
Rawles-------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	0.95	Flooding	0.60
	Flooding	1.00				
	Shrink-swell	0.50	Flooding	0.60		
			Cutbanks cave	0.10		
700:						
Monona, bench-------	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
700B:						
Monona, bench-------	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
700C2:						
Monona, bench, moderately eroded--	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
700D2:						
Monona, bench, moderately eroded--	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Slope	0.63	Slope	0.63
	Low strength	1.00	Cutbanks cave	0.10		
	Slope	0.63				
701:						
Wilsey-------------	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Flooding	0.60	Flooding	0.60
	Flooding	1.00	Cutbanks cave	0.10		
709:						
Fairhaven, 32 to 40 inches to sand and gravel------------	Very limited		Very limited		Not limited	
	Low strength	1.00	Cutbanks cave	1.00		
	Shrink-swell	0.50				

Table 12b.--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
709B:						
Fairhaven, 32 to 40 inches to sand and gravel	Very limited		Very limited		Not limited	
	Low strength	1.00	Cutbanks cave	1.00		
	Shrink-swell	0.50				
717D:						
Napier	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Cutbanks cave	0.10	Slope	0.04
	Slope	0.04	Slope	0.04		
Gullied land	Not rated		Not rated		Not rated	
733:						
Calco	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	Flooding	0.60	Flooding	0.60
	Flooding	1.00	Cutbanks cave	0.10		
734:						
Holly Springs	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	Too clayey	1.00		
	Shrink-swell	1.00	Cutbanks cave	0.10		
734+:						
Holly Springs, overwash	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	Too clayey	0.98		
	Shrink-swell	1.00	Cutbanks cave	0.10		
740C:						
Hawick	Not limited		Very limited		Somewhat limited	
			Cutbanks cave	1.00	Droughty	0.95
740D:						
Hawick	Somewhat limited		Very limited		Somewhat limited	
	Slope	0.63	Cutbanks cave	1.00	Droughty	0.95
			Slope	0.63	Slope	0.63
740E:						
Hawick	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
			Slope	1.00	Droughty	0.95
740F:						
Hawick	Very limited		Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00	Slope	1.00
			Slope	1.00	Droughty	0.95
750:						
Ticonic	Somewhat limited		Very limited		Somewhat limited	
	Flooding	0.40	Cutbanks cave	1.00	Droughty	0.69

Table 12b.--Building Site Development--Continued

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
754:						
Larpenteur----------	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		
	Flooding	0.40				
810B:						
Galva, bench--------	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
810C2:						
Galva, bench, moderately eroded--	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
847B:						
Judson--------------	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
Rawles--------------	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	0.95	Flooding	1.00
	Flooding	1.00				
	Shrink-swell	0.50	Flooding	0.80		
			Cutbanks cave	0.10		
945:						
Albaton, depressional, drained-----------	Very limited		Very limited		Very limited	
	Shrink-swell	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Depth to saturated zone	1.00			Depth to saturated zone	1.00
			Ponding	1.00		
	Frost action	1.00	Flooding	0.80	Too clayey	1.00
1137:						
Haynie--------------	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Flooding	0.60	Flooding	0.60
	Flooding	1.00	Depth to saturated zone	0.16		
			Cutbanks cave	0.10		
1144:						
Blake---------------	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	Flooding	0.60	Flooding	0.60
	Flooding	1.00	Cutbanks cave	0.10		
1146:						
Onawa---------------	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	Too clayey	0.88	Too clayey	1.00
	Flooding	1.00	Flooding	0.60	Flooding	0.60

Table 12b.--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
1220:						
Nodaway, channeled--	Very limited		Somewhat limited		Very limited	
	Frost action	1.00	Flooding	0.80	Flooding	1.00
	Flooding	1.00	Depth to saturated zone	0.16		
	Shrink-swell	0.50	Cutbanks cave	0.10		
1237B:						
Sarpy---------------	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Cutbanks cave	1.00	Droughty	0.69
			Flooding	0.60	Flooding	0.60
1237C:						
Sarpy---------------	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Cutbanks cave	1.00	Droughty	0.69
			Flooding	0.60	Flooding	0.60
1238:						
Sarpy---------------	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Cutbanks cave	1.00	Droughty	0.69
			Flooding	0.60	Flooding	0.60
Morconick-----------	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
			Flooding	0.60		
1513:						
Grable--------------	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
			Flooding	0.60		
Morconick-----------	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
			Flooding	0.60		
1524:						
Morconick-----------	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
			Flooding	0.60		
1525:						
Scroll--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Frost action	0.50	Flooding	0.60	Droughty	0.88
2515:						
Percival------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Frost action	0.50	Flooding	0.60	Flooding	0.60
Albaton-------------	Very limited		Very limited		Very limited	
	Shrink-swell	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	0.60	Too clayey	1.00
	Flooding	1.00	Too clayey	0.50	Flooding	0.60

Table 12b.--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
3146:						
Onawa---------------	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	Too clayey	0.88	Too clayey	1.00
	Shrink-swell	1.00	Cutbanks cave	0.10		
Albaton-------------	Very limited		Very limited		Very limited	
	Shrink-swell	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Too clayey	0.50	Too clayey	1.00
	Frost action	0.50	Cutbanks cave	0.10		
3275:						
Moville-------------	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	Too clayey	1.00		
	Low strength	1.00	Cutbanks cave	0.10		
Holly Springs, overwash-----------	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	Too clayey	0.98		
	Shrink-swell	1.00	Cutbanks cave	0.10		
3440:						
Blencoe-------------	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	Too clayey	0.28	Too clayey	1.00
	Low strength	1.00	Cutbanks cave	0.10		
Woodbury------------	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	Too clayey	0.12	Too clayey	1.00
	Shrink-swell	1.00	Cutbanks cave	0.10		
3513:						
Grable--------------	Somewhat limited		Very limited		Not limited	
	Flooding	0.40	Cutbanks cave	1.00		
Morconick-----------	Somewhat limited		Very limited		Not limited	
	Flooding	0.40	Cutbanks cave	1.00		
3549:						
Modale silty clay loam---------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.19
	Shrink-swell	1.00				
	Low strength	1.00	Too clayey	1.00		
			Cutbanks cave	0.10		
Modale silt loam----	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	Too clayey	1.00		
	Low strength	1.00	Cutbanks cave	0.10		

Table 12b.--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
3686:						
Napa	Very limited		Very limited		Very limited	
	Shrink-swell	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Depth to saturated zone	1.00	Too clayey	0.72	Depth to saturated zone	1.00
	Low strength	1.00	Cutbanks cave	0.10	Salinity	1.00
Luton	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	Too clayey	1.00	Too clayey	1.00
	Frost action	0.50	Cutbanks cave	0.10		
Tieville	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	Too clayey	1.00	Too clayey	1.00
	Frost action	0.50	Cutbanks cave	0.10		
4000:						
Urban land	Not rated		Not rated		Not rated	
4001C:						
Ida	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Low strength	1.00				
Urban land	Not rated		Not rated		Not rated	
4001D:						
Ida	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Slope	0.63	Slope	0.63
	Slope	0.63	Cutbanks cave	0.10		
Urban land	Not rated		Not rated		Not rated	
4001E:						
Ida	Very limited		Very limited		Very limited	
	Frost action	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Cutbanks cave	0.10		
Urban land	Not rated		Not rated		Not rated	
4001F:						
Ida	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				
Urban land	Not rated		Not rated		Not rated	
4010B:						
Monona	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
Urban land	Not rated		Not rated		Not rated	

Table 12b.--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
4010C:						
Monona	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
Urban land	Not rated		Not rated		Not rated	
4010D:						
Monona	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Slope	0.63	Slope	0.63
	Slope	0.63	Cutbanks cave	0.10		
	Shrink-swell	0.50				
Urban land	Not rated		Not rated		Not rated	
4010E:						
Monona	Very limited		Very limited		Very limited	
	Frost action	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
Urban land	Not rated		Not rated		Not rated	
4012B:						
Napier	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
Urban land	Not rated		Not rated		Not rated	
4012C:						
Napier	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Cutbanks cave	0.10		
Urban land	Not rated		Not rated		Not rated	
4170D:						
Napier	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Slope	0.63	Slope	0.63
	Slope	0.63	Cutbanks cave	0.10		
Castana	Very limited		Somewhat limited		Somewhat limited	
	Frost action	1.00	Slope	0.63	Slope	0.63
	Slope	0.63	Cutbanks cave	0.10		
Urban land	Not rated		Not rated		Not rated	
4600:						
Percival	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	0.50	Depth to saturated zone	1.00	Too clayey	1.00
	Flooding	0.40	Too clayey	0.50	Droughty	0.38
Haynie	Very limited		Somewhat limited		Not limited	
	Frost action	1.00	Depth to saturated zone	0.16		
	Flooding	0.40	Cutbanks cave	0.10		
Urban land	Not rated		Not rated		Not rated	

Table 12b.--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
4670:						
Rawles	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	0.95	Flooding	0.60
	Flooding	1.00	Flooding	0.60		
	Shrink-swell	0.50	Cutbanks cave	0.10		
Urban land	Not rated		Not rated		Not rated	
5010:						
Pits, sand and gravel	Not rated		Not rated		Not rated	
5040:						
Udorthents, loamy	Not rated		Not rated		Not rated	
5044:						
Fluvaquents	Not rated		Not rated		Not rated	
5060:						
Pits, clay	Not rated		Not rated		Not rated	
5080:						
Udorthents, sanitary landfill	Not rated		Not rated		Not rated	
SL:						
Sewage lagoons	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	

Table 13a.--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. "Not rated" indicates that data are not available or that no rating is applicable. 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
1B3:				
Ida, severely eroded	Somewhat limited		Somewhat limited	
	Restricted permeability	0.46	Seepage	0.53
			Slope	0.32
1C:				
Ida	Somewhat limited		Very limited	
	Restricted permeability	0.50	Slope	1.00
			Seepage	0.50
1C3:				
Ida, severely eroded	Somewhat limited		Very limited	
	Restricted permeability	0.50	Slope	1.00
			Seepage	0.50
1D3:				
Ida, severely eroded	Somewhat limited		Very limited	
	Slope	0.63	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
1E3:				
Ida, severely eroded	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
1F:				
Ida	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
1F3:				
Ida, severely eroded	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
1G:				
Ida	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
2G:				
Hamburg	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50

Table 13a.--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
3D:				
Castana-------------	Somewhat limited		Very limited	
	Slope	0.63	Slope	1.00
	Restricted permeability	0.46	Seepage	0.53
3E:				
Castana-------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.46	Seepage	0.53
8B:				
Judson--------------	Somewhat limited		Somewhat limited	
	Restricted permeability	0.46	Seepage	0.53
			Slope	0.08
8C:				
Judson--------------	Somewhat limited		Very limited	
	Restricted permeability	0.46	Slope	1.00
			Seepage	0.53
10B:				
Monona--------------	Somewhat limited		Somewhat limited	
	Restricted permeability	0.50	Seepage	0.50
			Slope	0.32
10B2:				
Monona, moderately eroded------------	Somewhat limited		Somewhat limited	
	Restricted permeability	0.46	Seepage	0.53
			Slope	0.32
10C2:				
Monona, moderately eroded------------	Somewhat limited		Very limited	
	Restricted permeability	0.46	Slope	1.00
			Seepage	0.53
10D2:				
Monona, moderately eroded------------	Somewhat limited		Very limited	
	Slope	0.63	Slope	1.00
	Restricted permeability	0.46	Seepage	0.53
10D3:				
Monona, severely eroded------------	Somewhat limited		Very limited	
	Slope	0.63	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
10E:				
Monona--------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50

Table 13a.--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
10E3:				
Monona, severely eroded	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
10F:				
Monona	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
12B:				
Napier	Somewhat limited		Somewhat limited	
	Restricted permeability	0.46	Seepage	0.53
			Slope	0.32
12C:				
Napier	Somewhat limited		Very limited	
	Restricted permeability	0.46	Slope	1.00
			Seepage	0.53
17B:				
Napier	Somewhat limited		Somewhat limited	
	Restricted permeability	0.46	Seepage	0.53
			Slope	0.32
Kennebec	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	0.53
	Depth to saturated zone	0.43		
Colo	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.50	Seepage	0.50
26:				
Kennebec	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	0.53
	Depth to saturated zone	0.43		
35F:				
Liston	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	1.00		
Burchard	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	1.00		

Table 13a.--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
35G:				
Liston	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	1.00		
Burchard	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	1.00		
36:				
Salix	Somewhat limited		Somewhat limited	
	Restricted permeability	0.50	Seepage	0.50
	Depth to saturated zone	0.43	Flooding	0.40
	Flooding	0.40		
46:				
Keg	Somewhat limited		Not rated	
	Restricted permeability	0.50		
	Flooding	0.40		
47B:				
Napier	Somewhat limited		Somewhat limited	
	Restricted permeability	0.46	Seepage	0.53
			Slope	0.32
Rawles	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	0.53
54:				
Zook	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
59E:				
Burchard	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	0.96		
66:				
Luton	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	0.40
	Flooding	0.40		

Table 13a.--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
67:				
Woodbury	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	0.40
	Flooding	0.40		
100B:				
Monona	Somewhat limited		Somewhat limited	
	Restricted permeability	0.50	Seepage	0.50
			Slope	0.08
100C2:				
Monona, moderately eroded	Somewhat limited		Very limited	
	Restricted permeability	0.50	Slope	1.00
			Seepage	0.50
100D2:				
Monona, moderately eroded	Somewhat limited		Very limited	
	Slope	0.63	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
100E2:				
Monona, moderately eroded	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
101E2:				
Monona, moderately eroded	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
Ida, moderately eroded	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
123:				
Grantcenter	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	0.53
	Flooding	0.40	Flooding	0.40
137:				
Haynie	Somewhat limited		Somewhat limited	
	Restricted permeability	0.46	Seepage	0.53
	Depth to saturated zone	0.43	Flooding	0.40
	Flooding	0.40		

Table 13a.--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
144:				
Blake	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.50	Seepage	0.50
	Flooding	0.40	Flooding	0.40
156:				
Albaton	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	0.40
	Flooding	0.40		
170E:				
Napier	Somewhat limited		Very limited	
	Slope	0.63	Slope	1.00
	Restricted permeability	0.46	Seepage	0.53
Castana	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.46	Seepage	0.53
212:				
Kennebec	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	0.53
	Depth to saturated zone	0.43		
212+:				
Kennebec, overwash	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	0.53
	Depth to saturated zone	0.43		
220:				
Nodaway	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.50	Seepage	0.50
	Depth to saturated zone	0.43		
237:				
Sarpy	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
	Flooding	0.40	Flooding	0.40
237B:				
Sarpy	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
	Flooding	0.40	Flooding	0.40
			Slope	0.32

Table 13a.--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
244:				
Blend	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
	Flooding	0.40	Flooding	0.40
255:				
Cooper	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.50
	Flooding	0.40	Flooding	0.40
266:				
Smithland	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.50	Seepage	0.50
266+:				
Smithland, overwash	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.50	Seepage	0.50
277B:				
Deloit	Somewhat limited		Somewhat limited	
	Restricted permeability	0.46	Seepage	0.53
			Slope	0.32
277C:				
Deloit	Somewhat limited		Very limited	
	Restricted permeability	0.46	Slope	1.00
			Seepage	0.53
277E:				
Deloit	Somewhat limited		Very limited	
	Slope	0.96	Slope	1.00
	Restricted permeability	0.46	Seepage	0.53
310B:				
Galva	Somewhat limited		Somewhat limited	
	Restricted permeability	0.46	Seepage	0.53
			Slope	0.32
310C2:				
Galva, moderately eroded	Somewhat limited		Very limited	
	Restricted permeability	0.50	Slope	1.00
			Seepage	0.50

Table 13a.--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
366:				
Luton	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.50
			Flooding	0.40
	Flooding	0.40		
436:				
Lakeport	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.68	Seepage	0.50
			Flooding	0.40
	Flooding	0.40		
446:				
Burcham	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.50
			Flooding	0.40
	Flooding	0.40		
465:				
Tieville	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	0.40
	Flooding	0.40		
485:				
Spillville	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	0.53
510:				
Monona, bench	Somewhat limited		Somewhat limited	
	Restricted permeability	0.50	Seepage	0.50
510B:				
Monona, bench	Somewhat limited		Somewhat limited	
	Restricted permeability	0.50	Seepage	0.50
			Slope	0.08
510B2:				
Monona, bench, moderately eroded	Somewhat limited		Somewhat limited	
	Restricted permeability	0.46	Seepage	0.53
			Slope	0.08
510C2:				
Monona, bench, moderately eroded	Somewhat limited		Not rated	
	Restricted permeability	0.50		

Table 13a.--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
515:				
Percival------------	Very limited		Very limited	
	Restricted permeability	1.00	Seepage	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Flooding	0.40
518:				
Morconick-----------	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Seepage	1.00	Flooding	0.40
	Flooding	0.40		
527:				
Anthon--------------	Very limited		Somewhat limited	
	Filtering capacity	1.00	Seepage	0.53
	Seepage	1.00		
	Restricted permeability	0.46		
527B:				
Anthon--------------	Very limited		Somewhat limited	
	Filtering capacity	1.00	Seepage	0.53
			Slope	0.32
	Seepage	1.00		
	Restricted permeability	0.46		
549:				
Modale silt loam----	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.50
Modale silty clay loam---------------	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.50
552:				
Owego---------------	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
	Flooding	0.40	Flooding	0.40

Table 13a.--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
630:				
Danbury	Very limited		Not rated	
	Flooding	1.00		
	Depth to saturated zone	1.00		
	Restricted permeability	1.00		
666B:				
Smithland	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.50	Seepage	0.50
Danbury	Very limited		Not rated	
	Flooding	1.00		
	Depth to saturated zone	1.00		
	Restricted permeability	1.00		
Judson	Somewhat limited		Somewhat limited	
	Restricted permeability	0.46	Seepage	0.53
			Slope	0.32
670:				
Rawles	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	0.53
700:				
Monona, bench	Somewhat limited		Somewhat limited	
	Restricted permeability	0.46	Seepage	0.53
700B:				
Monona, bench	Somewhat limited		Somewhat limited	
	Restricted permeability	0.46	Seepage	0.53
			Slope	0.32
700C2:				
Monona, bench, moderately eroded	Somewhat limited		Very limited	
	Restricted permeability	0.46	Slope	1.00
			Seepage	0.53
700D2:				
Monona, bench, moderately eroded	Somewhat limited		Very limited	
	Slope	0.63	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50

Table 13a.--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
701:				
Wilsey	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	0.53
709:				
Fairhaven, 32 to 40 inches to sand and gravel	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Seepage	1.00		
	Restricted permeability	0.46		
709B:				
Fairhaven, 32 to 40 inches to sand and gravel	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.08
	Seepage	1.00		
	Restricted permeability	0.46		
717D:				
Napier	Somewhat limited		Very limited	
	Restricted permeability	0.46	Slope	1.00
			Seepage	0.53
	Slope	0.04		
Gullied land	Not rated		Not rated	
733:				
Calco	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.50	Seepage	0.50
734:				
Holly Springs	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	0.40
	Flooding	0.40		
734+:				
Holly Springs, overwash	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	0.40
	Flooding	0.40		

Table 13a.--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
740C:				
Hawick	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Seepage	1.00	Slope	1.00
740D:				
Hawick	Very limited		Very limited	
	Filtering capacity	1.00	Slope	1.00
	Seepage	1.00	Seepage	1.00
	Slope	0.63		
740E:				
Hawick	Very limited		Very limited	
	Filtering capacity	1.00	Slope	1.00
	Seepage	1.00	Seepage	1.00
	Slope	1.00		
740F:				
Hawick	Very limited		Very limited	
	Filtering capacity	1.00	Slope	1.00
	Slope	1.00	Seepage	1.00
	Seepage	1.00		
750:				
Ticonic	Somewhat limited		Not rated	
	Restricted permeability	0.50		
	Flooding	0.40		
754:				
Larpenteur	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.50	Seepage	0.50
	Flooding	0.40	Flooding	0.40
810B:				
Galva, bench	Somewhat limited		Somewhat limited	
	Restricted permeability	0.46	Seepage	0.53
			Slope	0.08
810C2:				
Galva, bench, moderately eroded	Somewhat limited		Very limited	
	Restricted permeability	0.50	Slope	1.00
			Seepage	0.50
847B:				
Judson	Somewhat limited		Somewhat limited	
	Restricted permeability	0.46	Seepage	0.53
			Slope	0.32

Table 13a.--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
847B:				
Rawles	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	0.53
945:				
Albaton, depressional, drained	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Ponding	1.00
1137:				
Haynie	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	0.53
	Depth to saturated zone	0.43		
1144:				
Blake	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.50	Seepage	0.50
1146:				
Onawa	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
1220:				
Nodaway, channeled	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.50	Seepage	0.50
	Depth to saturated zone	0.43		
1237B:				
Sarpy	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Seepage	1.00	Seepage	1.00
			Slope	0.32

Table 13a.--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
1237C:				
Sarpy	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Filtering capacity	1.00	Seepage	1.00
			Slope	1.00
	Seepage	1.00		
1238:				
Sarpy	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Seepage	1.00	Seepage	1.00
Morconick	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Filtering capacity	1.00	Seepage	1.00
	Seepage	1.00		
1513:				
Grable	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Seepage	1.00	Seepage	1.00
Morconick	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Filtering capacity	1.00	Seepage	1.00
	Seepage	1.00		
1524:				
Morconick	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Filtering capacity	1.00	Seepage	1.00
	Seepage	1.00		
1525:				
Scroll	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Seepage	1.00
			Depth to saturated zone	1.00
	Filtering capacity	1.00		
2515:				
Percival	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	1.00	Seepage	1.00
			Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
Albaton	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		

Table 13a.--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
3146:				
Onawa	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Flooding	0.40
Albaton	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	0.40
	Flooding	0.40		
3275:				
Moville	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.53
	Flooding	0.40	Flooding	0.40
Holly Springs, overwash	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	0.40
	Flooding	0.40		
3440:				
Blencoe	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.50
	Flooding	0.40	Flooding	0.40
Woodbury	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	0.40
	Flooding	0.40		
3513:				
Grable	Very limited		Very limited	
	Seepage	1.00	Seepage	1.00
	Flooding	0.40	Flooding	0.40
Morconick	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Seepage	1.00	Flooding	0.40
	Flooding	0.40		

Table 13a.--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
3549:				
Modale silty clay loam	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.50
	Flooding	0.40	Flooding	0.40
Modale silt loam	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Seepage	0.50
	Flooding	0.40	Flooding	0.40
3686:				
Napa	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	0.40
	Flooding	0.40		
Luton	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	0.40
	Flooding	0.40		
Tieville	Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Flooding	0.40
	Flooding	0.40		
4000:				
Urban land	Not rated		Not rated	
4001C:				
Ida	Somewhat limited		Very limited	
	Restricted permeability	0.50	Slope	1.00
			Seepage	0.50
Urban land	Not rated		Not rated	
4001D:				
Ida	Somewhat limited		Very limited	
	Slope	0.63	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
Urban land	Not rated		Not rated	

Table 13a.--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
4001E:				
Ida-----------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
Urban land----------	Not rated		Not rated	
4001F:				
Ida-----------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
Urban land----------	Not rated		Not rated	
4010B:				
Monona--------------	Somewhat limited		Somewhat limited	
	Restricted permeability	0.50	Seepage	0.50
			Slope	0.32
Urban land----------	Not rated		Not rated	
4010C:				
Monona--------------	Somewhat limited		Very limited	
	Restricted permeability	0.50	Slope	1.00
			Seepage	0.50
Urban land----------	Not rated		Not rated	
4010D:				
Monona--------------	Somewhat limited		Very limited	
	Slope	0.63	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
Urban land----------	Not rated		Not rated	
4010E:				
Monona--------------	Very limited		Very limited	
	Slope	1.00	Slope	1.00
	Restricted permeability	0.50	Seepage	0.50
Urban land----------	Not rated		Not rated	
4012B:				
Napier--------------	Somewhat limited		Somewhat limited	
	Restricted permeability	0.46	Seepage	0.53
			Slope	0.32
Urban land----------	Not rated		Not rated	
4012C:				
Napier--------------	Somewhat limited		Very limited	
	Restricted permeability	0.46	Slope	1.00
			Seepage	0.53
Urban land----------	Not rated		Not rated	

Table 13a.--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
4170D:				
Napier	Somewhat limited		Very limited	
	Slope	0.63	Slope	1.00
	Restricted permeability	0.46	Seepage	0.53
Castana	Somewhat limited		Very limited	
	Slope	0.63	Slope	1.00
	Restricted permeability	0.46	Seepage	0.53
Urban land	Not rated		Not rated	
4600:				
Percival	Very limited		Very limited	
	Restricted permeability	1.00	Seepage	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Flooding	0.40
Haynie	Somewhat limited		Not rated	
	Restricted permeability	0.46		
	Depth to saturated zone	0.43		
	Flooding	0.40		
Urban land	Not rated		Not rated	
4670:				
Rawles	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	0.53
Urban land	Not rated		Not rated	
5010:				
Pits, sand and gravel	Not rated		Not rated	
5040:				
Udorthents, loamy	Not rated		Not rated	
5044:				
Fluvaquents	Not rated		Not rated	
5060:				
Pits, clay	Not rated		Not rated	
5080:				
Udorthents, sanitary landfill	Not rated		Not rated	
SL:				
Sewage lagoons	Not rated		Not rated	

Table 13a.--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
W:				
Water---------------	Not rated		Not rated	

Table 13b.--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. "Not rated" indicates that data are not available or that no rating is applicable. 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
1B3:						
Ida, severely eroded	Not limited		Not limited		Not limited	
1C:						
Ida	Not limited		Not limited		Not limited	
1C3:						
Ida, severely eroded	Not limited		Not limited		Not limited	
1D3:						
Ida, severely eroded	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
1E3:						
Ida, severely eroded	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
1F:						
Ida	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
1F3:						
Ida, severely eroded	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
1G:						
Ida	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
2G:						
Hamburg	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
3D:						
Castana	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
3E:						
Castana	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
8B:						
Judson	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
8C:						
Judson	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
10B:						
Monona	Not limited		Not limited		Not limited	

Table 13b.--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
10B2:						
Monona, moderately eroded	Not limited		Not limited		Not limited	
10C2:						
Monona, moderately eroded	Not limited		Not limited		Not limited	
10D2:						
Monona, moderately eroded	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
10D3:						
Monona, severely eroded	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
10E:						
Monona	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
10E3:						
Monona, severely eroded	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
10F:						
Monona	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
12B:						
Napier	Not limited		Not limited		Not limited	
12C:						
Napier	Not limited		Not limited		Not limited	
17B:						
Napier	Not limited		Not limited		Not limited	
Kennebec	Very limited		Very limited		Not limited	
	Flooding	1.00	Flooding	1.00		
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
Colo	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
26:						
Kennebec	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Too clayey	0.50
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Too clayey	0.50				

Table 13b.--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
35F:						
Liston	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50
Burchard	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50
35G:						
Liston	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50
Burchard	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	0.50			Too clayey	0.50
36:						
Salix	Very limited		Very limited		Not limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Flooding	0.40	Flooding	0.40		
46:						
Keg	Somewhat limited		Somewhat limited		Not rated	
	Flooding	0.40	Flooding	0.40		
47B:						
Napier	Not limited		Not limited		Not limited	
Rawles	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Too clayey	0.50
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.11
	Too clayey	0.50				
54:						
Zook	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			Hard to compact	1.00
59E:						
Burchard	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.96	Slope	0.96	Slope	0.96
	Too clayey	0.50			Too clayey	0.50
66:						
Luton	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	Flooding	0.40	Too clayey	1.00
	Flooding	0.40			Hard to compact	1.00

Table 13b.--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
67:						
Woodbury	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	Flooding	0.40	Too clayey	1.00
	Flooding	0.40			Hard to compact	1.00
100B:						
Monona	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
100C2:						
Monona, moderately eroded	Not limited		Not limited		Not limited	
100D2:						
Monona, moderately eroded	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
100E2:						
Monona, moderately eroded	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
101E2:						
Monona, moderately eroded	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Ida, moderately eroded	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
123:						
Grantcenter	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	0.40	Flooding	0.40		
137:						
Haynie	Very limited		Very limited		Not limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Flooding	0.40	Flooding	0.40		
144:						
Blake	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	0.40	Flooding	0.40		
156:						
Albaton	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	Flooding	0.40	Too clayey	1.00
	Flooding	0.40			Hard to compact	1.00

Table 13b.--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
170E:						
Napier	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
Castana	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
212:						
Kennebec	Very limited		Very limited		Not limited	
	Flooding	1.00	Flooding	1.00		
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
212+:						
Kennebec, overwash	Very limited		Very limited		Not limited	
	Flooding	1.00	Flooding	1.00		
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
220:						
Nodaway	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Too clayey	0.50
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Too clayey	0.50				
237:						
Sarpy	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				
237B:						
Sarpy	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				
244:						
Blend	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50	Flooding	0.40	Too clayey	0.50
	Flooding	0.40				
255:						
Cooper	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	Flooding	0.40	Too clayey	1.00
	Flooding	0.40			Hard to compact	1.00
266:						
Smithland	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				

Table 13b.--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
266+:						
Smithland, overwash	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
277B:						
Deloit---------------	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
277C:						
Deloit---------------	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
277E:						
Deloit---------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.96	Slope	0.96	Slope	0.96
	Too clayey	0.50			Too clayey	0.50
310B:						
Galva----------------	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
310C2:						
Galva, moderately eroded------------	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
366:						
Luton----------------	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	Flooding	0.40	Too clayey	1.00
	Flooding	0.40			Hard to compact	1.00
436:						
Lakeport------------	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	Flooding	0.40	Too clayey	0.50
	Flooding	0.40				
446:						
Burcham-------------	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	Flooding	0.40	Too clayey	1.00
	Flooding	0.40			Hard to compact	1.00
465:						
Tieville------------	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	Flooding	0.40	Too clayey	1.00
	Flooding	0.40			Hard to compact	1.00

Table 13b.--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
485:						
Spillville	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.86
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
510:						
Monona, bench	Not limited		Not limited		Not limited	
510B:						
Monona, bench	Not limited		Not limited		Not limited	
510B2:						
Monona, bench, moderately eroded	Not limited		Not limited		Not limited	
510C2:						
Monona, bench, moderately eroded	Not limited		Not limited		Not rated	
515:						
Percival	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	Flooding	0.40	Seepage	1.00
518:						
Morconick	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				
527:						
Anthon	Very limited		Not limited		Very limited	
	Seepage	1.00			Seepage	1.00
	Too clayey	0.50			Too clayey	0.50
527B:						
Anthon	Very limited		Not limited		Very limited	
	Seepage	1.00			Seepage	1.00
	Too clayey	0.50			Too clayey	0.50
549:						
Modale silt loam	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Too clayey	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Hard to compact	1.00
	Too clayey	1.00			Depth to saturated zone	0.86
Modale silty clay loam	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Too clayey	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Hard to compact	1.00
	Too clayey	1.00			Depth to saturated zone	0.86

Table 13b.--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
552:						
Owego	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	Flooding	0.40	Too clayey	1.00
	Flooding	0.40			Hard to compact	1.00
630:						
Danbury	Very limited		Very limited		Not rated	
	Flooding	1.00	Flooding	1.00		
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Too clayey	0.50				
666B:						
Smithland	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
Danbury	Very limited		Very limited		Not rated	
	Flooding	1.00	Flooding	1.00		
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Too clayey	0.50				
Judson	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
670:						
Rawles	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Too clayey	0.50
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.11
	Too clayey	0.50				
700:						
Monona, bench	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
700B:						
Monona, bench	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
700C2:						
Monona, bench, moderately eroded	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
700D2:						
Monona, bench, moderately eroded	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
701:						
Wilsey	Very limited		Very limited		Not limited	
	Flooding	1.00	Flooding	1.00		

Table 13b.--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
709:						
Fairhaven, 32 to 40 inches to sand and gravel-------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	0.50			Too sandy	0.50
709B:						
Fairhaven, 32 to 40 inches to sand and gravel-------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	0.50			Too sandy	0.50
717D:						
Napier--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.04	Slope	0.04	Slope	0.04
Gullied land--------	Not rated		Not rated		Not rated	
733:						
Calco---------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
734:						
Holly Springs-------	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	Flooding	0.40	Too clayey	1.00
	Flooding	0.40			Hard to compact	1.00
734+:						
Holly Springs, overwash-----------	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	Flooding	0.40	Too clayey	1.00
	Flooding	0.40			Hard to compact	1.00
740C:						
Hawick--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00			Seepage	1.00
740D:						
Hawick--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00	Slope	0.63	Seepage	1.00
	Slope	0.63			Slope	0.63
740E:						
Hawick--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00	Slope	1.00	Seepage	1.00
	Slope	1.00			Slope	1.00

Table 13b.--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
740F:						
Hawick	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00			Seepage	1.00
750:						
Ticonic	Somewhat limited		Very limited		Not rated	
	Flooding	0.40	Seepage	1.00		
			Flooding	0.40		
754:						
Larpenteur	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	0.40	Flooding	0.40		
810B:						
Galva, bench	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
810C2:						
Galva, bench, moderately eroded	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
847B:						
Judson	Somewhat limited		Not limited		Somewhat limited	
	Too clayey	0.50			Too clayey	0.50
Rawles	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Too clayey	0.50
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.11
	Too clayey	0.50				
945:						
Albaton, depressional, drained	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
1137:						
Haynie	Very limited		Very limited		Not limited	
	Flooding	1.00	Flooding	1.00		
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
1144:						
Blake	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		

Table 13b.--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
1146:						
Onawa	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
	Seepage	1.00	Seepage	1.00	Seepage	0.21
1220:						
Nodaway, channeled	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Too clayey	0.50
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Too clayey	0.50				
1237B:						
Sarpy	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Too sandy	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	1.00				
1237C:						
Sarpy	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Too sandy	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	1.00				
1238:						
Sarpy	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Too sandy	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	1.00				
Morconick	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Too sandy	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	1.00				
1513:						
Grable	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Too sandy	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	1.00				
Morconick	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Too sandy	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	1.00				
1524:						
Morconick	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Too sandy	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	1.00				
1525:						
Scroll	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Seepage	1.00	Too sandy	0.50

Table 13b.--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
2515:						
Percival------------	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 sandy	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
Albaton-------------	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			Hard to compact	1.00
3146:						
Onawa---------------	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 clayey	1.00
	Flooding	0.40	Flooding	0.40	Seepage	0.21
Albaton-------------	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	Flooding	0.40	Too clayey	1.00
	Flooding	0.40			Hard to compact	1.00
3275:						
Moville-------------	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	Flooding	0.40	Too clayey	1.00
	Flooding	0.40			Hard to compact	1.00
Holly Springs, overwash-----------	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	Flooding	0.40	Too clayey	1.00
	Flooding	0.40			Hard to compact	1.00
3440:						
Blencoe-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	0.40	Flooding	0.40		
Woodbury------------	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	Flooding	0.40	Too clayey	1.00
	Flooding	0.40			Hard to compact	1.00
3513:						
Grable--------------	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 13b.--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
3513:						
Morconick	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				
3549:						
Modale silty clay loam	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	1.00
					Hard to compact	1.00
	Too clayey	1.00	Flooding	0.40	Depth to saturated zone	0.86
	Flooding	0.40				
Modale silt loam	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	Flooding	0.40	Too clayey	1.00
	Flooding	0.40			Hard to compact	1.00
3686:						
Napa	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	Flooding	0.40	Too clayey	1.00
	Flooding	0.40			Hard to compact	1.00
Luton	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	Flooding	0.40	Too clayey	1.00
	Flooding	0.40			Hard to compact	1.00
Tieville	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	Flooding	0.40	Too clayey	1.00
	Flooding	0.40			Hard to compact	1.00
4000:						
Urban land	Not rated		Not rated		Not rated	
4001C:						
Ida	Not limited		Not limited		Not limited	
Urban land	Not rated		Not rated		Not rated	
4001D:						
Ida	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
Urban land	Not rated		Not rated		Not rated	
4001E:						
Ida	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Urban land	Not rated		Not rated		Not rated	

Table 13b.--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
4001F:						
Ida	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Urban land	Not rated		Not rated		Not rated	
4010B:						
Monona	Not limited		Not limited		Not limited	
Urban land	Not rated		Not rated		Not rated	
4010C:						
Monona	Not limited		Not limited		Not limited	
Urban land	Not rated		Not rated		Not rated	
4010D:						
Monona	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
Urban land	Not rated		Not rated		Not rated	
4010E:						
Monona	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
Urban land	Not rated		Not rated		Not rated	
4012B:						
Napier	Not limited		Not limited		Not limited	
Urban land	Not rated		Not rated		Not rated	
4012C:						
Napier	Not limited		Not limited		Not limited	
Urban land	Not rated		Not rated		Not rated	
4170D:						
Napier	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
Castana	Somewhat limited		Somewhat limited		Somewhat limited	
	Slope	0.63	Slope	0.63	Slope	0.63
Urban land	Not rated		Not rated		Not rated	
4600:						
Percival	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	Flooding	0.40	Seepage	1.00
Haynie	Very limited		Very limited		Not rated	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Flooding	0.40	Flooding	0.40		
Urban land	Not rated		Not rated		Not rated	

Table 13b.--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
4670:						
Rawles	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Too clayey	0.50
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.11
	Too clayey	0.50				
Urban land	Not rated		Not rated		Not rated	
5010:						
Pits, sand and gravel	Not rated		Not rated		Not rated	
5040:						
Udorthents, loamy	Not rated		Not limited		Not rated	
5044:						
Fluvaquents	Not rated		Very limited		Not rated	
			Flooding	1.00		
			Depth to saturated zone	1.00		
			Ponding	1.00		
5060:						
Pits, clay	Not rated		Not rated		Not rated	
5080:						
Udorthents, sanitary landfill	Not rated		Not rated		Not rated	
SL:						
Sewage lagoons	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	

Table 14a.--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. "Not rated" indicates that data are not available or that no rating is applicable. 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
1B3:				
Ida, severely eroded	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
1C:				
Ida-----------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
1C3:				
Ida, severely eroded	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
1D3:				
Ida, severely eroded	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
1E3:				
Ida, severely eroded	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
1F:				
Ida-----------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
1F3:				
Ida, severely eroded	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
1G:				
Ida-----------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
2G:				
Hamburg-------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
3D:				
Castana-------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00

Table 14a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
3E:				
Castana	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
8B:				
Judson	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
8C:				
Judson	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
10B:				
Monona	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
10B2:				
Monona, moderately eroded	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
10C2:				
Monona, moderately eroded	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
10D2:				
Monona, moderately eroded	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
10D3:				
Monona, severely eroded	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
10E:				
Monona	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
10E3:				
Monona, severely eroded	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
10F:				
Monona	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00

Table 14a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
12B:				
Napier	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
12C:				
Napier	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
17B:				
Napier	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Kennebec	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Colo	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
26:				
Kennebec	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
35F:				
Liston	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Burchard	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
35G:				
Liston	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Burchard	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
36:				
Salix	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
46:				
Keg	Improbable		Not rated	
	Thickest layer	0.00		
	Bottom layer	0.00		
47B:				
Napier	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00

Table 14a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
47B:				
Rawles	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
54:				
Zook	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
59E:				
Burchard	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
66:				
Luton	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
67:				
Woodbury	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
100B:				
Monona	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
100C2:				
Monona, moderately eroded	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
100D2:				
Monona, moderately eroded	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
100E2:				
Monona, moderately eroded	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
101E2:				
Monona, moderately eroded	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Ida, moderately eroded	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00

Table 14a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
123:				
Grantcenter---------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
137:				
Haynie--------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
144:				
Blake---------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
156:				
Albaton-------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
170E:				
Napier--------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Castana-------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
212:				
Kennebec------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
212+:				
Kennebec, overwash--	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
220:				
Nodaway-------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
237:				
Sarpy---------------	Improbable		Fair	
	Thickest layer	0.00	Thickest layer	0.03
	Bottom layer	0.00	Bottom layer	0.30
237B:				
Sarpy---------------	Improbable		Fair	
	Thickest layer	0.00	Thickest layer	0.03
	Bottom layer	0.00	Bottom layer	0.30
244:				
Blend---------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00

Table 14a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
255:				
Cooper	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
266:				
Smithland	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
266+:				
Smithland, overwash	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
277B:				
Deloit	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
277C:				
Deloit	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
277E:				
Deloit	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
310B:				
Galva	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
310C2:				
Galva, moderately eroded	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
366:				
Luton	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
436:				
Lakeport	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
446:				
Burcham	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
465:				
Tieville	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00

Table 14a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
485:				
Spillville----------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
510:				
Monona, bench-------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
510B:				
Monona, bench-------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
510B2:				
Monona, bench, moderately eroded--	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
510C2:				
Monona, bench, moderately eroded--	Improbable		Not rated	
	Thickest layer	0.00		
	Bottom layer	0.00		
515:				
Percival------------	Improbable		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.19
518:				
Morconick-----------	Improbable		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.33
527:				
Anthon--------------	Possible		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.04	Bottom layer	0.08
527B:				
Anthon--------------	Possible		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.04	Bottom layer	0.08
549:				
Modale silt loam----	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Modale silty clay loam---------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
552:				
Owego---------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00

Table 14a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
630:				
Danbury------------	Improbable		Not rated	
	Thickest layer	0.00		
	Bottom layer	0.00		
666B:				
Smithland-----------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Danbury------------	Improbable		Not rated	
	Thickest layer	0.00		
	Bottom layer	0.00		
Judson-------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
670:				
Rawles-------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
700:				
Monona, bench-------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
700B:				
Monona, bench-------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
700C2:				
Monona, bench, moderately eroded--	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
700D2:				
Monona, bench, moderately eroded--	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
701:				
Wilsey-------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
709:				
Fairhaven, 32 to 40 inches to sand and gravel------------	Possible		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.04	Bottom layer	0.51

Table 14a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
709B:				
Fairhaven, 32 to 40 inches to sand and gravel	Possible		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.04	Bottom layer	0.51
717D:				
Napier	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Gullied land	Not rated		Not rated	
733:				
Calco	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
734:				
Holly Springs	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
734+:				
Holly Springs, overwash	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
740C:				
Hawick	Possible		Fair	
	Thickest layer	0.00	Thickest layer	0.18
	Bottom layer	0.04	Bottom layer	0.57
740D:				
Hawick	Possible		Fair	
	Thickest layer	0.00	Thickest layer	0.18
	Bottom layer	0.04	Bottom layer	0.57
740E:				
Hawick	Possible		Fair	
	Thickest layer	0.00	Thickest layer	0.18
	Bottom layer	0.04	Bottom layer	0.57
740F:				
Hawick	Possible		Fair	
	Thickest layer	0.00	Thickest layer	0.18
	Bottom layer	0.04	Bottom layer	0.57
750:				
Ticonic	Improbable		Not rated	
	Thickest layer	0.00		
	Bottom layer	0.00		
754:				
Larpenteur	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00

Table 14a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
810B:				
Galva, bench	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
810C2:				
Galva, bench, moderately eroded	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
847B:				
Judson	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Rawles	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
945:				
Albaton, depressional, drained	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
1137:				
Haynie	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
1144:				
Blake	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
1146:				
Onawa	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
1220:				
Nodaway, channeled	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
1237B:				
Sarpy	Improbable		Fair	
	Thickest layer	0.00	Thickest layer	0.03
	Bottom layer	0.00	Bottom layer	0.30
1237C:				
Sarpy	Improbable		Fair	
	Thickest layer	0.00	Thickest layer	0.03
	Bottom layer	0.00	Bottom layer	0.30
1238:				
Sarpy	Improbable		Fair	
	Thickest layer	0.00	Thickest layer	0.03
	Bottom layer	0.00	Bottom layer	0.30

Table 14a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
1238:				
Morconick-----------	Improbable		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.33
1513:				
Grable--------------	Improbable		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.13
Morconick-----------	Improbable		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.33
1524:				
Morconick-----------	Improbable		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.33
1525:				
Scroll--------------	Improbable		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.06
2515:				
Percival------------	Improbable		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.19
Albaton-------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
3146:				
Onawa---------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Albaton-------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
3275:				
Moville-------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Holly Springs, overwash-----------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
3440:				
Blencoe-------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Woodbury------------	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00

Table 14a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
3513:				
Grable	Improbable		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.13
Morconick	Improbable		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.33
3549:				
Modale silty clay loam	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Modale silt loam	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
3686:				
Napa	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Luton	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Tieville	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
4000:				
Urban land	Not rated		Not rated	
4001C:				
Ida	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Urban land	Not rated		Not rated	
4001D:				
Ida	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Urban land	Not rated		Not rated	
4001E:				
Ida	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Urban land	Not rated		Not rated	
4001F:				
Ida	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00

Table 14a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel: Rating class	Value	Potential as source of sand: Rating class	Value
4001F:				
Urban land	Not rated		Not rated	
4010B:				
Monona	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Urban land	Not rated		Not rated	
4010C:				
Monona	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Urban land	Not rated		Not rated	
4010D:				
Monona	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Urban land	Not rated		Not rated	
4010E:				
Monona	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Urban land	Not rated		Not rated	
4012B:				
Napier	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Urban land	Not rated		Not rated	
4012C:				
Napier	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Urban land	Not rated		Not rated	
4170D:				
Napier	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Castana	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Urban land	Not rated		Not rated	
4600:				
Percival	Improbable		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.19

Table 14a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of gravel		Potential as source of sand	
	Rating class	Value	Rating class	Value
4600:				
Haynie	Improbable		Not rated	
	Thickest layer	0.00		
	Bottom layer	0.00		
Urban land	Not rated		Not rated	
4670:				
Rawles	Improbable		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
Urban land	Not rated		Not rated	
5010:				
Pits, sand and gravel	Not rated		Not rated	
5040:				
Udorthents, loamy	Not rated		Not rated	
5044:				
Fluvaquents	Not rated		Not rated	
5060:				
Pits, clay	Not rated		Not rated	
5080:				
Udorthents, sanitary landfill	Not rated		Not rated	
SL:				
Sewage lagoons	Not rated		Not rated	
W:				
Water	Not rated		Not rated	

Table 14b.--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. "Not rated" indicates that data are not available or that no rating is applicable. 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
1B3:						
Ida, severely eroded	Fair		Good		Fair	
	Low content of organic matter	0.12			Carbonate content	0.97
	Water erosion	0.90				
	Carbonate content	0.97				
1C:						
Ida-----------------	Fair		Poor		Fair	
	Low content of organic matter	0.12	Low strength	0.00	Carbonate content	0.97
	Water erosion	0.90				
	Carbonate content	0.97				
1C3:						
Ida, severely eroded	Fair		Good		Fair	
	Low content of organic matter	0.12			Carbonate content	0.97
	Water erosion	0.90				
	Carbonate content	0.97				
1D3:						
Ida, severely eroded	Fair		Good		Fair	
	Low content of organic matter	0.12			Slope	0.37
					Carbonate content	0.97
	Water erosion	0.90				
	Carbonate content	0.97				
1E3:						
Ida, severely eroded	Fair		Fair		Poor	
	Low content of organic matter	0.12	Slope	0.92	Slope	0.00
					Carbonate content	0.97
	Water erosion	0.90				
	Carbonate content	0.97				
1F:						
Ida-----------------	Fair		Poor		Poor	
	Low content of organic matter	0.12	Slope	0.00	Slope	0.00
			Low strength	0.00	Carbonate content	0.97
	Water erosion	0.90				
	Carbonate content	0.97				
1F3:						
Ida, severely eroded	Fair		Poor		Poor	
	Low content of organic matter	0.12	Slope	0.00	Slope	0.00
					Carbonate content	0.97
	Water erosion	0.90				
	Carbonate content	0.97				

Table 14b.--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
1G:						
Ida	Fair		Poor		Poor	
	Low content of organic matter	0.12	Slope	0.00	Slope	0.00
					Carbonate content	0.97
	Water erosion	0.90				
	Carbonate content	0.97				
2G:						
Hamburg	Fair		Poor		Poor	
	Low content of organic matter	0.12	Slope	0.00	Slope	0.00
	Water erosion	0.90				
3D:						
Castana	Fair		Good		Fair	
	Low content of organic matter	0.12			Slope	0.37
					Carbonate content	0.97
	Water erosion	0.90				
	Carbonate content	0.97				
3E:						
Castana	Fair		Fair		Poor	
	Low content of organic matter	0.12	Slope	0.92	Slope	0.00
					Carbonate content	0.97
	Water erosion	0.90				
	Carbonate content	0.97				
8B:						
Judson	Fair		Fair		Good	
	Water erosion	0.90	Shrink-swell	0.87		
8C:						
Judson	Fair		Fair		Good	
	Water erosion	0.90	Shrink-swell	0.87		
10B:						
Monona	Fair		Good		Good	
	Low content of organic matter	0.12				
	Water erosion	0.90				
10B2:						
Monona, moderately eroded	Fair		Good		Good	
	Low content of organic matter	0.12				
	Water erosion	0.90				
10C2:						
Monona, moderately eroded	Fair		Good		Good	
	Low content of organic matter	0.12				
	Water erosion	0.90				

Table 14b.--Construction Materials--Continued

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
10D2:						
Monona, moderately eroded	Fair		Good		Fair	
	Low content of organic matter	0.12			Slope	0.37
	Water erosion	0.90				
10D3:						
Monona, severely eroded	Fair		Good		Fair	
	Low content of organic matter	0.12			Slope	0.37
	Water erosion	0.90				
10E:						
Monona	Fair		Fair		Poor	
	Low content of organic matter	0.12	Slope	0.92	Slope	0.00
	Water erosion	0.90				
10E3:						
Monona, severely eroded	Fair		Fair		Poor	
	Low content of organic matter	0.12	Slope	0.92	Slope	0.00
	Water erosion	0.90				
10F:						
Monona	Fair		Poor		Poor	
	Low content of organic matter	0.12	Slope	0.00	Slope	0.00
	Water erosion	0.90				
12B:						
Napier	Fair		Good		Good	
	Water erosion	0.90				
12C:						
Napier	Fair		Good		Good	
	Water erosion	0.90				
17B:						
Napier	Fair		Good		Good	
	Water erosion	0.90				
Kennebec	Good		Fair		Good	
			Shrink-swell	0.87		
Colo	Fair		Poor		Poor	
	Too clayey	0.95	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.00	Too clayey	0.95
			Shrink-swell	0.87		
26:						
Kennebec	Fair		Good		Good	
	Too acid	0.99				

Table 14b.--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
35F:						
Liston	Fair		Fair		Poor	
	Low content of organic matter	0.88	Slope	0.32	Slope	0.00
			Shrink-swell	0.87		
Burchard	Fair		Fair		Poor	
	Low content of organic matter	0.12	Slope	0.32	Slope	0.00
			Shrink-swell	0.87	Too clayey	0.70
	Too clayey	0.98				
	Water erosion	0.99				
35G:						
Liston	Fair		Poor		Poor	
	Low content of organic matter	0.88	Slope	0.00	Slope	0.00
			Shrink-swell	0.87		
Burchard	Fair		Poor		Poor	
	Low content of organic matter	0.12	Slope	0.00	Slope	0.00
			Shrink-swell	0.87	Too clayey	0.70
	Too clayey	0.98				
	Water erosion	0.99				
36:						
Salix	Fair		Good		Good	
	Low content of organic matter	0.50				
	Water erosion	0.90				
46:						
Keg	Fair		Good		Good	
	Low content of organic matter	0.88				
	Water erosion	0.90				
	Carbonate content	0.97				
47B:						
Napier	Fair		Good		Good	
	Water erosion	0.90				
Rawles	Good		Fair		Good	
			Shrink-swell	0.87		
54:						
Zook	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Water erosion	0.99				
			Shrink-swell	0.12	Too clayey	0.00
59E:						
Burchard	Fair		Fair		Fair	
	Low content of organic matter	0.12	Shrink-swell	0.87	Slope	0.04
					Too clayey	0.70
	Too clayey	0.98				
	Water erosion	0.99				
66:						
Luton	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.50			Depth to saturated zone	0.00
			Shrink-swell	0.12		

Table 14b.--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
67:						
Woodbury------------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Water erosion	0.90			Depth to saturated zone	0.00
	Too acid	0.99	Shrink-swell	0.12		
100B:						
Monona--------------	Fair		Poor		Good	
	Water erosion	0.90	Low strength	0.00		
			Shrink-swell	0.96		
100C2:						
Monona, moderately eroded------------	Fair		Poor		Good	
	Low content of organic matter	0.12	Low strength	0.00		
	Water erosion	0.90				
100D2:						
Monona, moderately eroded------------	Fair		Poor		Fair	
	Low content of organic matter	0.12	Low strength	0.00	Slope	0.37
	Water erosion	0.90				
100E2:						
Monona, moderately eroded------------	Fair		Poor		Poor	
	Low content of organic matter	0.12	Low strength	0.00	Slope	0.00
			Slope	0.92		
	Water erosion	0.90				
101E2:						
Monona, moderately eroded------------	Fair		Fair		Poor	
	Low content of organic matter	0.12	Slope	0.92	Slope	0.00
	Water erosion	0.90				
Ida, moderately eroded------------	Fair		Fair		Poor	
	Low content of organic matter	0.12	Slope	0.92	Slope	0.00
					Carbonate content	0.97
	Water erosion	0.90				
	Carbonate content	0.97				
123:						
Grantcenter---------	Fair		Poor		Poor	
	Water erosion	0.90	Depth to saturated zone	0.00	Depth to saturated zone	0.00
137:						
Haynie--------------	Fair		Good		Fair	
	Low content of organic matter	0.50			Carbonate content	0.97
	Water erosion	0.90				
	Carbonate content	0.97				

Table 14b.--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
144:						
Blake	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Water erosion	0.90			Carbonate content	0.97
	Carbonate content	0.97				
156:						
Albaton	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.50	Shrink-swell	0.00	Depth to saturated zone	0.00
	Carbonate content	0.97			Carbonate content	0.97
170E:						
Napier	Fair		Good		Fair	
	Water erosion	0.90			Slope	0.37
Castana	Fair		Fair		Poor	
	Low content of organic matter	0.12	Slope	0.92	Slope	0.00
	Water erosion	0.90			Carbonate content	0.97
	Carbonate content	0.97				
212:						
Kennebec	Good		Fair		Good	
			Shrink-swell	0.87		
212+:						
Kennebec, overwash	Good		Fair		Good	
			Shrink-swell	0.87		
220:						
Nodaway	Fair		Fair		Good	
	Low content of organic matter	0.12	Shrink-swell	0.87		
	Water erosion	0.90				
237:						
Sarpy	Poor		Good		Poor	
	Too sandy	0.00			Too sandy	0.00
	Wind erosion	0.00				
	Low content of organic matter	0.12				
237B:						
Sarpy	Poor		Good		Poor	
	Too sandy	0.00			Too sandy	0.00
	Wind erosion	0.00				
	Low content of organic matter	0.12				
244:						
Blend	Fair		Poor		Poor	
	Too clayey	0.50	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Shrink-swell	0.37	Too clayey	0.44

Table 14b.--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
255:						
Cooper	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Shrink-swell	0.31	Depth to saturated zone	0.00
266:						
Smithland	Fair		Poor		Poor	
	Too clayey	0.95	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Shrink-swell	0.87	Too clayey	0.95
266+:						
Smithland, overwash	Fair		Poor		Poor	
	Too clayey	0.95	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Shrink-swell	0.87	Too clayey	0.95
277B:						
Deloit	Good		Good		Good	
277C:						
Deloit	Good		Good		Good	
277E:						
Deloit	Good		Good		Fair	
					Slope	0.04
310B:						
Galva	Fair		Fair		Fair	
	Too clayey	0.59	Shrink-swell	0.87	Too clayey	0.49
	Water erosion	0.90				
	Carbonate content	0.97				
310C2:						
Galva, moderately eroded	Fair		Fair		Fair	
	Too clayey	0.59	Shrink-swell	0.87	Too clayey	0.46
	Water erosion	0.90				
366:						
Luton	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Too clayey	0.18	Shrink-swell	0.12	Too clayey	0.18
436:						
Lakeport	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Too clayey	0.24	Shrink-swell	0.30	Too clayey	0.21
	Too acid	0.97				
446:						
Burcham	Fair		Poor		Poor	
	Carbonate content	0.97	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.00		
			Shrink-swell	0.34		

Table 14b.--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
465:						
Tieville------------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
			Shrink-swell	0.12	Depth to saturated zone	0.00
485:						
Spillville----------	Good		Poor		Fair	
			Low strength	0.00	Depth to saturated zone	0.53
			Depth to saturated zone	0.53		
			Shrink-swell	0.92		
510:						
Monona, bench-------	Fair		Good		Good	
	Low content of organic matter	0.12				
	Water erosion	0.90				
510B:						
Monona, bench-------	Fair		Good		Good	
	Low content of organic matter	0.12				
	Water erosion	0.90				
510B2:						
Monona, bench, moderately eroded--	Fair		Good		Good	
	Low content of organic matter	0.12				
	Water erosion	0.90				
510C2:						
Monona, bench, moderately eroded--	Fair		Good		Good	
	Low content of organic matter	0.12				
	Water erosion	0.90				
515:						
Percival------------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Shrink-swell	0.99	Depth to saturated zone	0.00
	Droughty	0.13				
518:						
Morconick-----------	Fair		Good		Fair	
	Too sandy	0.06			Too sandy	0.06
	Low content of organic matter	0.12				
	Water erosion	0.90				
527:						
Anthon--------------	Fair		Good		Fair	
	Too acid	0.99			Hard to reclaim (rock fragments)	0.82

Table 14b.--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
527B:						
Anthon	Fair		Good		Fair	
	Too acid	0.99			Hard to reclaim (rock fragments)	0.82
549:						
Modale silt loam	Fair		Poor		Fair	
	Low content of organic matter	0.88	Low strength	0.00	Depth to saturated zone	0.53
	Carbonate content	0.97	Shrink-swell	0.31	Carbonate content	0.97
	Water erosion	0.99	Depth to saturated zone	0.53		
Modale silty clay loam	Fair		Poor		Fair	
	Low content of organic matter	0.88	Low strength	0.00	Depth to saturated zone	0.53
	Carbonate content	0.97	Depth to saturated zone	0.53	Carbonate content	0.97
	Water erosion	0.99	Shrink-swell	0.56		
552:						
Owego	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.50	Shrink-swell	0.38	Depth to saturated zone	0.00
	Carbonate content	0.97			Carbonate content	0.97
630:						
Danbury	Good		Fair		Good	
			Shrink-swell	0.45		
666B:						
Smithland	Fair		Poor		Poor	
	Too clayey	0.95	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Shrink-swell	0.87	Too clayey	0.95
Danbury	Good		Fair		Good	
			Shrink-swell	0.45		
Judson	Fair		Fair		Fair	
	Too clayey	0.88	Shrink-swell	0.87	Too clayey	0.88
	Water erosion	0.90				
670:						
Rawles	Good		Fair		Good	
			Shrink-swell	0.87		
700:						
Monona, bench	Fair		Fair		Good	
	Water erosion	0.90	Shrink-swell	0.96		
700B:						
Monona, bench	Fair		Fair		Good	
	Water erosion	0.90	Shrink-swell	0.96		
700C2:						
Monona, bench, moderately eroded	Fair		Fair		Good	
	Water erosion	0.90	Shrink-swell	0.96		

Table 14b.--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
700D2:						
Monona, bench, moderately eroded	Fair		Poor		Fair	
	Low content of organic matter	0.12	Low strength	0.00	Slope	0.37
	Water erosion	0.90				
701:						
Wilsey	Fair		Good		Fair	
	Carbonate content	0.97			Carbonate content	0.97
709:						
Fairhaven, 32 to 40 inches to sand and gravel	Fair		Good		Fair	
	Low content of organic matter	0.12			Hard to reclaim (rock fragments)	0.68
	Too clayey	0.98			Too clayey	0.70
709B:						
Fairhaven, 32 to 40 inches to sand and gravel	Fair		Good		Fair	
	Low content of organic matter	0.12			Hard to reclaim (rock fragments)	0.68
	Too clayey	0.98			Too clayey	0.70
717D:						
Napier	Fair		Good		Fair	
	Water erosion	0.90			Slope	0.96
Gullied land	Not rated		Not rated		Not rated	
733:						
Calco	Fair		Poor		Poor	
	Carbonate content	0.97	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.00	Carbonate content	0.97
			Shrink-swell	0.29		
734:						
Holly Springs	Fair		Poor		Poor	
	Too clayey	0.76	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.97				
	Water erosion	0.99	Shrink-swell	0.12	Too clayey	0.76
					Carbonate content	0.97
734+:						
Holly Springs, overwash	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.97				
	Water erosion	0.99	Shrink-swell	0.12	Too clayey	0.00
					Carbonate content	0.97
740C:						
Hawick	Poor		Good		Poor	
	Too sandy	0.00			Too sandy	0.00
	Low content of organic matter	0.12			Rock fragments	0.03
					Hard to reclaim (rock fragments)	0.98
	Droughty	0.21				

Table 14b.--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
740D:						
Hawick--------------	Poor		Good		Poor	
	Too sandy	0.00			Too sandy	0.00
	Low content of organic matter	0.12			Rock fragments	0.03
	Droughty	0.21			Slope	0.37
740E:						
Hawick--------------	Poor		Fair		Poor	
	Too sandy	0.00	Slope	0.98	Slope	0.00
	Low content of organic matter	0.12			Too sandy	0.00
	Droughty	0.21			Rock fragments	0.03
740F:						
Hawick--------------	Poor		Fair		Poor	
	Too sandy	0.00	Slope	0.18	Slope	0.00
	Low content of organic matter	0.12			Too sandy	0.00
	Droughty	0.21			Rock fragments	0.03
750:						
Ticonic-------------	Poor		Good		Poor	
	Too sandy	0.00			Too sandy	0.00
	Wind erosion	0.00				
	Low content of organic matter	0.12				
754:						
Larpenteur----------	Fair		Poor		Poor	
	Low content of organic matter	0.50	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Water erosion	0.90				
810B:						
Galva, bench--------	Fair		Fair		Fair	
	Too clayey	0.59	Shrink-swell	0.87	Too clayey	0.49
	Water erosion	0.90				
	Carbonate content	0.97				
810C2:						
Galva, bench, moderately eroded--	Fair		Fair		Fair	
	Too clayey	0.59	Shrink-swell	0.87	Too clayey	0.46
	Water erosion	0.90				
847B:						
Judson--------------	Fair		Fair		Fair	
	Too clayey	0.88	Shrink-swell	0.87	Too clayey	0.88
	Water erosion	0.90				
Rawles--------------	Good		Fair		Good	
			Shrink-swell	0.87		

Table 14b.--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
945:						
Albaton, depressional, drained	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.50	Shrink-swell	0.00	Depth to saturated zone	0.00
	Carbonate content	0.97			Carbonate content	0.97
1137:						
Haynie	Fair		Good		Fair	
	Low content of organic matter	0.50			Carbonate content	0.97
	Water erosion	0.90				
	Carbonate content	0.97				
1144:						
Blake	Fair		Poor		Poor	
	Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Water erosion	0.90	Low strength	0.00	Carbonate content	0.97
	Carbonate content	0.97				
1146:						
Onawa	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Shrink-swell	0.84	Depth to saturated zone	0.00
	Water erosion	0.90			Carbonate content	0.97
1220:						
Nodaway, channeled	Fair		Fair		Good	
	Low content of organic matter	0.12	Shrink-swell	0.87		
	Water erosion	0.90				
1237B:						
Sarpy	Poor		Good		Poor	
	Too sandy	0.00			Too sandy	0.00
	Wind erosion	0.00				
	Low content of organic matter	0.12				
1237C:						
Sarpy	Poor		Good		Poor	
	Too sandy	0.00			Too sandy	0.00
	Wind erosion	0.00				
	Low content of organic matter	0.12				
1238:						
Sarpy	Poor		Good		Poor	
	Too sandy	0.00			Too sandy	0.00
	Wind erosion	0.00				
	Droughty	0.35				
Morconick	Fair		Good		Fair	
	Too sandy	0.06			Too sandy	0.06
	Low content of organic matter	0.12				
	Water erosion	0.90				

Table 14b.--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
1513:						
Grable	Fair		Good		Fair	
	Low content of organic matter	0.12			Carbonate content	0.97
	Water erosion	0.90				
	Carbonate content	0.97				
Morconick	Fair		Good		Fair	
	Too sandy	0.06			Too sandy	0.06
	Low content of organic matter	0.12				
	Water erosion	0.90				
1524:						
Morconick	Fair		Good		Fair	
	Too sandy	0.06			Too sandy	0.06
	Low content of organic matter	0.12				
	Water erosion	0.90				
1525:						
Scroll	Poor		Poor		Poor	
	Droughty	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Too sandy	0.02			Too sandy	0.02
	Low content of organic matter	0.12				
2515:						
Percival	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Shrink-swell	0.99	Depth to saturated zone	0.00
	Droughty	0.13				
Albaton	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.50	Shrink-swell	0.00	Depth to saturated zone	0.00
	Carbonate content	0.97			Carbonate content	0.97
3146:						
Onawa	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Shrink-swell	0.84	Depth to saturated zone	0.00
	Water erosion	0.90			Carbonate content	0.97
Albaton	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.50	Shrink-swell	0.00	Depth to saturated zone	0.00
	Carbonate content	0.97			Carbonate content	0.97
3275:						
Moville	Fair		Poor		Poor	
	Water erosion	0.99	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Low strength	0.00		
			Shrink-swell	0.71		

Table 14b.--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
3275:						
Holly Springs, overwash	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.97	Shrink-swell	0.12	Too clayey	0.00
	Water erosion	0.99			Carbonate content	0.97
3440:						
Blencoe	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.88	Low strength	0.00	Depth to saturated zone	0.00
	Water erosion	0.90	Shrink-swell	0.53		
Woodbury	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Water erosion	0.90	Shrink-swell	0.12	Depth to saturated zone	0.00
	Too acid	0.99				
3513:						
Grable	Fair		Good		Fair	
	Low content of organic matter	0.12			Carbonate content	0.97
	Water erosion	0.90				
	Carbonate content	0.97				
Morconick	Fair		Good		Fair	
	Too sandy	0.06			Too sandy	0.06
	Low content of organic matter	0.12				
	Water erosion	0.90				
3549:						
Modale silty clay loam	Fair		Poor		Fair	
	Low content of organic matter	0.88	Low strength	0.00	Depth to saturated zone	0.53
	Carbonate content	0.97	Shrink-swell	0.31	Carbonate content	0.97
	Water erosion	0.99	Depth to saturated zone	0.53		
Modale silt loam	Fair		Poor		Poor	
	Low content of organic matter	0.88	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Carbonate content	0.97	Low strength	0.00	Carbonate content	0.97
	Water erosion	0.99	Shrink-swell	0.31		
3686:						
Napa	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Sodium content	0.03	Low strength	0.00	Depth to saturated zone	0.00
	Salinity	0.88	Shrink-swell	0.00	Salinity	0.00
Luton	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.50	Shrink-swell	0.12	Depth to saturated zone	0.00

Table 14b.--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
3686:						
Tieville-----------	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
			Shrink-swell	0.12	Depth to saturated zone	0.00
4000:						
Urban land----------	Not rated		Not rated		Not rated	
4001C:						
Ida-----------------	Fair		Poor		Fair	
	Low content of organic matter	0.12	Low strength	0.00	Carbonate content	0.97
	Water erosion	0.90				
	Carbonate content	0.97				
Urban land----------	Not rated		Not rated		Not rated	
4001D:						
Ida-----------------	Fair		Good		Fair	
	Low content of organic matter	0.12			Slope	0.37
					Carbonate content	0.97
	Water erosion	0.90				
	Carbonate content	0.97				
Urban land----------	Not rated		Not rated		Not rated	
4001E:						
Ida-----------------	Fair		Fair		Poor	
	Low content of organic matter	0.12	Slope	0.92	Slope	0.00
					Carbonate content	0.97
	Water erosion	0.90				
	Carbonate content	0.97				
Urban land----------	Not rated		Not rated		Not rated	
4001F:						
Ida-----------------	Fair		Poor		Poor	
	Low content of	0.12	Slope	0.00	Slope	0.00
	organic matter		Low strength	0.00	Carbonate content	0.97
	Water erosion	0.90				
	Carbonate content	0.97				
Urban land----------	Not rated		Not rated		Not rated	
4010B:						
Monona--------------	Fair		Good		Good	
	Low content of organic matter	0.12				
	Water erosion	0.90				
Urban land----------	Not rated		Not rated		Not rated	
4010C:						
Monona--------------	Fair		Good		Good	
	Low content of organic matter	0.12				
	Water erosion	0.90				
Urban land----------	Not rated		Not rated		Not rated	

Table 14b.--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
4010D:						
Monona	Fair		Good		Fair	
	Low content of organic matter	0.12			Slope	0.37
	Water erosion	0.90				
Urban land	Not rated		Not rated		Not rated	
4010E:						
Monona	Fair		Fair		Poor	
	Low content of organic matter	0.12	Slope	0.92	Slope	0.00
	Water erosion	0.90				
Urban land	Not rated		Not rated		Not rated	
4012B:						
Napier	Fair		Good		Good	
	Water erosion	0.90				
Urban land	Not rated		Not rated		Not rated	
4012C:						
Napier	Fair		Good		Good	
	Water erosion	0.90				
Urban land	Not rated		Not rated		Not rated	
4170D:						
Napier	Fair		Good		Fair	
	Water erosion	0.90			Slope	0.37
Castana	Fair		Good		Fair	
	Low content of organic matter	0.12			Slope	0.37
	Water erosion	0.90			Carbonate content	0.97
	Carbonate content	0.97				
Urban land	Not rated		Not rated		Not rated	
4600:						
Percival	Poor		Poor		Poor	
	Too clayey	0.00	Depth to saturated zone	0.00	Too clayey	0.00
	Low content of organic matter	0.12	Shrink-swell	0.99	Depth to saturated zone	0.00
	Droughty	0.13				
Haynie	Fair		Good		Fair	
	Low content of organic matter	0.50			Carbonate content	0.97
	Water erosion	0.90				
	Carbonate content	0.97				
Urban land	Not rated		Not rated		Not rated	
4670:						
Rawles	Good		Fair		Good	
			Shrink-swell	0.87		
Urban land	Not rated		Not rated		Not rated	

Table 14b.--Construction Materials--Continued

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
5010:						
Pits, sand and gravel-------------	Not rated		Not rated		Not rated	
5040:						
Udorthents, loamy---	Not rated		Not rated		Not rated	
5044:						
Fluvaquents---------	Not rated		Not rated		Not rated	
5060:						
Pits, clay----------	Not rated		Not rated		Not rated	
5080:						
Udorthents, sanitary landfill-----------	Not rated		Not rated		Not rated	
SL:						
Sewage lagoons------	Not rated		Not rated		Not rated	
W:						
Water---------------	Not rated		Not rated		Not rated	

Table 15.--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. "Not rated" indicates that data are not available or that no rating is applicable. 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
1B3:						
Ida, severely eroded	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Piping	1.00	No ground water	1.00
1C:						
Ida-----------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Piping	1.00	No ground water	1.00
1C3:						
Ida, severely eroded	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Piping	1.00	No ground water	1.00
1D3:						
Ida, severely eroded	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Piping	1.00	No ground water	1.00
	Slope	0.01				
1E3:						
Ida, severely eroded	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Piping	1.00	No ground water	1.00
	Slope	0.06				
1F:						
Ida-----------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Piping	1.00	No ground water	1.00
	Slope	0.28				
1F3:						
Ida, severely eroded	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Piping	1.00	No ground water	1.00
	Slope	0.28				
1G:						
Ida-----------------	Somewhat limited		Very limited		Very limited	
	Slope	0.72	Piping	1.00	No ground water	1.00
	Seepage	0.70				
2G:						
Hamburg-------------	Very limited		Very limited		Very limited	
	Slope	1.00	Piping	1.00	No ground water	1.00
	Seepage	0.70				
3D:						
Castana-------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.68	No ground water	1.00
	Slope	0.01				
3E:						
Castana-------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.68	No ground water	1.00
	Slope	0.06				

Table 15.--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
8B:						
Judson	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.19	No ground water	1.00
8C:						
Judson	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.19	No ground water	1.00
10B:						
Monona	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.28	No ground water	1.00
10B2:						
Monona, moderately eroded	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.32	No ground water	1.00
10C2:						
Monona, moderately eroded	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.32	No ground water	1.00
10D2:						
Monona, moderately eroded	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.32	No ground water	1.00
	Slope	0.01				
10D3:						
Monona, severely eroded	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.32	No ground water	1.00
	Slope	0.01				
10E:						
Monona	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.28	No ground water	1.00
	Slope	0.06				
10E3:						
Monona, severely eroded	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.32	No ground water	1.00
	Slope	0.06				
10F:						
Monona	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.28	No ground water	1.00
	Slope	0.28				
12B:						
Napier	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.68	No ground water	1.00
12C:						
Napier	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.68	No ground water	1.00

Table 15.--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
17B:						
Napier--------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.68	No ground water	1.00
Kennebec------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.87	No ground water	1.00
					Slow refill	0.28
Colo----------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
					Cutbanks cave	0.10
26:						
Kennebec------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Piping	1.00	No ground water	1.00
					Slow refill	0.28
35F:						
Liston--------------	Somewhat limited		Not limited		Very limited	
	Slope	0.15			No ground water	1.00
	Seepage	0.05				
Burchard------------	Somewhat limited		Not limited		Very limited	
	Slope	0.15			No ground water	1.00
	Seepage	0.04				
35G:						
Liston--------------	Somewhat limited		Not limited		Very limited	
	Slope	0.64			No ground water	1.00
	Seepage	0.05				
Burchard------------	Somewhat limited		Not limited		Very limited	
	Slope	0.64			No ground water	1.00
	Seepage	0.04				
36:						
Salix---------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.19	No ground water	1.00
46:						
Keg-----------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Piping	1.00	No ground water	1.00
47B:						
Napier--------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.68	No ground water	1.00
Rawles--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Seepage	0.72	Piping	0.84	Slow refill	0.28
			Depth to saturated zone	0.46	Depth to water	0.24
					Cutbanks cave	0.10
54:						
Zook----------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.04	Depth to saturated zone	1.00	Slow refill	0.96
					Cutbanks cave	0.10
			Hard to pack	0.96		

Table 15.--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
59E:						
Burchard------------	Somewhat limited		Not limited		Very limited	
	Seepage	0.04			No ground water	1.00
	Slope	0.02				
66:						
Luton---------------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Slow refill	1.00
					Cutbanks cave	0.10
			Hard to pack	1.00		
67:						
Woodbury------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.05	Depth to saturated zone	1.00	Slow refill	0.95
					Cutbanks cave	0.10
			Hard to pack	0.99		
100B:						
Monona--------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.24	No ground water	1.00
100C2:						
Monona, moderately eroded-------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.36	No ground water	1.00
100D2:						
Monona, moderately eroded-------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.36	No ground water	1.00
	Slope	0.01				
100E2:						
Monona, moderately eroded-------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.36	No ground water	1.00
	Slope	0.06				
101E2:						
Monona, moderately eroded-------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.36	No ground water	1.00
	Slope	0.06				
Ida, moderately eroded-------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Piping	1.00	No ground water	1.00
	Slope	0.06				
123:						
Grantcenter---------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Piping	0.69		
137:						
Haynie--------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Piping	1.00	No ground water	1.00

Table 15.--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
144:						
Blake---------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
					Cutbanks cave	0.10
			Piping	0.63		
156:						
Albaton-------------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Slow refill	1.00
					Cutbanks cave	0.10
			Hard to pack	1.00		
170E:						
Napier--------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.68	No ground water	1.00
	Slope	0.01				
Castana-------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.68	No ground water	1.00
	Slope	0.06				
212:						
Kennebec------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.87	No ground water	1.00
					Slow refill	0.28
212+:						
Kennebec, overwash--	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.87	No ground water	1.00
					Slow refill	0.28
220:						
Nodaway-------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Piping	1.00	No ground water	1.00
237:						
Sarpy---------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.30	No ground water	1.00
237B:						
Sarpy---------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.30	No ground water	1.00
244:						
Blend---------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Hard to pack	0.89		
255:						
Cooper--------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
					Cutbanks cave	0.10
			Hard to pack	0.90		
266:						
Smithland-----------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
					Cutbanks cave	0.10

Table 15.--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
266+:						
Smithland, overwash	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
					Cutbanks cave	0.10
277B:						
Deloit	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.66	No ground water	1.00
277C:						
Deloit	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.66	No ground water	1.00
277E:						
Deloit	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.66	No ground water	1.00
	Slope	0.02				
310B:						
Galva	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.03	No ground water	1.00
310C2:						
Galva, moderately eroded	Somewhat limited		Not limited		Very limited	
	Seepage	0.70			No ground water	1.00
366:						
Luton	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
					Cutbanks cave	0.10
			Hard to pack	0.95		
436:						
Lakeport	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
					Cutbanks cave	0.10
446:						
Burcham	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
					Cutbanks cave	0.10
			Hard to pack	0.82		
465:						
Tieville	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Slow refill	1.00
					Cutbanks cave	0.10
			Hard to pack	1.00		
485:						
Spillville	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	0.99	Slow refill	0.28
					Cutbanks cave	0.10
			Piping	0.77	Depth to water	0.01
510:						
Monona, bench	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.28	No ground water	1.00

Table 15.--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
510B:						
Monona, bench-------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.28	No ground water	1.00
510B2:						
Monona, bench, moderately eroded--	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.32	No ground water	1.00
510C2:						
Monona, bench, moderately eroded--	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.33	No ground water	1.00
515:						
Percival------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Seepage	0.19		
518:						
Morconick-----------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.33	No ground water	1.00
527:						
Anthon--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	No ground water	1.00
			Seepage	0.08		
527B:						
Anthon--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	No ground water	1.00
			Seepage	0.08		
549:						
Modale silt loam----	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Depth to saturated zone	0.99	Slow refill	1.00
					Cutbanks cave	0.10
			Hard to pack	0.82	Depth to water	0.01
Modale silty clay loam---------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Depth to saturated zone	0.99	Slow refill	1.00
					Cutbanks cave	0.10
			Hard to pack	0.83	Depth to water	0.01
552:						
Owego---------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Hard to pack	0.88		
630:						
Danbury-------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	0.43	Slow refill	0.96
					Depth to water	0.25
			Piping	0.02	Cutbanks cave	0.10

Table 15.--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
666B:						
Smithland-----------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
					Cutbanks cave	0.10
Danbury-------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	0.43	Slow refill	0.96
					Depth to water	0.25
			Piping	0.02	Cutbanks cave	0.10
Judson--------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.19	No ground water	1.00
670:						
Rawles--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Seepage	0.72	Piping	0.84	Slow refill	0.28
			Depth to saturated zone	0.46	Depth to water	0.24
					Cutbanks cave	0.10
700:						
Monona, bench-------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.24	No ground water	1.00
700B:						
Monona, bench-------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.24	No ground water	1.00
700C2:						
Monona, bench, moderately eroded--	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.24	No ground water	1.00
700D2:						
Monona, bench, moderately eroded--	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.38	No ground water	1.00
	Slope	0.01				
701:						
Wilsey--------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Piping	1.00	No ground water	1.00
709:						
Fairhaven, 32 to 40 inches to sand and gravel------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.51	No ground water	1.00
709B:						
Fairhaven, 32 to 40 inches to sand and gravel------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.51	No ground water	1.00
717D:						
Napier--------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.68	No ground water	1.00
Gullied land--------	Not limited		Not rated		Not rated	

Table 15.--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
733:						
Calco---------------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
					Cutbanks cave	0.10
			Piping	0.01		
734:						
Holly Springs-------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.04	Depth to saturated zone	1.00	Slow refill	0.96
					Cutbanks cave	0.10
			Hard to pack	0.94		
734+:						
Holly Springs, overwash-----------	Not limited		Very limited		Somewhat limited	
			Depth to saturated zone	1.00	Slow refill	0.96
					Cutbanks cave	0.10
			Hard to pack	0.97		
740C:						
Hawick--------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.57	No ground water	1.00
740D:						
Hawick--------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.57	No ground water	1.00
	Slope	0.01				
740E:						
Hawick--------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.57	No ground water	1.00
	Slope	0.04				
740F:						
Hawick--------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.57	No ground water	1.00
	Slope	0.18				
750:						
Ticonic-------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.96	No ground water	1.00
754:						
Larpenteur----------	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
					Cutbanks cave	0.10
			Piping	1.00		
810B:						
Galva, bench--------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.03	No ground water	1.00
810C2:						
Galva, bench, moderately eroded--	Somewhat limited		Not limited		Very limited	
	Seepage	0.70			No ground water	1.00

Table 15.--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
847B:						
Judson	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.19	No ground water	1.00
Rawles	Somewhat limited		Somewhat limited		Somewhat limited	
	Seepage	0.72	Piping	0.84	Slow refill	0.28
			Depth to saturated zone	0.46	Depth to water	0.24
					Cutbanks cave	0.10
945:						
Albaton, depressional, drained	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Slow refill	1.00
					Cutbanks cave	0.10
			Hard to pack	1.00		
			Ponding	1.00		
1137:						
Haynie	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Piping	1.00	No ground water	1.00
1144:						
Blake	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
					Cutbanks cave	0.10
			Piping	0.63		
1146:						
Onawa	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
1220:						
Nodaway, channeled	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Piping	1.00	No ground water	1.00
1237B:						
Sarpy	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.30	No ground water	1.00
1237C:						
Sarpy	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.30	No ground water	1.00
1238:						
Sarpy	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.30	No ground water	1.00
Morconick	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.33	No ground water	1.00
1513:						
Grable	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.13	No ground water	1.00
Morconick	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.33	No ground water	1.00

Table 15.--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
1524:						
Morconick	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.33	No ground water	1.00
1525:						
Scroll	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Seepage	0.06		
2515:						
Percival	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Seepage	0.19		
Albaton	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Slow refill	1.00
					Cutbanks cave	0.10
			Hard to pack	1.00		
3146:						
Onawa	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
Albaton	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Slow refill	1.00
					Cutbanks cave	0.10
			Hard to pack	1.00		
3275:						
Moville	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Hard to pack	0.96		
Holly Springs, overwash	Not limited		Very limited		Somewhat limited	
			Depth to saturated zone	1.00	Slow refill	0.96
					Cutbanks cave	0.10
			Hard to pack	0.97		
3440:						
Blencoe	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
					Cutbanks cave	0.10
Woodbury	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.05	Depth to saturated zone	1.00	Slow refill	0.95
					Cutbanks cave	0.10
			Hard to pack	0.99		
3513:						
Grable	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.13	No ground water	1.00
Morconick	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.33	No ground water	1.00

Table 15.--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
3549:						
Modale silty clay loam	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Depth to saturated zone	0.99	Slow refill	1.00
					Cutbanks cave	0.10
			Hard to pack	0.82	Depth to water	0.01
Modale silt loam	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
					Cutbanks cave	0.10
			Hard to pack	0.82		
3686:						
Napa	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Slow refill	1.00
					Salty water	0.50
			Hard to pack	1.00	Cutbanks cave	0.10
			Salinity	0.12		
Luton	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Slow refill	1.00
					Cutbanks cave	0.10
			Hard to pack	1.00		
Tieville	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Slow refill	1.00
					Cutbanks cave	0.10
			Hard to pack	1.00		
4000:						
Urban land	Not rated		Not rated		Not rated	
4001C:						
Ida	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Piping	1.00	No ground water	1.00
Urban land	Not rated		Not rated		Not rated	
4001D:						
Ida	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Piping	1.00	No ground water	1.00
	Slope	0.01				
Urban land	Not rated		Not rated		Not rated	
4001E:						
Ida	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Piping	1.00	No ground water	1.00
	Slope	0.06				
Urban land	Not rated		Not rated		Not rated	
4001F:						
Ida	Somewhat limited		Very limited		Very limited	
	Seepage	0.70	Piping	1.00	No ground water	1.00
	Slope	0.28				

Table 15.--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
4001F:						
Urban land	Not rated		Not rated		Not rated	
4010B:						
Monona	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.28	No ground water	1.00
Urban land	Not rated		Not rated		Not rated	
4010C:						
Monona	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.28	No ground water	1.00
Urban land	Not rated		Not rated		Not rated	
4010D:						
Monona	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.28	No ground water	1.00
	Slope	0.01				
Urban land	Not rated		Not rated		Not rated	
4010E:						
Monona	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.70	Piping	0.28	No ground water	1.00
	Slope	0.06				
Urban land	Not rated		Not rated		Not rated	
4012B:						
Napier	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.68	No ground water	1.00
Urban land	Not rated		Not rated		Not rated	
4012C:						
Napier	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.68	No ground water	1.00
Urban land	Not rated		Not rated		Not rated	
4170D:						
Napier	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.68	No ground water	1.00
	Slope	0.01				
Castana	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Piping	0.68	No ground water	1.00
	Slope	0.01				
Urban land	Not rated		Not rated		Not rated	

Table 15.--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
4600:						
Percival------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Seepage	0.19		
Haynie--------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Piping	1.00	No ground water	1.00
Urban land----------	Not rated		Not rated		Not rated	
4670:						
Rawles--------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Seepage	0.72	Piping	0.84	Slow refill	0.28
			Depth to saturated zone	0.46	Depth to water	0.24
					Cutbanks cave	0.10
Urban land----------	Not rated		Not rated		Not rated	
5010:						
Pits, sand and gravel-------------	Not rated		Not rated		Not rated	
5040:						
Udorthents, loamy---	Somewhat limited		Not rated		Not rated	
	Seepage	0.43				
5044:						
Fluvaquents---------	Not limited		Not rated		Not rated	
5060:						
Pits, clay----------	Not rated		Not rated		Not rated	
5080:						
Udorthents, sanitary landfill-----------	Not rated		Not rated		Not rated	
SL:						
Sewage lagoons------	Not rated		Not rated		Not rated	
W:						
Water---------------	Not rated		Not rated		Not rated	

Table 16.--Agricultural Waste Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. "Not rated" indicates that data are not available or that no rating is applicable. See text for further explanation of ratings in this table)

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1B3:						
Ida, severely eroded	Not limited		Not limited		Somewhat limited	
					Too steep for surface application	0.08
1C:						
Ida-----------------	Very limited		Very limited		Very limited	
	Low adsorption	1.00	Low adsorption	1.00	Low adsorption	1.00
					Too steep for surface application	0.92
					Too steep for sprinkler application	0.02
1C3:						
Ida, severely eroded	Not limited		Not limited		Somewhat limited	
					Too steep for surface application	0.92
					Too steep for sprinkler application	0.02
1D3:						
Ida, severely eroded	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Too steep for surface application	1.00
					Too steep for sprinkler application	0.78
1E3:						
Ida, severely eroded	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
					Too steep for sprinkler application	1.00
1F:						
Ida-----------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for sprinkler application	1.00
					Too steep for surface application	1.00

Table 16.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
1F3:						
Ida, severely eroded	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for sprinkler application	1.00
					Too steep for surface application	1.00
1G:						
Ida	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for sprinkler application	1.00
					Too steep for surface application	1.00
2G:						
Hamburg	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for sprinkler application	1.00
					Too steep for surface application	1.00
3D:						
Castana	Very limited		Very limited		Very limited	
	Low adsorption	1.00	Low adsorption	1.00	Low adsorption	1.00
	Slope	0.63	Slope	0.63	Too steep for surface application	1.00
					Too steep for sprinkler application	0.78
3E:						
Castana	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
					Too steep for sprinkler application	1.00
8B:						
Judson	Not limited		Not limited		Not limited	
8C:						
Judson	Not limited		Not limited		Somewhat limited	
					Too steep for surface application	0.92
					Too steep for sprinkler application	0.02

Table 16.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
10B:						
Monona	Not limited		Not limited		Somewhat limited	
					Too steep for surface application	0.08
10B2:						
Monona, moderately eroded	Not limited		Not limited		Somewhat limited	
					Too steep for surface application	0.08
10C2:						
Monona, moderately eroded	Not limited		Not limited		Somewhat limited	
					Too steep for surface application	0.92
					Too steep for sprinkler application	0.02
10D2:						
Monona, moderately eroded	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Too steep for surface application	1.00
					Too steep for sprinkler application	0.78
10D3:						
Monona, severely eroded	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Too steep for surface application	1.00
					Too steep for sprinkler application	0.78
10E:						
Monona	Very limited		Very limited		Very limited	
	Low adsorption	1.00	Low adsorption	1.00	Low adsorption	1.00
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
					Too steep for sprinkler application	1.00

Table 16.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
10E3:						
Monona, severely eroded	Very limited		Very limited		Very limited	
	Low adsorption	1.00	Low adsorption	1.00	Low adsorption	1.00
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
					Too steep for sprinkler application	1.00
10F:						
Monona	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for sprinkler application	1.00
	Low adsorption	1.00	Low adsorption	1.00	Low adsorption	1.00
					Too steep for surface application	1.00
12B:						
Napier	Very limited		Very limited		Very limited	
	Low adsorption	1.00	Low adsorption	1.00	Low adsorption	1.00
					Too steep for surface application	0.08
12C:						
Napier	Very limited		Very limited		Very limited	
	Low adsorption	1.00	Low adsorption	1.00	Low adsorption	1.00
					Too steep for surface application	0.92
					Too steep for sprinkler application	0.02
17B:						
Napier	Very limited		Very limited		Very limited	
	Low adsorption	1.00	Low adsorption	1.00	Low adsorption	1.00
					Too steep for surface application	0.08
Kennebec	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
Colo	Very limited		Very limited		Very limited	
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Low adsorption	1.00	Low adsorption	1.00	Low adsorption	1.00
26:						
Kennebec	Somewhat limited		Very limited		Somewhat limited	
	Flooding	0.60	Flooding	1.00	Flooding	0.60
	Too acid	0.01	Too acid	0.01	Too acid	0.01

Table 16.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
35F:						
Liston	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for sprinkler application	1.00
	Low adsorption	0.94	Restricted permeability	0.22	Too steep for surface application	1.00
	Restricted permeability	0.30			Low adsorption	0.94
Burchard	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for sprinkler application	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Too steep for surface application	1.00
					Restricted permeability	0.31
35G:						
Liston	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for sprinkler application	1.00
	Low adsorption	0.94	Restricted permeability	0.22	Too steep for surface application	1.00
	Restricted permeability	0.30			Low adsorption	0.94
Burchard	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for sprinkler application	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Too steep for surface application	1.00
					Restricted permeability	0.31
36:						
Salix	Not limited		Somewhat limited		Not limited	
			Flooding	0.40		
46:						
Keg	Not limited		Somewhat limited		Not limited	
			Flooding	0.40		
47B:						
Napier	Very limited		Very limited		Very limited	
	Low adsorption	1.00	Low adsorption	1.00	Low adsorption	1.00
					Too steep for surface application	0.08
Rawles	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone (Nov-Jul)	0.46	Depth to saturated zone (Nov-Jul)	0.46	Depth to saturated zone (Nov-Jul)	0.46

Table 16.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
54:						
Zook	Very limited		Very limited		Very limited	
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Restricted permeability	1.00	Flooding	1.00	Restricted permeability	1.00
	Flooding	0.60	Restricted permeability	1.00	Flooding	0.60
59E:						
Burchard	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.96	Slope	0.96	Too steep for surface application	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Too steep for sprinkler application	0.98
					Restricted permeability	0.31
66:						
Luton	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Runoff	0.40	Flooding	0.40		
67:						
Woodbury	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff	0.40	Flooding	0.40	Too acid	0.01
100B:						
Monona	Not limited		Not limited		Not limited	
100C2:						
Monona, moderately eroded	Not limited		Not limited		Somewhat limited	
					Too steep for surface application	0.92
					Too steep for sprinkler application	0.02
100D2:						
Monona, moderately eroded	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Too steep for surface application	1.00
					Too steep for sprinkler application	0.78

Table 16.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
100E2:						
Monona, moderately eroded	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
					Too steep for sprinkler application	1.00
101E2:						
Monona, moderately eroded	Very limited		Very limited		Very limited	
	Low adsorption	1.00	Low adsorption	1.00	Low adsorption	1.00
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
					Too steep for sprinkler application	1.00
Ida, moderately eroded	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
					Too steep for sprinkler application	1.00
123:						
Grantcenter	Very limited		Very limited		Very limited	
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
			Flooding	0.40		
137:						
Haynie	Not limited		Somewhat limited		Not limited	
			Flooding	0.40		
144:						
Blake	Very limited		Very limited		Very limited	
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
			Flooding	0.40		
156:						
Albaton	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Runoff	0.40	Flooding	0.40		

Table 16.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
170E:						
Napier	Very limited		Very limited		Very limited	
	Low adsorption	1.00	Low adsorption	1.00	Low adsorption	1.00
	Slope	0.63	Slope	0.63	Too steep for surface application	1.00
					Too steep for sprinkler application	0.78
Castana	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
					Too steep for sprinkler application	1.00
212:						
Kennebec	Somewhat limited		Very limited		Somewhat limited	
	Flooding	0.60	Flooding	1.00	Flooding	0.60
212+:						
Kennebec, overwash	Somewhat limited		Very limited		Somewhat limited	
	Flooding	0.60	Flooding	1.00	Flooding	0.60
220:						
Nodaway	Somewhat limited		Very limited		Somewhat limited	
	Flooding	0.60	Flooding	1.00	Flooding	0.60
237:						
Sarpy	Very limited		Very limited		Very limited	
	Low adsorption	1.00	Low adsorption	1.00	Low adsorption	1.00
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.65	Droughty	0.65	Droughty	0.65
237B:						
Sarpy	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.65	Droughty	0.65	Droughty	0.65
	Leaching	0.45	Flooding	0.40	Too steep for surface application	0.08
244:						
Blend	Very limited		Very limited		Very limited	
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff	0.40	Flooding	0.40		

Table 16.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
255:						
Cooper	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Restricted permeability	1.00	Restricted permeability	1.00
			Flooding	0.40		
266:						
Smithland	Very limited		Very limited		Very limited	
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Leaching	0.70	Flooding	1.00	Flooding	0.60
	Flooding	0.60				
266+:						
Smithland, overwash	Very limited		Very limited		Very limited	
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Leaching	0.70	Flooding	1.00	Flooding	0.60
	Flooding	0.60				
277B:						
Deloit	Not limited		Not limited		Somewhat limited	
					Too steep for surface application	0.08
277C:						
Deloit	Not limited		Not limited		Somewhat limited	
					Too steep for surface application	0.92
					Too steep for sprinkler application	0.02
277E:						
Deloit	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.96	Slope	0.96	Too steep for surface application	1.00
					Too steep for sprinkler application	0.98
310B:						
Galva	Not limited		Not limited		Somewhat limited	
					Too steep for surface application	0.08

Table 16.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
310C2:						
Galva, moderately eroded	Not limited		Not limited		Somewhat limited	
					Too steep for surface application	0.92
					Too steep for sprinkler application	0.02
366:						
Luton	Very limited		Very limited		Very limited	
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Restricted permeability	0.89	Restricted permeability	0.78	Restricted permeability	0.78
	Runoff	0.40	Flooding	0.40		
436:						
Lakeport	Very limited		Very limited		Very limited	
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Too acid	0.02	Flooding	0.40	Too acid	0.07
			Too acid	0.07		
446:						
Burcham	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Low adsorption	1.00	Low adsorption	1.00	Low adsorption	1.00
465:						
Tieville	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Runoff	0.40	Flooding	0.40		
485:						
Spillville	Very limited		Very limited		Very limited	
	Depth to saturated zone (Nov-Jul)	1.00	Flooding	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Flooding	0.60	Depth to saturated zone (Nov-Jul)	1.00	Flooding	0.60
510:						
Monona, bench	Not limited		Not limited		Not limited	
510B:						
Monona, bench	Not limited		Not limited		Not limited	

Table 16.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
510B2:						
Monona, bench, moderately eroded	Not limited		Not limited		Not limited	
510C2:						
Monona, bench, moderately eroded	Not limited		Not limited		Somewhat limited	
					Too steep for surface application	0.92
					Too steep for sprinkler application	0.02
515:						
Percival	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
518:						
Morconick	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
			Flooding	0.40		
527:						
Anthon	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Too acid	0.01	Too acid	0.01	Too acid	0.01
527B:						
Anthon	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Too acid	0.01	Too acid	0.01	Too steep for surface application	0.08
					Too acid	0.01
549:						
Modale silt loam	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Flooding	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Flooding	0.60	Depth to saturated zone (Nov-Jul)	1.00	Flooding	0.60

Table 16.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
549:						
Modale silty clay loam	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Flooding	1.00	Restricted permeability	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Restricted permeability	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Flooding	0.60	Depth to saturated zone (Nov-Jul)	1.00	Flooding	0.60
552:						
Owego	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Runoff	0.40	Flooding	0.40	Too acid	0.01
630:						
Danbury	Somewhat limited		Very limited		Somewhat limited	
	Flooding	0.60	Flooding	1.00	Flooding	0.60
	Depth to saturated zone (Nov-Jul)	0.43	Depth to saturated zone (Nov-Jul)	0.43	Depth to saturated zone (Nov-Jul)	0.43
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
666B:						
Smithland	Very limited		Very limited		Very limited	
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Leaching	0.70	Flooding	1.00	Flooding	0.60
	Flooding	0.60				
Danbury	Somewhat limited		Very limited		Somewhat limited	
	Flooding	0.60	Flooding	1.00	Flooding	0.60
	Depth to saturated zone (Nov-Jul)	0.43	Depth to saturated zone (Nov-Jul)	0.43	Depth to saturated zone (Nov-Jul)	0.43
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
Judson	Not limited		Not limited		Somewhat limited	
					Too steep for surface application	0.08
670:						
Rawles	Somewhat limited		Very limited		Somewhat limited	
	Flooding	0.60	Flooding	1.00	Flooding	0.60
	Depth to saturated zone (Nov-Jul)	0.46	Depth to saturated zone (Nov-Jul)	0.46	Depth to saturated zone (Nov-Jul)	0.46
700:						
Monona, bench	Not limited		Not limited		Not limited	

Table 16.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
700B:						
Monona, bench	Not limited		Not limited		Somewhat limited	
					Too steep for surface application	0.08
700C2:						
Monona, bench, moderately eroded	Not limited		Not limited		Somewhat limited	
					Too steep for surface application	0.92
					Too steep for sprinkler application	0.02
700D2:						
Monona, bench, moderately eroded	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Too steep for surface application	1.00
					Too steep for sprinkler application	0.78
701:						
Wilsey	Somewhat limited		Very limited		Somewhat limited	
	Flooding	0.60	Flooding	1.00	Flooding	0.60
709:						
Fairhaven, 32 to 40 inches to sand and gravel	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
709B:						
Fairhaven, 32 to 40 inches to sand and gravel	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
717D:						
Napier	Very limited		Very limited		Very limited	
	Low adsorption	1.00	Low adsorption	1.00	Low adsorption	1.00
	Slope	0.04	Slope	0.04	Too steep for surface application	1.00
					Too steep for sprinkler application	0.22
Gullied land	Not rated		Not rated		Not rated	

Table 16.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
733:						
Calco	Very limited		Very limited		Very limited	
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Leaching	0.70	Flooding	1.00	Flooding	0.60
	Flooding	0.60				
734:						
Holly Springs	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Runoff	0.40	Flooding	0.40		
734+:						
Holly Springs, overwash	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Runoff	0.40	Flooding	0.40		
740C:						
Hawick	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.79	Droughty	0.79	Too steep for surface application	0.92
	Leaching	0.45			Droughty	0.79
740D:						
Hawick	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.79	Droughty	0.79	Too steep for surface application	1.00
	Slope	0.63	Slope	0.63	Droughty	0.79
740E:						
Hawick	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Droughty	0.79	Droughty	0.79	Too steep for sprinkler application	1.00

Table 16.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
740F:						
Hawick	Very limited		Very limited		Very limited	
	Slope	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Filtering capacity	1.00	Slope	1.00	Too steep for sprinkler application	1.00
	Droughty	0.79	Droughty	0.79	Too steep for surface application	1.00
750:						
Ticonic	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Leaching	0.45	Flooding	0.40		
754:						
Larpenteur	Very limited		Very limited		Very limited	
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
			Flooding	0.40		
810B:						
Galva, bench	Not limited		Not limited		Not limited	
810C2:						
Galva, bench, moderately eroded	Not limited		Not limited		Somewhat limited	
					Too steep for surface application	0.92
					Too steep for sprinkler application	0.02
847B:						
Judson	Not limited		Not limited		Somewhat limited	
					Too steep for surface application	0.08
Rawles	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone (Nov-Jul)	0.46	Depth to saturated zone (Nov-Jul)	0.46	Depth to saturated zone (Nov-Jul)	0.46
945:						
Albaton, depressional, drained	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00

Table 16.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1137:						
Haynie	Somewhat limited		Very limited		Somewhat limited	
	Flooding	0.60	Flooding	1.00	Flooding	0.60
1144:						
Blake	Very limited		Very limited		Very limited	
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Low adsorption	1.00	Flooding	1.00	Low adsorption	1.00
	Flooding	0.60	Low adsorption	1.00	Flooding	0.60
1146:						
Onawa	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Flooding	1.00	Restricted permeability	1.00
	Flooding	0.60	Restricted permeability	1.00	Flooding	0.60
1220:						
Nodaway, channeled	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
1237B:						
Sarpy	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Flooding	1.00	Filtering capacity	1.00
	Droughty	0.65	Filtering capacity	1.00	Droughty	0.65
	Flooding	0.60	Droughty	0.65	Flooding	0.60
1237C:						
Sarpy	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.65	Flooding	1.00	Too steep for surface application	0.92
	Flooding	0.60	Droughty	0.65	Droughty	0.65
1238:						
Sarpy	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Flooding	1.00	Filtering capacity	1.00
	Droughty	0.65	Filtering capacity	1.00	Droughty	0.65
	Flooding	0.60	Droughty	0.65	Flooding	0.60
Morconick	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Flooding	0.60	Flooding	1.00	Flooding	0.60
1513:						
Grable	Very limited		Very limited		Very limited	
	Dense layer	1.00	Flooding	1.00	Filtering capacity	1.00
	Filtering capacity	1.00	Filtering capacity	1.00	Flooding	0.60
	Flooding	0.60				

Table 16.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
1513:						
Morconick	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Flooding	0.60	Flooding	1.00	Flooding	0.60
1524:						
Morconick	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Flooding	0.60	Flooding	1.00	Flooding	0.60
1525:						
Scroll	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Restricted permeability	1.00	Flooding	1.00	Restricted permeability	1.00
2515:						
Percival	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Flooding	1.00	Restricted permeability	1.00
	Filtering capacity	1.00	Restricted permeability	1.00	Filtering capacity	1.00
Albaton	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Flooding	0.60	Flooding	1.00	Flooding	0.60
3146:						
Onawa	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff	0.40	Flooding	0.40		
Albaton	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Runoff	0.40	Flooding	0.40		

Table 16.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
3275:						
Moville-------------	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
			Flooding	0.40		
Holly Springs, overwash-----------	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Runoff	0.40	Flooding	0.40		
3440:						
Blencoe-------------	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff	0.40	Flooding	0.40		
Woodbury------------	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff	0.40	Flooding	0.40		
3513:						
Grable--------------	Very limited		Very limited		Very limited	
	Dense layer	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Filtering capacity	1.00	Flooding	0.40		
Morconick-----------	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
			Flooding	0.40		
3549:						
Modale silty clay loam---------------	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
			Flooding	0.40		

Table 16.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
3549:						
Modale silt loam----	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
			Flooding	0.40		
3686:						
Napa----------------	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Runoff	0.40	Flooding	0.40		
Luton---------------	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Runoff	0.40	Flooding	0.40		
Tieville------------	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Runoff	0.40	Flooding	0.40		
4000:						
Urban land----------	Not rated		Not rated		Not rated	
4001C:						
Ida-----------------	Very limited		Very limited		Very limited	
	Low adsorption	1.00	Low adsorption	1.00	Low adsorption	1.00
					Too steep for surface application	0.92
					Too steep for sprinkler application	0.02
Urban land----------	Not rated		Not rated		Not rated	
4001D:						
Ida-----------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Too steep for surface application	1.00
					Too steep for sprinkler application	0.78
Urban land----------	Not rated		Not rated		Not rated	

Table 16.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
4001E:						
Ida	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
					Too steep for sprinkler application	1.00
Urban land	Not rated		Not rated		Not rated	
4001F:						
Ida	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for sprinkler application	1.00
					Too steep for surface application	1.00
Urban land	Not rated		Not rated		Not rated	
4010B:						
Monona	Not limited		Not limited		Somewhat limited	
					Too steep for surface application	0.08
Urban land	Not rated		Not rated		Not rated	
4010C:						
Monona	Not limited		Not limited		Somewhat limited	
					Too steep for surface application	0.92
					Too steep for sprinkler application	0.02
Urban land	Not rated		Not rated		Not rated	
4010D:						
Monona	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.63	Slope	0.63	Too steep for surface application	1.00
					Too steep for sprinkler application	0.78
Urban land	Not rated		Not rated		Not rated	

Table 16.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
4010E:						
Monona	Very limited		Very limited		Very limited	
	Low adsorption	1.00	Low adsorption	1.00	Low adsorption	1.00
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
					Too steep for sprinkler application	1.00
Urban land	Not rated		Not rated		Not rated	
4012B:						
Napier	Very limited		Very limited		Very limited	
	Low adsorption	1.00	Low adsorption	1.00	Low adsorption	1.00
					Too steep for surface application	0.08
Urban land	Not rated		Not rated		Not rated	
4012C:						
Napier	Very limited		Very limited		Very limited	
	Low adsorption	1.00	Low adsorption	1.00	Low adsorption	1.00
					Too steep for surface application	0.92
					Too steep for sprinkler application	0.02
Urban land	Not rated		Not rated		Not rated	
4170D:						
Napier	Very limited		Very limited		Very limited	
	Low adsorption	1.00	Low adsorption	1.00	Low adsorption	1.00
	Slope	0.63	Slope	0.63	Too steep for surface application	1.00
					Too steep for sprinkler application	0.78
Castana	Very limited		Very limited		Very limited	
	Low adsorption	1.00	Low adsorption	1.00	Low adsorption	1.00
	Slope	0.63	Slope	0.63	Too steep for surface application	1.00
					Too steep for sprinkler application	0.78
Urban land	Not rated		Not rated		Not rated	

Table 16.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
4600:						
Percival	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone (Nov-Jul)	1.00	Depth to saturated zone (Nov-Jul)	1.00
	Depth to saturated zone (Nov-Jul)	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
Haynie	Not limited		Somewhat limited		Not limited	
			Flooding	0.40		
Urban land	Not rated		Not rated		Not rated	
4670:						
Rawles	Somewhat limited		Very limited		Somewhat limited	
	Flooding	0.60	Flooding	1.00	Flooding	0.60
	Depth to saturated zone (Nov-Jul)	0.46	Depth to saturated zone (Nov-Jul)	0.46	Depth to saturated zone (Nov-Jul)	0.46
Urban land	Not rated		Not rated		Not rated	
5010:						
Pits, sand and gravel	Not rated		Not rated		Not rated	
5040:						
Udorthents, loamy	Not rated		Not rated		Not rated	
5044:						
Fluvaquents	Not rated		Not rated		Not rated	
5060:						
Pits, clay	Not rated		Not rated		Not rated	
5080:						
Udorthents, sanitary landfill	Not rated		Not rated		Not rated	
SL:						
Sewage lagoons	Not rated		Not rated		Not rated	
W:						
Water	Not rated		Not rated		Not rated	

Table 17.--Engineering Index Properties

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
1B3:												
Ida, severely eroded---------	0-6	Silt loam	ML	A-4, A-6	0	0	100	100	95-100	95-100	30-40	5-15
	6-80	Silt loam	ML	A-4, A-6	0	0	100	100	95-100	95-100	30-40	5-15
1C:												
Ida-------------	0-8	Silt loam	ML	A-4, A-6	0	0	100	100	95-100	95-100	30-40	5-15
	8-60	Silt loam	ML	A-4, A-6	0	0	100	100	95-100	95-100	30-40	5-15
1C3:												
Ida, severely eroded---------	0-6	Silt loam	ML	A-6, A-4	0	0	100	100	95-100	95-100	30-40	5-15
	6-80	Silt loam	ML	A-6, A-4	0	0	100	100	95-100	95-100	30-40	5-15
1D3:												
Ida, severely eroded---------	0-6	Silt loam	ML	A-6, A-4	0	0	100	100	95-100	95-100	30-40	5-15
	6-80	Silt loam	ML	A-6, A-4	0	0	100	100	95-100	95-100	30-40	5-15
1E3:												
Ida, severely eroded---------	0-6	Silt loam	ML	A-6, A-4	0	0	100	100	95-100	95-100	30-40	5-15
	6-80	Silt loam	ML	A-6, A-4	0	0	100	100	95-100	95-100	30-40	5-15
1F:												
Ida-------------	0-8	Silt loam	ML	A-4, A-6	0	0	100	100	95-100	95-100	30-40	5-15
	8-60	Silt loam	ML	A-4, A-6	0	0	100	100	95-100	95-100	30-40	5-15
1F3:												
Ida, severely eroded---------	0-6	Silt loam	ML	A-6, A-4	0	0	100	100	95-100	95-100	30-40	5-15
	6-80	Silt loam	ML	A-6, A-4	0	0	100	100	95-100	95-100	30-40	5-15
1G:												
Ida-------------	0-8	Silt loam	ML	A-4, A-6	0	0	100	100	95-100	95-100	30-40	5-15
	8-80	Silt loam	ML	A-4, A-6	0	0	100	100	95-100	95-100	30-40	5-15
2G:												
Hamburg---------	0-4	Silt loam	ML	A-4	0	0	100	100	100	95-100	0-25	NP-5
	4-14	Silt loam	ML	A-4	0	0	100	100	100	95-100	0-25	NP-5
	14-60	Silt loam	ML	A-4	0	0	100	100	100	95-100	0-25	NP-5

Table 17.--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	
3D:												
Castana---------	0-8	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	25-40	8-20
	8-18	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	25-40	8-20
	18-30	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	25-40	8-20
	30-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	25-40	8-20
3E:												
Castana---------	0-8	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	25-40	8-20
	8-18	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	25-40	8-20
	18-30	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	25-40	8-20
	30-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	25-40	8-20
8B:												
Judson----------	0-9	Silty clay loam	CL, ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-25
	9-28	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	30-50	15-25
	28-52	Silty clay loam	CL, CL-ML	A-6, A-7, A-4	0	0	100	100	100	95-100	25-50	5-25
	52-60	Silty clay loam	CL, CL-ML	A-6, A-7, A-4	0	0	100	100	100	95-100	25-50	5-25
8C:												
Judson----------	0-9	Silty clay loam	CL, ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-25
	9-28	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	30-50	15-25
	28-52	Silty clay loam	CL, CL-ML	A-6, A-7, A-4	0	0	100	100	100	95-100	25-50	5-25
	52-60	Silty clay loam	CL, CL-ML	A-6, A-7, A-4	0	0	100	100	100	95-100	25-50	5-25
10B:												
Monona----------	0-8	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	8-15	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	15-30	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	30-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
10B2:												
Monona, moderately eroded---------	0-7	Silt loam	ML, CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	7-24	Silt loam	ML, CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	24-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
10C2:												
Monona, moderately eroded---------	0-7	Silt loam	ML, CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	7-24	Silt loam	ML, CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	24-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20

Table 17.--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	
10D2:												
Monona, moderately eroded---------	0-7	Silt loam	ML, CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	7-24	Silt loam	ML, CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	24-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
10D3:												
Monona, severely eroded---------	0-7	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	7-24	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	24-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
10E:												
Monona----------	0-8	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	8-15	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	15-30	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	30-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
10E3:												
Monona, severely eroded---------	0-7	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	7-24	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	24-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
10F:												
Monona----------	0-8	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	8-15	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	15-30	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	30-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
12B:												
Napier----------	0-8	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	8-29	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	29-48	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	48-60	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
12C:												
Napier----------	0-8	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	8-29	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	29-48	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	48-60	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20

Table 17.--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	
17B:												
Napier----------	0-8	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	8-29	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	29-48	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	48-60	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
Kennebec--------	0-8	Silt loam	CL	A-7, A-6	0	0	100	100	95-100	90-100	25-45	10-20
	8-41	Silt loam	CL	A-7, A-6	0	0	100	100	95-100	90-100	25-45	10-20
	41-54	Silt loam, silty clay loam	CL	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-15
	54-80	Silt loam, silty clay loam	CL	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-15
Colo------------	0-8	Silty clay loam	CL	A-7	0	0	100	100	90-100	90-100	40-60	15-30
	8-34	Silty clay loam	CL	A-7	0	0	100	100	90-100	90-100	40-60	15-30
	34-51	Silty clay loam	CL	A-7	0	0	100	100	90-100	90-100	40-55	20-30
	51-60	Silty clay loam, silt loam	CL	A-7	0	0	100	100	95-100	80-100	40-55	15-30
26:												
Kennebec--------	0-9	Silty clay loam	CL	A-6	0	0	95-100	95-100	95-100	95-100	30-40	10-20
	9-48	Silty clay loam	ML	A-4	0	0	95-100	95-100	95-100	95-100	25-40	5-12
	48-59	Silty clay loam	ML	A-4	0	0	95-100	95-100	95-100	95-100	---	NP
	59-80	Silty clay loam	ML	A-4	0	0	95-100	95-100	95-100	95-100	---	NP
35F:												
Liston----------	0-5	Clay loam	CL	A-6, A-7	0	0-5	95-100	95-100	85-100	55-90	30-50	15-25
	5-38	Clay loam	CL	A-6, A-7	0	0-5	95-100	95-100	90-100	70-90	30-55	12-30
	38-80	Loam, clay loam	CL	A-6, A-7	0	0-5	95-100	95-100	90-100	60-75	25-55	10-30
Burchard--------	0-11	Clay loam	CL	A-6, A-7	0	0-5	95-100	95-100	85-95	60-80	35-50	14-24
	11-24	Clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	75-95	60-80	35-50	20-30
	24-36	Clay loam, loam	CL	A-6, A-7	0	0-5	95-100	85-100	75-95	60-80	35-50	20-30
	36-60	Clay loam, loam	CL	A-7, A-6	0	0-5	95-100	85-100	75-95	60-80	35-50	15-30
35G:												
Liston----------	0-5	Clay loam	CL	A-6, A-7	0	0-5	95-100	95-100	85-100	55-90	30-50	15-25
	5-38	Clay loam	CL	A-6, A-7	0	0-5	95-100	95-100	90-100	70-90	30-55	12-30
	38-80	Loam, clay loam	CL	A-6, A-7	0	0-5	95-100	95-100	90-100	60-75	25-55	10-30

Table 17.--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	
35G:												
Burchard--------	0-11	Clay loam	CL	A-6, A-7	0	0-5	95-100	95-100	85-95	60-80	35-50	14-24
	11-24	Clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	75-95	60-80	35-50	20-30
	24-36	Clay loam, loam	CL	A-6, A-7	0	0-5	95-100	85-100	75-95	60-80	35-50	20-30
	36-60	Clay loam, loam	CL	A-7, A-6	0	0-5	95-100	85-100	75-95	60-80	35-50	15-30
36:												
Salix-----------	0-7	Silt loam, silty clay loam	CL	A-7	0	0	100	100	95-100	95-100	40-60	20-35
	7-15	Silty clay loam	CL	A-7	0	0	100	100	95-100	95-100	40-60	20-35
	15-25	Silty clay loam	CL	A-7, A-6	0	0	100	100	95-100	95-100	35-50	20-30
	25-40	Silt loam, loam, very fine sandy loam	ML	A-6, A-4	0	0	100	100	95-100	90-100	30-40	5-15
	40-60	Silt loam, loam, very fine sandy loam	ML	A-6, A-4	0	0	100	100	95-100	90-100	30-40	5-15
46:												
Keg-------------	0-7	Very fine sandy loam, loam	CL	A-4, A-6	0	0	100	100	95-100	90-100	25-35	5-15
	7-29	Loam	CL	A-4, A-6	0	0	100	100	95-100	90-100	25-35	5-15
	29-56	Loam, very fine sandy loam	CL	A-4, A-6	0	0	100	100	90-100	80-100	25-35	5-15
	56-80	Loam, very fine sandy loam	CL	A-4, A-6	0	0	100	100	90-100	80-100	25-35	5-15
47B:												
Napier----------	0-8	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	8-29	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	29-48	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	48-60	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
Rawles----------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	90-100	25-40	5-15
	8-26	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	90-100	25-40	5-15
	26-60	Silt loam, silty clay loam	CL	A-6, A-7	0	0	100	100	100	90-100	30-45	10-20

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
54:												
Zook------------	0-6	Silty clay loam	CL	A-7	0	0	100	100	95-100	95-100	45-65	20-35
	6-20	Silty clay loam	CL	A-7	0	0	100	100	95-100	95-100	45-65	20-35
	20-52	Silty clay, silty clay loam	CH	A-7	0	0	100	100	95-100	95-100	60-85	35-55
	52-60	Silty clay loam, silty clay, silt loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-80	10-50
59E:												
Burchard--------	0-11	Clay loam	CL	A-6, A-7	0	0-5	95-100	95-100	85-95	60-80	35-50	14-24
	11-24	Clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	75-95	60-80	35-50	20-30
	24-36	Clay loam, loam	CL	A-6, A-7	0	0-5	95-100	85-100	75-95	60-80	35-50	20-30
	36-60	Clay loam, loam	CL	A-7, A-6	0	0-5	95-100	85-100	75-95	60-80	35-50	15-30
66:												
Luton-----------	0-8	Silty clay	CH	A-7	0	0	100	100	95-100	95-100	56-90	28-54
	8-25	Silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	35-60
	25-38	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	35-60
	38-60	Clay, silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	35-60
67:												
Woodbury--------	0-7	Silty clay	CH	A-7	0	0	100	100	100	95-100	60-85	35-60
	7-19	Silty clay	CH	A-7	0	0	100	100	100	95-100	60-85	35-60
	19-35	Silty clay, clay	CH	A-7	0	0	100	100	95-100	90-100	60-85	35-60
	35-48	Silty clay loam	CL	A-7	0	0	100	100	90-100	80-100	40-60	20-35
	48-60	Silt loam	CH	A-7	0	0	100	100	90-100	70-90	40-60	20-35
100B:												
Monona----------	0-7	Silty clay loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	7-20	Silty clay loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	20-48	Silt loam, silty clay loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	48-80	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20

Table 17.--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	
100C2:												
Monona, moderately eroded---------	0-6	Silty clay loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	6-24	Silt loam, silty clay loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	24-80	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
100D2:												
Monona, moderately eroded---------	0-6	Silty clay loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	6-24	Silt loam, silty clay loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	24-80	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
100E2:												
Monona, moderately eroded---------	0-6	Silty clay loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	6-24	Silt loam, silty clay loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	24-80	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
101E2:												
Monona, moderately eroded---------	0-6	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	6-24	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	24-80	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
Ida, moderately eroded---------	0-6	Silt loam	ML	A-6, A-4	0	0	100	100	95-100	95-100	30-40	5-15
	6-80	Silt loam	ML	A-6, A-4	0	0	100	100	95-100	95-100	30-40	5-15

Table 17.--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	
123:												
Grantcenter-----	0-6	Silty clay loam	ML	A-6, A-7	0	0	100	100	85-100	85-100	35-50	10-25
	6-23	Silty clay loam, silt loam	ML	A-6, A-7	0	0	100	100	85-100	85-100	35-50	10-25
	23-56	Silt loam, loam	CL	A-4, A-6, A-5, A-7	0	0	100	100	85-100	80-100	25-45	5-20
	56-80	Silt loam, loam	CL	A-4, A-6, A-5, A-7	0	0	100	100	85-100	80-100	25-45	5-20
137:												
Haynie----------	0-7	Silt loam	CL	A-6, A-4	0	0	100	100	85-100	70-100	25-40	5-15
	7-60	Silt loam, very fine sandy loam	CL	A-6, A-4	0	0	100	100	85-100	85-100	25-35	5-15
144:												
Blake-----------	0-7	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	85-95	35-50	15-30
	7-24	Silty clay loam, silt loam	CL	A-6, A-7	0	0	100	100	90-100	85-95	30-50	10-30
	24-60	Silt loam, loam, very fine sandy loam	ML	A-4, A-6	0	0	100	100	80-90	75-90	30-40	5-15
156:												
Albaton---------	0-7	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	40-60
	7-60	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	40-60
170E:												
Napier----------	0-8	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	8-29	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	29-48	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	48-60	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
Castana---------	0-8	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	25-40	8-20
	8-18	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	25-40	8-20
	18-30	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	25-40	8-20
	30-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	25-40	8-20

Table 17.--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	
212:												
Kennebec--------	0-8	Silt loam	CL	A-7, A-6	0	0	100	100	95-100	90-100	25-45	10-20
	8-41	Silt loam	CL	A-7, A-6	0	0	100	100	95-100	90-100	25-45	10-20
	41-54	Silt loam, silty clay loam	CL	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-15
	54-80	Silt loam, silty clay loam	CL	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-15
212+:												
Kennebec, overwash-------	0-10	Silt loam	CL	A-7, A-6	0	0	100	100	95-100	90-100	25-45	10-20
	10-41	Silt loam	CL	A-7, A-6	0	0	100	100	95-100	90-100	25-45	10-20
	41-54	Silt loam, silty clay loam	CL	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-15
	54-80	Silt loam, silty clay loam	CL	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-15
220:												
Nodaway---------	0-7	Silty clay loam, silt loam	CL	A-6, A-4	0	0	100	95-100	95-100	90-100	25-35	5-15
	7-60	Stratified silt loam to silty clay loam, silt loam, silty clay loam	CL	A-6, A-4	0	0	100	95-100	95-100	90-100	25-40	5-15
237:												
Sarpy-----------	0-6	Loamy fine sand	SC-SM	A-2-4	0	0	100	100	60-80	15-35	0-20	NP
	6-60	Fine sand, loamy fine sand, sand	SC-SM	A-2-4, A-3	0	0	100	100	60-80	2-35	0-25	NP
237B:												
Sarpy-----------	0-6	Loamy fine sand	SM	A-2-4	0	0	100	100	60-80	15-35	---	NP
	6-60	Fine sand, loamy fine sand, sand	SM	A-3, A-2-4	0	0	100	100	60-80	2-35	---	NP

Table 17.--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	
244:												
Blend-----------	0-7	Silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	30-50
	7-14	Silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	30-50
	14-32	Silty clay loam	CL	A-7	0	0	100	100	95-100	85-100	40-50	15-25
	32-43	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	30-55
	43-60	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	30-55
255:												
Cooper----------	0-8	Silty clay loam	CL	A-7	0	0	100	100	95-100	85-100	40-50	20-30
	8-16	Silty clay loam	CL	A-7	0	0	100	100	95-100	85-100	40-50	20-30
	16-24	Silty clay loam	CL	A-7	0	0	100	100	95-100	95-100	40-50	20-30
	24-33	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	35-50
	33-60	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	35-50
266:												
Smithland-------	0-7	Silty clay loam	CL	A-7	0	0	100	100	90-100	90-100	40-60	15-30
	7-34	Silty clay loam	CL	A-7	0	0	100	100	90-100	90-100	40-60	15-30
	34-50	Silty clay loam	CL	A-7	0	0	100	100	90-100	90-100	40-55	20-30
	50-60	Silty clay loam, clay loam, silt loam	CL	A-7	0	0	100	100	95-100	80-100	40-55	15-30
266+:												
Smithland, overwash-------	0-8	Silt loam	CL	A-7	0	0	100	100	90-100	90-100	40-60	15-30
	8-34	Silty clay loam	CL	A-7	0	0	100	100	90-100	90-100	40-60	15-30
	34-50	Silty clay loam	CL	A-7	0	0	100	100	90-100	90-100	40-55	20-30
	50-60	Silty clay loam, clay loam, silt loam	CL	A-7	0	0	100	100	95-100	80-100	40-55	15-30
277B:												
Deloit----------	0-8	Loam	CL	A-6	0	0-5	95-100	95-100	70-90	60-80	30-40	10-20
	8-30	Loam, clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	70-90	60-80	30-45	10-25
	30-80	Clay loam, loam	CL, SC, SC-SM, CL-ML	A-6, A-4	0	0-5	95-100	90-100	65-95	35-85	20-40	5-20

Table 17.--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	
277C:												
Deloit----------	0-8	Loam	CL	A-6	0	0-5	95-100	95-100	70-90	60-80	30-40	10-20
	8-30	Loam, clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	70-90	60-80	30-45	10-25
	30-80	Clay loam, loam	CL, SC, SC-SM, CL-ML	A-6, A-4	0	0-5	95-100	90-100	65-95	35-85	20-40	5-20
277E:												
Deloit----------	0-8	Loam	CL	A-6	0	0-5	95-100	95-100	70-90	60-80	30-40	10-20
	8-30	Loam, clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	70-90	60-80	30-45	10-25
	30-80	Clay loam, loam	CL, SC, SC-SM, CL-ML	A-6, A-4	0	0-5	95-100	90-100	65-95	35-85	20-40	5-20
310B:												
Galva-----------	0-6	Silty clay loam	ML, CL, MH, CH	A-7	0	0	100	100	95-100	90-100	40-55	15-25
	6-11	Silty clay loam	ML, CL, MH, CH	A-7	0	0	100	100	95-100	90-100	40-55	15-25
	11-31	Silty clay loam	CL	A-7	0	0	100	100	95-100	90-100	40-50	15-25
	31-45	Silt loam, silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	85-100	35-50	15-25
	45-60	Clay loam, loam, silt loam	CL	A-6	0	2-5	95-100	90-100	75-90	65-80	30-40	10-20
310C2:												
Galva, moderately eroded---------	0-7	Silty clay loam	ML, CL, MH, CH	A-7	0	0	100	100	95-100	90-100	40-55	15-25
	7-40	Silty clay loam	CL	A-7	0	0	100	100	95-100	90-100	40-50	15-25
	40-60	Silt loam, silty clay loam	CL	A-7, A-6	0	0	100	100	95-100	85-100	35-50	15-25
366:												
Luton-----------	0-8	Silty clay loam	CL	A-7	0	0	100	100	95-100	95-100	40-60	15-30
	8-25	Silty clay loam	CL	A-7	0	0	100	100	95-100	95-100	40-60	15-30
	25-38	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	35-60
	38-60	Silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	35-60

Table 17.--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	
436:												
Lakeport--------	0-12	Silty clay loam	CL	A-7	0	0	100	100	95-100	90-100	40-60	20-35
	12-22	Silty clay loam	CL	A-7	0	0	100	100	95-100	90-100	40-60	20-35
	21-37	Silty clay loam	CL	A-7	0	0	100	100	95-100	90-100	40-60	20-35
	48-80	Stratified silt loam to silty clay loam to silty clay to clay	CL	A-6	0	0	100	100	90-100	85-100	25-40	10-20
446:												
Burcham---------	0-7	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	90-100	25-35	5-15
	7-26	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	90-100	25-35	5-15
	26-60	Silty clay, clay	CH	A-7	0	0	100	100	100	95-100	60-80	45-60
465:												
Tieville--------	0-7	Silty clay	CH	A-7	0	0	100	100	90-100	75-95	55-70	35-45
	7-22	Silty clay	CH	A-7	0	0	100	100	90-100	75-95	55-70	35-45
	22-43	Silty clay, clay	CH	A-7	0	0	100	100	90-100	75-95	55-70	35-45
	43-60	Silty clay, clay	CH	A-7	0	0	100	100	90-100	75-95	55-70	35-45
485:												
Spillville------	0-20	Loam	CL	A-6	0	0	100	95-100	85-95	60-80	25-40	10-20
	20-54	Loam	CL	A-6	0	0	100	95-100	85-95	60-80	25-40	10-20
	54-80	Sandy clay loam, loam, sandy loam	SC-SM, SC, CL, CL-ML	A-4, A-6	0	0	100	95-100	80-90	35-75	20-40	5-15
510:												
Monona, bench---	0-8	Silt loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	8-15	Silt loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	15-30	Silt loam, silty clay loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	30-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20

Table 17.--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	
510B:												
Monona, bench---	0-8	Silt loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	8-15	Silt loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	15-30	Silt loam, silty clay loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	30-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
510B2:												
Monona, bench, moderately eroded---------	0-7	Silt loam	ML, CL	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	7-24	Silt loam	ML, CL	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	24-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
510C2:												
Monona, bench, moderately eroded---------	0-7	Silt loam	ML, CL	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	7-24	Silt loam, silty clay loam	ML, CL	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	24-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
515:												
Percival--------	0-8	Silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	35-60
	8-24	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	35-60
	24-60	Stratified fine sand to loamy fine sand	SM	A-2	0	0	100	100	80-95	12-30	0-20	NP-5
518:												
Morconick-------	0-7	Fine sandy loam	CL	A-6	0	0	100	100	80-95	80-95	25-40	5-20
	7-13	Loam	CL	A-4	0	0	100	100	80-95	80-95	0-25	5-15
	13-80	Stratified sand to fine sand, very fine sand, sand	SC	A-2	0	0	100	85-100	65-95	5-30	0-25	5-15

Table 17.--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	
527:												
Anthon----------	0-8	Silty clay loam, silt loam	CL	A-6	0	0	95-100	95-100	95-100	85-95	30-40	10-20
	8-29	Silty clay loam, silt loam	CL	A-6	0	0	95-100	95-100	95-100	85-95	30-40	10-20
	29-45	Silty clay loam, silt loam	CL	A-6	0	0	95-100	95-100	95-100	85-95	30-40	10-20
	45-59	Gravelly sandy clay loam, sandy clay loam	ML	A-6	0	0	95-100	80-100	75-95	40-60	25-40	5-12
	59-80	Gravelly loamy sand, sandy loam, very gravelly loamy sand, gravelly sandy loam, loamy sand	SP	A-1	0-3	0-5	45-100	35-100	10-80	2-10	---	NP
527B:												
Anthon----------	0-8	Silty clay loam, silt loam	CL	A-6	0	0	95-100	95-100	95-100	85-95	30-40	10-20
	8-29	Silty clay loam, silt loam	CL	A-6	0	0	95-100	95-100	95-100	85-95	30-40	10-20
	29-45	Silty clay loam, silt loam	CL	A-6	0	0	95-100	95-100	95-100	85-95	30-40	10-20
	45-59	Gravelly sandy clay loam, sandy clay loam	ML	A-6	0	0	95-100	80-100	75-95	40-60	25-40	5-12
	59-80	Gravelly loamy sand, sandy loam, very gravelly loamy sand, gravelly sandy loam, loamy sand	SP	A-1	0-3	0-5	45-100	35-100	10-80	2-10	---	NP

Table 17.--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	
549:												
Modale silt loam	0-7	Loam, silt loam	CL	A-6, A-4	0	0	100	100	95-100	80-90	25-40	5-15
	7-24	Loam, silt loam	CL	A-6, A-4	0	0	100	100	95-100	80-90	25-40	5-15
	24-60	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	65-85	40-60
Modale silty clay loam------	0-7	Silt loam, silty clay loam	CL-ML, CL	A-6, A-4	0	0	100	100	95-100	80-90	25-40	5-15
	7-24	Silt loam, silty clay loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	80-90	25-40	5-15
	24-60	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	65-85	40-60
552:												
Owego-----------	0-8	Silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	30-55
	8-14	Silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	30-55
	14-23	Silt loam, silty clay loam, clay loam	CL	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-15
	23-32	Silty clay	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	5-15
	32-55	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	30-55
	55-80	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	30-55
630:												
Danbury---------	0-7	Silty clay loam, silt loam	ML	A-6	0	0	100	100	95-100	85-100	25-50	8-20
	7-32	Silty clay loam, silt loam	ML	A-6	0	0	100	100	95-100	85-100	25-50	8-20
	32-64	Silty clay loam, silt loam	CL	A-7	0	0	100	100	95-100	85-100	35-60	15-30
	64-80	Silty clay loam, silt loam	CL	A-7	0	0	100	100	95-100	85-100	35-60	15-30

Table 17.--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	
666B:												
Smithland-------	0-7	Silty clay loam	CL	A-7	0	0	100	100	90-100	90-100	40-60	15-30
	7-34	Silty clay loam	CL	A-7	0	0	100	100	90-100	90-100	40-60	15-30
	34-50	Silty clay loam	CL	A-7	0	0	100	100	90-100	90-100	40-55	20-30
	50-60	Silty clay loam, silt loam	CL	A-7	0	0	100	100	95-100	80-100	40-55	15-30
Danbury---------	0-7	Silty clay loam, silt loam	ML	A-6	0	0	100	100	95-100	85-100	25-50	8-20
	7-32	Silty clay loam, silt loam	ML	A-6	0	0	100	100	95-100	85-100	25-50	8-20
	32-64	Silty clay loam, silt loam	CL	A-7	0	0	100	100	95-100	85-100	35-60	15-30
	64-80	Silty clay loam, silt loam	CL	A-7	0	0	100	100	95-100	85-100	35-60	15-30
Judson----------	0-9	Silty clay loam	CL, ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-25
	9-28	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	30-50	15-25
	28-52	Silty clay loam	CL, CL-ML	A-6, A-7, A-4	0	0	100	100	100	95-100	25-50	5-25
	52-60	Silty clay loam	CL, CL-ML	A-6, A-7, A-4	0	0	100	100	100	95-100	25-50	5-25
670:												
Rawles----------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	90-100	25-40	5-15
	8-26	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	90-100	25-40	5-15
	26-60	Silt loam, silty clay loam	CL	A-6, A-7	0	0	100	100	100	90-100	30-45	10-20
700:												
Monona, bench---	0-6	Silty clay loam	ML	A-7	0	0	100	100	95-100	95-100	35-50	10-25
	6-16	Silty clay loam	ML	A-7	0	0	100	100	95-100	95-100	35-50	10-25
	16-49	Silty clay loam, silt loam	ML	A-7	0	0	100	100	95-100	95-100	35-50	10-25
	49-80	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20

Table 17.--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	
700B:												
Monona, bench---	0-6	Silty clay loam	ML	A-7	0	0	100	100	95-100	95-100	35-50	10-25
	6-16	Silty clay loam	ML	A-7	0	0	100	100	95-100	95-100	35-50	10-25
	16-49	Silty clay loam, silt loam	ML	A-7	0	0	100	100	95-100	95-100	35-50	10-25
	49-80	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
700C2:												
Monona, bench, moderately eroded---------	0-6	Silty clay loam	ML	A-7	0	0	100	100	95-100	95-100	35-50	10-25
	6-49	Silty clay loam, silt loam	ML	A-7	0	0	100	100	95-100	95-100	35-50	10-25
	49-80	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
700D2:												
Monona, bench, moderately eroded---------	0-6	Silty clay loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	6-20	Silt loam, silty clay loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	20-80	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
701:												
Wilsey----------	0-7	Silt loam, silty clay loam	CL	A-4	0	0	100	100	95-100	90-100	25-40	5-15
	7-54	Silt loam, silty clay loam	CL	A-4	0	0	100	100	95-100	90-100	25-40	5-15
	54-80	Silty clay loam, silt loam	CL	A-4	0	0	100	100	95-100	90-100	25-40	5-15

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
709:												
Fairhaven, 32 to 40 inches to sand and gravel	0-6	Silt loam, silty clay loam	ML	A-4	0	0	95-100	90-100	75-95	50-65	25-40	2-10
	6-12	Silt loam, silty clay loam	ML	A-4	0	0	95-100	90-100	75-95	50-65	25-40	2-10
	12-25	Silty clay loam, silt loam	SM, ML, CL, SC	A-4, A-6	0	0	95-100	80-100	75-95	40-60	25-40	5-12
	25-39	Clay loam	CL	A-6, A-7	0	0-5	95-100	80-100	75-95	65-80	35-50	20-30
	39-80	Gravelly loamy sand, gravelly coarse sand	SP, SP-SM, GP, GP-GM	A-1, A-3, A-2	0-3	0-5	45-100	40-90	0-50	0-30	---	NP
709B:												
Fairhaven, 32 to 40 inches to sand and gravel	0-6	Silt loam, silty clay loam	ML	A-4	0	0	95-100	90-100	75-95	50-65	25-40	2-10
	6-12	Silt loam, silty clay loam	ML	A-4	0	0	95-100	90-100	75-95	50-65	25-40	2-10
	12-25	Silty clay loam, silt loam	SM, ML, CL, SC	A-4, A-6	0	0	95-100	80-100	75-95	40-60	25-40	5-12
	25-39	Clay loam	CL	A-6, A-7	0	0-5	95-100	80-100	75-95	65-80	35-50	20-30
	39-80	Gravelly loamy sand, gravelly coarse sand	SP, SP-SM, GP, GP-GM	A-1, A-3, A-2	0-3	0-5	45-100	40-90	0-50	0-30	---	NP
717D:												
Napier----------	0-8	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	8-29	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	29-48	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	48-60	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
Gullied land.												

Table 17.--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	
733:												
Calco	0-8	Silt loam, silty clay loam	CH, CL	A-7	0	0	100	100	95-100	85-100	40-60	15-30
	8-38	Silt loam, silty clay loam	CH, CL	A-7	0	0	100	100	95-100	85-100	40-60	15-30
	38-46	Silty clay loam	CL, CH	A-7	0	0	100	100	95-100	85-100	40-60	15-30
	46-80	Silt loam, silty clay loam	CL	A-7, A-6	0	0	100	100	90-100	80-100	30-45	10-20
734:												
Holly Springs	0-7	Silty clay loam	CH, CL	A-7	0	0	100	100	95-100	95-100	40-65	20-40
	7-26	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	95-100	95-100	40-65	20-40
	26-36	Silty clay loam, silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-75	30-45
	36-60	Silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	30-50
	60-80	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	30-50
734+:												
Holly Springs, overwash	0-6	Silty clay loam	CH, CL	A-7	0	0	100	100	95-100	95-100	40-65	20-40
	6-12	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	95-100	95-100	40-65	20-40
	12-44	Silty clay loam, silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-75	30-45
	44-70	Silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	30-50
	70-80	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	30-50

Table 17.--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	
740C:												
Hawick----------	0-5	Sandy loam	SM	A-2	0-2	0-5	85-100	80-95	50-65	25-35	0-20	NP-4
	5-12	Gravelly loamy coarse sand, gravelly coarse sand, loamy sand	SP-SM, SM	A-1, A-2, A-3	0-2	0-5	75-95	60-95	35-70	5-25	0-14	NP
	12-80	Loamy coarse sand, gravelly coarse sand, coarse sand, sand	SP	A-1, A-3, A-2	0-2	0-5	60-95	50-95	30-65	2-10	0-14	NP
740D:												
Hawick----------	0-5	Sandy loam	SM	A-2	0-2	0-5	85-100	80-95	50-65	25-35	0-20	NP-4
	5-12	Gravelly loamy coarse sand, gravelly coarse sand, loamy sand	SP-SM, SM	A-1, A-2, A-3	0-2	0-5	75-95	60-95	35-70	5-25	0-14	NP
	12-80	Loamy coarse sand, gravelly coarse sand, coarse sand, sand	SP	A-1, A-3, A-2	0-2	0-5	60-95	50-95	30-65	2-10	0-14	NP
740E:												
Hawick----------	0-5	Sandy loam	SM	A-2	0-2	0-5	85-100	80-95	50-65	25-35	0-20	NP-4
	5-12	Gravelly loamy coarse sand, gravelly coarse sand, loamy sand	SP-SM, SM	A-1, A-2, A-3	0-2	0-5	75-95	60-95	35-70	5-25	0-14	NP
	12-80	Loamy coarse sand, gravelly coarse sand, coarse sand, sand	SP	A-1, A-3, A-2	0-2	0-5	60-95	50-95	30-65	2-10	0-14	NP

Table 17.--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	
740F:												
Hawick----------	0-5	Sandy loam	SM	A-2	0-2	0-5	85-100	80-95	50-65	25-35	0-20	NP-4
	5-12	Gravelly loamy coarse sand, gravelly coarse sand, loamy sand	SP-SM, SM	A-1, A-2, A-3	0-2	0-5	75-95	60-95	35-70	5-25	0-14	NP
	12-80	Loamy coarse sand, gravelly coarse sand, coarse sand, sand	SP	A-1, A-3, A-2	0-2	0-5	60-95	50-95	30-65	2-10	0-14	NP
750:												
Ticonic---------	0-8	Fine sand, very fine sandy loam, very fine sandy loam	SP-SM	A-2-4, A-3	0	0	100	95-100	60-80	2-15	0-14	NP
	8-50	Loamy fine sand, fine sandy loam	SC-SM	A-2-4, A-3	0	0	100	95-100	60-80	2-15	0-14	NP
	50-80	Silt loam, stratified loamy fine sand to silt loam	CL	A-4, A-6	0	0	100	85-95	80-90	60-80	25-40	5-12
754:												
Larpenteur------	0-8	Loam	CL	A-4, A-6	0	0	100	100	95-100	90-100	25-35	5-15
	8-15	Loam	CL	A-4, A-6	0	0	100	100	95-100	90-100	25-35	5-15
	15-46	Loam, silty clay loam	CL	A-4, A-6	0	0	100	100	95-100	70-100	25-35	5-15
	46-80	Loam	CL	A-4, A-6	0	0	100	100	95-100	65-100	25-35	5-15

Table 17.--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	
810B:												
Galva, bench----	0-6	Silty clay loam	ML, CL, MH, CH	A-7	0	0	100	100	95-100	90-100	40-55	15-25
	6-11	Silty clay loam	ML, CL, MH, CH	A-7	0	0	100	100	95-100	90-100	40-55	15-25
	11-31	Silty clay loam	CL	A-7	0	0	100	100	95-100	90-100	40-50	15-25
	31-45	Silt loam, silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	85-100	35-50	15-25
	45-60	Clay loam, loam, silt loam	CL	A-6	0	2-5	95-100	90-100	75-90	65-80	30-40	10-20
810C2:												
Galva, bench, moderately eroded---------	0-7	Silty clay loam	ML, CL, MH, CH	A-7	0	0	100	100	95-100	90-100	40-55	15-25
	7-40	Silty clay loam	CL	A-7	0	0	100	100	95-100	90-100	40-50	15-25
	40-60	Silt loam, silty clay loam	CL	A-7, A-6	0	0	100	100	95-100	85-100	35-50	15-25
847B:												
Judson----------	0-9	Silty clay loam	CL, ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-25
	9-28	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	30-50	15-25
	28-52	Silty clay loam	CL, CL-ML	A-6, A-7, A-4	0	0	100	100	100	95-100	25-50	5-25
	52-60	Silty clay loam	CL, CL-ML	A-6, A-7, A-4	0	0	100	100	100	95-100	25-50	5-25
Rawles----------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	90-100	25-40	5-15
	8-26	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	90-100	25-40	5-15
	26-60	Silt loam, silty clay loam	CL	A-6, A-7	0	0	100	100	100	90-100	30-45	10-20
945:												
Albaton, depressional, drained--------	0-7	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	40-60
	7-60	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	40-60

Table 17.--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	
1137:												
Haynie----------	0-7	Silt loam	CL	A-6, A-4	0	0	100	100	85-100	70-100	25-40	5-15
	7-60	Silt loam, very fine sandy loam	CL	A-6, A-4	0	0	100	100	85-100	85-100	25-35	5-15
1144:												
Blake-----------	0-7	Silty clay loam	CL	A-7, A-6	0	0	100	100	90-100	85-95	35-50	15-30
	7-24	Silty clay loam, silt loam	CL	A-7, A-6	0	0	100	100	90-100	85-95	30-50	10-30
	24-60	Silt loam, loam, very fine sandy loam	ML	A-6, A-4	0	0	100	100	80-90	75-90	30-40	5-15
1146:												
Onawa-----------	0-9	Silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	40-60
	9-36	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	40-60
	36-80	Silt loam, very fine sandy loam, loam	CL	A-6, A-4	0	0	100	100	95-100	85-100	25-40	5-20
1220:												
Nodaway, channeled------	0-7	Silty clay loam, silt loam	CL	A-6, A-4	0	0	100	95-100	95-100	90-100	25-35	5-15
	7-60	Stratified silt loam to silty clay loam, silt loam, silty clay loam	CL	A-6, A-4	0	0	100	95-100	95-100	90-100	25-40	5-15
1237B:												
Sarpy-----------	0-6	Loamy fine sand	SM	A-2-4	0	0	100	100	60-80	15-35	---	NP
	6-60	Fine sand, loamy fine sand, sand	SM	A-2-4, A-3	0	0	100	100	60-80	2-35	---	NP

Table 17.--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	
1237C:												
Sarpy-----------	0-6	Loamy fine sand	SM	A-2-4	0	0	100	100	60-80	15-35	---	NP
	6-60	Fine sand, loamy fine sand, sand	SM	A-2-4, A-3	0	0	100	100	60-80	2-35	---	NP
1238:												
Sarpy-----------	0-6	Loamy fine sand	SM	A-2-4	0	0	100	100	60-80	15-35	---	NP
	6-60	Fine sand, loamy fine sand, sand	SM	A-3, A-2-4	0	0	100	100	60-80	2-35	---	NP
Morconick-------	0-7	Fine sandy loam	CL	A-6	0	0	100	100	80-95	80-95	25-40	5-20
	7-13	Loam	CL	A-4	0	0	100	100	80-95	80-95	0-25	5-15
	13-80	Stratified sand to fine sand, very fine sand, sand	SC	A-2	0	0	100	85-100	65-95	5-30	0-25	5-15
1513:												
Grable----------	0-6	Silt loam	CL	A-6, A-4	0	0	100	100	80-95	80-95	25-40	5-20
	6-23	Silt loam, very fine sandy loam	CL	A-6, A-4	0	0	100	100	80-95	80-95	0-25	5-15
	23-60	Fine sand, loamy sand, sand	SC-SM	A-3, A-2	0	0	100	100	65-80	5-35	0-20	NP-5
Morconick-------	0-7	Fine sandy loam	CL	A-6	0	0	100	100	80-95	80-95	25-40	5-20
	7-13	Loam	CL	A-4	0	0	100	100	80-95	80-95	0-25	5-15
	13-80	Stratified sand to fine sand, very fine sand, sand	SC	A-2	0	0	100	85-100	65-95	5-30	0-25	5-15
1524:												
Morconick-------	0-7	Fine sandy loam	CL	A-6	0	0	100	100	80-95	80-95	25-40	5-20
	7-13	Loam	CL	A-4	0	0	100	100	80-95	80-95	0-25	5-15
	13-80	Stratified sand to fine sand, very fine sand, sand	SC	A-2	0	0	100	85-100	65-95	5-30	0-25	5-15

Table 17.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
1525:												
Scroll----------	0-7	Silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	35-60
	7-11	Silt loam	ML	A-5, A-4, A-6	0	0	100	100	95-100	95-100	25-50	8-20
	11-60	Loamy fine sand, fine sandy loam	SM	A-2-4, A-4	0	0	100	100	80-95	25-45	0-20	NP-5
2515:												
Percival--------	0-7	Clay, silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	35-60
	7-24	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	35-60
	24-60	Stratified fine sand to loamy fine sand	SM	A-2	0	0	100	100	80-95	12-30	0-20	NP-5
Albaton---------	0-7	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	40-60
	7-60	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	40-60
3146:												
Onawa-----------	0-9	Silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	40-60
	9-36	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	40-60
	36-80	Silt loam, very fine sandy loam, loam	CL	A-6, A-4	0	0	100	100	95-100	85-100	25-40	5-20
Albaton---------	0-7	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	40-60
	7-60	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	40-60
3275:												
Moville---------	0-6	Silt loam	CL	A-6, A-4	0	0	100	100	95-100	90-100	30-40	8-18
	6-28	Silt loam	CL	A-6, A-4	0	0	100	100	95-100	90-100	30-40	8-18
	28-80	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	65-85	40-60

Table 17.--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	
3275:												
Holly Springs, overwash-------	0-6	Silty clay loam	CH, CL	A-7	0	0	100	100	95-100	95-100	40-65	20-40
	6-12	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	95-100	95-100	40-65	20-40
	12-44	Silty clay loam, silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-75	30-45
	44-70	Silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	30-50
	70-80	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	30-50
3440:												
Blencoe---------	0-8	Silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	30-50
	8-27	Silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	30-50
	27-33	Silty clay loam, silty clay	CL	A-7	0	0	100	100	95-100	90-100	41-60	20-30
	33-60	Silt loam	ML	A-6, A-4	0	0	100	100	95-100	85-100	30-40	5-15
Woodbury--------	0-7	Silty clay	CH	A-7	0	0	100	100	100	95-100	60-85	35-60
	7-19	Silty clay	CH	A-7	0	0	100	100	100	95-100	60-85	35-60
	19-35	Silty clay, clay	CH	A-7	0	0	100	100	95-100	90-100	60-85	35-60
	35-48	Silty clay loam	CL	A-7	0	0	100	100	90-100	80-100	40-60	20-35
	48-60	Silt loam	CH	A-7	0	0	100	100	90-100	70-90	40-60	20-35
3513:												
Grable----------	0-6	Silt loam	CL	A-6, A-4	0	0	100	100	80-95	80-95	25-40	5-20
	6-23	Silt loam, very fine sandy loam	CL	A-6, A-4	0	0	100	100	80-95	80-95	0-25	5-15
	23-60	Fine sand, loamy sand, sand	SC-SM	A-3, A-2	0	0	100	100	65-80	5-35	0-20	NP-5
Morconick-------	0-7	Fine sandy loam	CL	A-6	0	0	100	100	80-95	80-95	25-40	5-20
	7-13	Loam	CL	A-4	0	0	100	100	80-95	80-95	0-25	5-15
	13-80	Stratified sand to fine sand, very fine sand, sand	SC	A-2	0	0	100	85-100	65-95	5-30	0-25	5-15

Table 17.--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	
3549:												
Modale silty clay loam------	0-7	Silty clay loam	CL	A-6, A-4	0	0	100	100	95-100	80-90	25-40	5-15
	7-24	Loam, silt loam	CL	A-6, A-4	0	0	100	100	95-100	80-90	25-40	5-15
	24-60	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	65-85	40-60
Modale silt loam	0-7	Silt loam	CL	A-6, A-4	0	0	100	100	95-100	80-90	25-40	5-15
	7-24	Loam, silt loam	CL	A-6, A-4	0	0	100	100	95-100	80-90	25-40	5-15
	24-60	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	65-85	40-60
3686:												
Napa------------	0-6	Silty clay, clay	MH	A-7	0	0	100	100	95-100	90-100	50-80	20-45
	6-57	Silty clay, clay	MH	A-7	0	0	100	100	95-100	90-100	50-80	20-45
	57-80	Silty clay, clay, silty clay loam	ML	A-7	0	0	100	100	95-100	90-100	40-75	15-40
Luton-----------	0-8	Silty clay	CH	A-7	0	0	100	100	95-100	95-100	56-90	28-54
	8-25	Silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	35-60
	25-38	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	35-60
	38-60	Clay, silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	35-60
Tieville--------	0-7	Silty clay	CH	A-7	0	0	100	100	90-100	75-95	55-70	35-45
	7-22	Silty clay	CH	A-7	0	0	100	100	90-100	75-95	55-70	35-45
	22-43	Silty clay, clay	CH	A-7	0	0	100	100	90-100	75-95	55-70	35-45
	43-60	Silty clay, clay	CH	A-7	0	0	100	100	90-100	75-95	55-70	35-45
4000. Urban land												
4001C:												
Ida-------------	0-8	Silt loam	ML	A-4, A-6	0	0	100	100	95-100	95-100	30-40	5-15
	8-60	Silt loam	ML	A-4, A-6	0	0	100	100	95-100	95-100	30-40	5-15
Urban land.												

Table 17.--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	
4001D:												
Ida-------------	0-8	Silt loam	ML	A-6, A-4	0	0	100	100	95-100	95-100	30-40	5-15
	8-80	Silt loam	ML	A-6, A-4	0	0	100	100	95-100	95-100	30-40	5-15
Urban land.												
4001E:												
Ida-------------	0-8	Silt loam	ML	A-6, A-4	0	0	100	100	95-100	95-100	30-40	5-15
	8-80	Silt loam	ML	A-6, A-4	0	0	100	100	95-100	95-100	30-40	5-15
Urban land.												
4001F:												
Ida-------------	0-8	Silt loam	ML	A-4, A-6	0	0	100	100	95-100	95-100	30-40	5-15
	8-60	Silt loam	ML	A-4, A-6	0	0	100	100	95-100	95-100	30-40	5-15
Urban land.												
4010B:												
Monona----------	0-8	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	8-15	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	15-30	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	30-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
Urban land.												
4010C:												
Monona----------	0-8	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	8-15	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	15-30	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	30-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
Urban land.												
4010D:												
Monona----------	0-8	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	8-15	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	15-30	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	30-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
Urban land.												

Table 17.--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	
4010E:												
Monona----------	0-8	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	8-15	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	15-30	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	30-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
Urban land.												
4012B:												
Napier----------	0-8	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	8-29	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	29-48	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	48-60	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
Urban land.												
4012C:												
Napier----------	0-8	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	8-29	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	29-48	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	48-60	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
Urban land.												
4170D:												
Napier----------	0-8	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	8-29	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	29-48	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	48-60	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
Castana---------	0-8	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	25-40	8-20
	8-18	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	25-40	8-20
	18-30	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	25-40	8-20
	30-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	25-40	8-20
Urban land.												
4600:												
Percival--------	0-7	Silty clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	35-60
	7-24	Silty clay, clay	CH	A-7	0	0	100	100	95-100	95-100	60-85	35-60
	24-60	Stratified fine sand to loamy fine sand	SM	A-2	0	0	100	100	80-95	12-30	0-20	NP-5

Table 17.--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	
4600:												
Haynie----------	0-7	Silt loam	CL	A-4	0	0	100	100	85-100	70-100	25-40	5-15
	7-60	Silt loam	CL	A-4	0	0	100	100	85-100	85-100	25-35	5-15
Urban land.												
4670:												
Rawles----------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	90-100	25-40	5-15
	8-26	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	90-100	25-40	5-15
	26-60	Silt loam, silty clay loam	CL	A-6, A-7	0	0	100	100	100	90-100	30-45	10-20
Urban land.												
5010. Pits, sand and gravel												
5040:												
Udorthents, loamy----------	0-80	Variable	---	---	---	---	---	---	---	---	---	---
5044:												
Fluvaquents-----	0-24	Variable	---	---	---	---	---	---	---	---	---	---
5060. Pits, clay												
5080. Udorthents, sanitary landfill												
SL. Sewage lagoons												
W. Water												

Table 18.--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	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	g/cc	In/hr	In/in	Pct	Pct					
1B3:												
Ida, severely eroded	0-6	18-27	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43	4	4L	86
	6-80	18-25	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
1C:												
Ida-----------------	0-8	18-27	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	2.0-3.0	.32	.32	5	4L	86
	8-60	18-25	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
1C3:												
Ida, severely eroded	0-6	18-27	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43	4	4L	86
	6-80	18-25	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
1D3:												
Ida, severely eroded	0-6	18-27	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43	4	4L	86
	6-80	18-25	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
1E3:												
Ida, severely eroded	0-6	18-27	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43	4	4L	86
	6-80	18-25	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
1F:												
Ida-----------------	0-8	18-27	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	2.0-3.0	.32	.32	5	4L	86
	8-60	18-25	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
1F3:												
Ida, severely eroded	0-6	18-27	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43	4	4L	86
	6-80	18-25	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
1G:												
Ida-----------------	0-8	18-27	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	2.0-3.0	.32	.32	5	4L	86
	8-80	18-25	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
2G:												
Hamburg-------------	0-4	6-12	1.20-1.30	0.6-2	0.20-0.24	0.0-2.9	0.5-2.0	.43	.43	5	4L	86
	4-14	6-12	1.20-1.30	0.6-2	0.17-0.22	0.0-2.9	0.5-1.0	.43	.43			
	14-60	6-12	1.20-1.30	0.6-2	0.17-0.22	0.0-2.9	0.0-0.5	.43	.43			
3D:												
Castana-------------	0-8	18-22	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	2.0-3.0	.28	.28	5	4L	86
	8-18	18-24	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	2.0-2.5	.32	.32			
	18-30	18-24	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
	30-60	18-24	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
3E:												
Castana-------------	0-8	18-22	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	2.0-3.0	.28	.28	5	4L	86
	8-18	18-24	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	2.0-2.5	.32	.32			
	18-30	18-24	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
	30-60	18-24	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
8B:												
Judson--------------	0-9	27-32	1.30-1.35	0.6-2	0.21-0.23	3.0-5.9	3.0-4.0	.28	.28	5	7	38
	9-28	27-32	1.35-1.45	0.6-2	0.21-0.23	3.0-5.9	3.0-3.5	.28	.28			
	28-52	25-35	1.35-1.45	0.6-2	0.21-0.23	3.0-5.9	1.0-2.0	.43	.43			
	52-60	25-32	1.35-1.45	0.6-2	0.21-0.23	3.0-5.9	0.5-1.0	.43	.43			

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodibility group	Wind erodibility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
8C:												
Judson--------------	0-9	27-32	1.30-1.35	0.6-2	0.21-0.23	3.0-5.9	3.0-4.0	.28	.28	5	7	38
	9-28	27-32	1.35-1.45	0.6-2	0.21-0.23	3.0-5.9	3.0-3.5	.28	.28			
	28-52	25-35	1.35-1.45	0.6-2	0.21-0.23	3.0-5.9	1.0-2.0	.43	.43			
	52-60	25-32	1.35-1.45	0.6-2	0.21-0.23	3.0-5.9	0.5-1.0	.43	.43			
10B:												
Monona--------------	0-8	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28	5	6	48
	8-15	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-3.5	.28	.28			
	15-30	24-32	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43			
	30-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
10B2:												
Monona, moderately eroded------------	0-7	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.32	.32	5	6	48
	7-24	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	1.0-1.5	.43	.43			
	24-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
10C2:												
Monona, moderately eroded------------	0-7	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.32	.32	5	6	48
	7-24	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	1.0-1.5	.43	.43			
	24-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
10D2:												
Monona, moderately eroded------------	0-7	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.32	.32	5	6	48
	7-24	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	1.0-1.5	.43	.43			
	24-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
10D3:												
Monona, severely eroded------------	0-7	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	1.0-2.0	.43	.43	4	6	48
	7-24	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.0-0.5	.43	.43			
	24-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
10E:												
Monona--------------	0-8	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28	5	6	48
	8-15	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-3.5	.28	.28			
	15-30	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43			
	30-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
10E3:												
Monona, severely eroded------------	0-7	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	1.0-2.0	.43	.43	4	6	48
	7-24	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.0-0.5	.43	.43			
	24-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
10F:												
Monona--------------	0-8	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28	5	6	48
	8-15	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-3.5	.28	.28			
	15-30	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43			
	30-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
12B:												
Napier--------------	0-8	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-4.0	.28	.28	5	6	48
	8-29	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-3.5	.28	.28			
	29-48	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43			
	48-60	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	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	g/cc	In/hr	In/in	Pct	Pct					
12C:												
Napier	0-8	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-4.0	.28	.28	5	6	48
	8-29	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-3.5	.28	.28			
	29-48	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43			
	48-60	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
17B:												
Napier	0-8	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-4.0	.28	.28	5	6	48
	8-29	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-3.5	.28	.28			
	29-48	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43			
	48-60	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
Kennebec	0-8	22-30	1.25-1.35	0.6-2	0.22-0.24	3.0-5.9	5.0-6.0	.28	.28	5	6	48
	8-41	24-32	1.25-1.35	0.6-2	0.22-0.24	3.0-5.9	5.0-6.0	.28	.28			
	41-54	24-32	1.35-1.40	0.6-2	0.20-0.22	3.0-5.9	5.0-5.5	.43	.43			
	54-80	24-30	1.35-1.40	0.6-2	0.20-0.22	3.0-5.9	1.0-2.0	.43	.43			
Colo	0-8	24-35	1.28-1.32	0.6-2	0.21-0.23	3.0-5.9	5.0-7.0	.28	.28	5	7	38
	8-34	27-36	1.28-1.32	0.6-2	0.21-0.23	3.0-5.9	5.0-7.0	.28	.28			
	34-51	30-35	1.25-1.35	0.6-2	0.18-0.20	3.0-5.9	3.0-4.0	.28	.28			
	51-60	25-35	1.35-1.45	0.6-2	0.18-0.20	3.0-5.9	1.0-2.0	.32	.32			
26:												
Kennebec	0-9	27-30	1.25-1.40	0.6-2	0.22-0.24	0.0-2.9	5.0-6.0	.28	.28	5	6	48
	9-48	27-32	1.35-1.50	0.6-2	0.14-0.19	0.0-2.9	5.0-5.5	.32	.32			
	48-59	27-33	1.55-1.65	0.6-2	0.02-0.04	0.0-2.9	2.0-3.0	.10	.10			
	59-80	27-30	1.55-1.65	0.6-2	0.02-0.04	0.0-2.9	2.0-3.0	.10	.10			
35F:												
Liston	0-5	24-35	1.30-1.60	0.2-0.6	0.17-0.19	3.0-5.9	2.2-3.2	.32	.32	5	4L	86
	5-38	27-33	1.30-1.60	0.2-0.6	0.15-0.17	3.0-5.9	0.5-1.0	.32	.32			
	38-80	26-40	1.50-1.80	0.2-0.6	0.14-0.19	3.0-5.9	0.0-0.5	.32	.32			
Burchard	0-11	18-30	1.40-1.60	0.2-0.6	0.17-0.19	3.0-5.9	2.0-4.0	.28	.28	5	6	48
	11-24	27-35	1.40-1.60	0.2-0.6	0.15-0.17	3.0-5.9	0.5-1.0	.37	.37			
	24-36	18-30	1.40-1.60	0.2-0.6	0.15-0.17	3.0-5.9	0.5-1.0	.37	.37			
	36-60	18-30	1.40-1.60	0.2-0.6	0.14-0.16	3.0-5.9	0.0-0.5	.37	.37			
35G:												
Liston	0-5	24-35	1.30-1.60	0.2-0.6	0.17-0.19	3.0-5.9	2.2-3.2	.32	.32	5	4L	86
	5-38	27-33	1.30-1.60	0.2-0.6	0.15-0.17	3.0-5.9	0.5-1.0	.32	.32			
	38-80	26-40	1.50-1.80	0.2-0.6	0.14-0.19	3.0-5.9	0.0-0.5	.32	.32			
Burchard	0-11	18-30	1.40-1.60	0.2-0.6	0.17-0.19	3.0-5.9	2.0-4.0	.28	.28	5	6	48
	11-24	27-35	1.40-1.60	0.2-0.6	0.15-0.17	3.0-5.9	0.5-1.0	.37	.37			
	24-36	18-30	1.40-1.60	0.2-0.6	0.15-0.17	3.0-5.9	0.5-1.0	.37	.37			
	36-60	18-30	1.40-1.60	0.2-0.6	0.14-0.16	3.0-5.9	0.0-0.5	.37	.37			
36:												
Salix	0-7	25-30	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	3.0-4.0	.28	.28	5	7	38
	7-15	27-30	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	3.0-3.5	.28	.28			
	15-25	28-38	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	1.0-2.0	.43	.43			
	25-40	16-22	1.35-1.45	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
	40-60	16-22	1.35-1.45	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
46:												
Keg	0-7	20-26	1.20-1.25	0.6-2	0.21-0.23	0.0-2.9	3.0-5.0	.28	.28	5	6	48
	7-29	20-26	1.20-1.25	0.6-2	0.21-0.23	0.0-2.9	2.0-3.5	.28	.28			
	29-56	18-22	1.25-1.40	0.6-2	0.20-0.22	0.0-2.9	0.5-1.0	.43	.43			
	56-80	18-22	1.25-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	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	g/cc	In/hr	In/in	Pct	Pct					
47B:												
Napier	0-8	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-4.0	.28	.28	5	6	48
	8-29	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-3.5	.28	.28			
	29-48	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43			
	48-60	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
Rawles	0-8	18-27	1.25-1.35	0.6-2	0.21-0.23	3.0-5.9	1.0-3.0	.32	.32	5	4L	86
	8-26	18-27	1.25-1.35	0.6-2	0.21-0.23	3.0-5.9	1.0-2.5	.32	.32			
	26-60	22-35	1.35-1.40	0.6-2	0.19-0.21	3.0-5.9	3.0-4.0	.32	.32			
54:												
Zook	0-6	35-40	1.30-1.35	0.2-0.6	0.21-0.23	6.0-8.9	5.0-7.0	.37	.37	5	7	38
	6-20	35-40	1.30-1.35	0.2-0.6	0.21-0.23	6.0-8.9	5.0-6.5	.37	.37			
	20-52	36-45	1.30-1.45	0.06-0.2	0.11-0.13	6.0-8.9	2.0-4.0	.28	.28			
	52-60	20-45	1.30-1.45	0.06-0.2	0.11-0.22	6.0-8.9	0.0-1.0	.28	.28			
59E:												
Burchard	0-11	18-30	1.40-1.60	0.2-0.6	0.17-0.19	3.0-5.9	2.0-4.0	.28	.28	5	6	48
	11-24	27-35	1.40-1.60	0.2-0.6	0.15-0.17	3.0-5.9	0.5-1.0	.37	.37			
	24-36	18-30	1.40-1.60	0.2-0.6	0.15-0.17	3.0-5.9	0.5-1.0	.37	.37			
	36-60	18-30	1.40-1.60	0.2-0.6	0.14-0.16	3.0-5.9	0.0-0.5	.37	.37			
66:												
Luton	0-8	40-75	1.30-1.35	0.00-0.06	0.12-0.14	6.0-8.9	3.0-5.0	.28	.28	5	4	86
	8-25	40-75	1.30-1.35	0.00-0.06	0.12-0.14	6.0-8.9	3.0-4.5	.28	.28			
	25-38	40-75	1.30-1.35	0.00-0.06	0.12-0.14	6.0-8.9	0.5-1.5	.28	.28			
	38-60	35-75	1.35-1.45	0.00-0.06	0.12-0.13	6.0-8.9	0.0-1.0	.28	.28			
67:												
Woodbury	0-7	40-55	1.30-1.35	0.06-0.2	0.12-0.14	6.0-8.9	5.0-7.0	.28	.28	5	4	86
	7-19	40-55	1.30-1.35	0.06-0.2	0.12-0.14	6.0-8.9	5.0-6.5	.28	.28			
	19-35	40-50	1.30-1.35	0.06-0.2	0.11-0.13	6.0-8.9	2.0-3.0	.32	.32			
	35-48	28-35	1.30-1.40	0.2-0.6	0.18-0.20	6.0-8.9	1.0-2.0	.43	.43			
	48-60	20-36	1.30-1.40	0.2-0.6	0.18-0.20	6.0-8.9	0.0-1.0	.43	.43			
100B:												
Monona	0-7	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.2-3.2	.32	.32	5	7	38
	7-20	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.2-3.2	.32	.32			
	20-48	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	1.0-1.0	.43	.43			
	48-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
100C2:												
Monona, moderately eroded	0-6	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.32	.32	5	7	38
	6-24	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43			
	24-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
100D2:												
Monona, moderately eroded	0-6	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.32	.32	5	7	38
	6-24	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43			
	24-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
100E2:												
Monona, moderately eroded	0-6	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.32	.32	5	7	38
	6-24	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43			
	24-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	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	g/cc	In/hr	In/in	Pct	Pct					
101E2:												
Monona, moderately eroded-------------	0-6	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.43	.43	4	6	48
	6-24	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43			
	24-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
Ida, moderately eroded-------------	0-6	18-25	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43	4	4L	86
	6-80	18-25	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
123:												
Grantcenter---------	0-6	24-37	1.25-1.40	0.6-2	0.22-0.24	3.0-5.9	5.0-6.0	.28	.28	5	6	48
	6-23	18-39	1.25-1.40	0.6-2	0.22-0.24	3.0-5.9	5.0-5.5	.43	.43			
	23-56	15-36	1.25-1.40	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43			
	56-80	10-25	1.25-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
137:												
Haynie--------------	0-7	15-25	1.20-1.35	0.6-2	0.18-0.23	0.0-2.9	1.0-3.0	.32	.32	5	4L	86
	7-60	15-18	1.20-1.35	0.6-2	0.18-0.23	0.0-2.9	0.0-1.0	.43	.43			
144:												
Blake---------------	0-7	27-38	1.25-1.30	0.6-2	0.20-0.22	3.0-5.9	1.0-3.0	.32	.32	5	4L	86
	7-24	22-35	1.25-1.30	0.6-2	0.20-0.22	3.0-5.9	0.0-1.0	.43	.43			
	24-60	10-20	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
156:												
Albaton-------------	0-7	40-60	1.35-1.40	0.06-0.2	0.11-0.13	9.0-25.0	2.0-3.0	.28	.28	5	4	86
	7-60	40-70	1.35-1.45	0.00-0.06	0.11-0.13	9.0-25.0	0.0-1.0	.28	.28			
170E:												
Napier--------------	0-8	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-4.0	.28	.28	5	6	48
	8-29	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-3.5	.28	.28			
	29-48	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43			
	48-60	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
Castana-------------	0-8	18-22	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	2.0-3.0	.28	.28	5	4L	86
	8-18	18-24	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	2.0-2.5	.32	.32			
	18-30	18-24	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
	30-60	18-24	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
212:												
Kennebec------------	0-8	22-30	1.25-1.35	0.6-2	0.22-0.24	3.0-5.9	5.0-6.0	.28	.28	5	6	48
	8-41	24-32	1.25-1.35	0.6-2	0.22-0.24	3.0-5.9	5.0-6.0	.28	.28			
	41-54	24-32	1.35-1.40	0.6-2	0.20-0.22	3.0-5.9	5.0-5.5	.43	.43			
	54-80	24-30	1.35-1.40	0.6-2	0.20-0.22	3.0-5.9	1.0-2.0	.43	.43			
212+:												
Kennebec, overwash--	0-10	22-27	1.25-1.35	0.6-2	0.22-0.24	3.0-5.9	4.0-5.0	.28	.28	5	6	48
	10-41	22-27	1.25-1.35	0.6-2	0.22-0.24	3.0-5.9	5.0-6.0	.28	.28			
	41-54	24-28	1.35-1.40	0.6-2	0.20-0.22	3.0-5.9	5.0-5.5	.43	.43			
	54-80	24-28	1.35-1.40	0.6-2	0.20-0.22	3.0-5.9	1.0-2.0	.43	.43			
220:												
Nodaway-------------	0-7	18-31	1.25-1.35	0.6-2	0.20-0.23	0.0-2.9	2.0-3.0	.32	.32	5	6	48
	7-60	18-28	1.25-1.35	0.6-2	0.20-0.23	3.0-5.9	0.0-0.5	.43	.43			
237:												
Sarpy---------------	0-6	2-5	1.20-1.50	6-20	0.05-0.09	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	6-60	2-5	1.20-1.50	6-20	0.05-0.09	0.0-2.9	0.0-0.5	.15	.15			

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	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	g/cc	In/hr	In/in	Pct	Pct					
237B:												
Sarpy---------------	0-6	2-5	1.20-1.50	6-20	0.05-0.09	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	6-60	2-5	1.20-1.50	6-20	0.05-0.09	0.0-2.9	0.0-0.5	.15	.15			
244:												
Blend---------------	0-7	40-60	1.30-1.35	0.06-0.2	0.12-0.14	6.0-8.9	3.0-5.0	.28	.28	5	4	86
	7-14	40-60	1.30-1.35	0.06-0.2	0.12-0.14	6.0-8.9	3.0-4.5	.28	.28			
	14-32	30-40	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	1.0-2.0	.28	.28			
	32-43	40-55	1.35-1.40	0.06-0.2	0.11-0.13	6.0-8.9	1.0-2.0	.28	.28			
	43-60	50-75	1.35-1.40	0.06-0.2	0.11-0.13	6.0-8.9	0.5-1.0	.28	.28			
255:												
Cooper--------------	0-8	24-34	1.25-1.30	0.6-2	0.19-0.21	3.0-5.9	3.0-4.0	.32	.32	5	7	38
	8-16	27-34	1.25-1.30	0.6-2	0.19-0.21	3.0-5.9	3.0-3.5	.32	.32			
	16-24	27-34	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	1.0-2.0	.28	.28			
	24-33	40-60	1.35-1.40	0.06-0.2	0.11-0.13	6.0-8.9	3.0-3.5	.28	.28			
	33-60	40-60	1.35-1.40	0.06-0.2	0.11-0.13	6.0-8.9	0.0-0.5	.28	.28			
266:												
Smithland-----------	0-7	27-36	1.28-1.32	0.6-2	0.21-0.23	3.0-5.9	5.0-7.0	.28	.28	5	7	38
	7-34	27-36	1.28-1.32	0.6-2	0.21-0.23	3.0-5.9	5.0-6.5	.28	.28			
	34-50	30-35	1.25-1.35	0.6-2	0.18-0.20	3.0-5.9	3.0-4.0	.28	.28			
	50-60	25-35	1.35-1.45	0.6-2	0.18-0.20	3.0-5.9	1.0-2.0	.32	.32			
266+:												
Smithland, overwash	0-8	25-36	1.28-1.32	0.6-2	0.21-0.23	3.0-5.9	4.0-6.0	.28	.28	5	7	38
	8-34	27-36	1.28-1.32	0.6-2	0.21-0.23	3.0-5.9	5.0-6.5	.28	.28			
	34-50	30-35	1.25-1.35	0.6-2	0.18-0.20	3.0-5.9	3.0-4.0	.28	.28			
	50-60	25-35	1.35-1.45	0.6-2	0.18-0.20	3.0-5.9	1.0-2.0	.32	.32			
277B:												
Deloit--------------	0-8	18-26	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	3.0-4.0	.24	.24	5	6	48
	8-30	24-30	1.40-1.45	0.6-2	0.17-0.19	0.0-2.9	3.0-3.5	.28	.28			
	30-80	20-30	1.45-1.70	0.6-2	0.16-0.18	0.0-2.9	0.5-1.5	.32	.32			
277C:												
Deloit--------------	0-8	18-26	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	3.0-4.0	.24	.24	5	6	48
	8-30	24-30	1.40-1.45	0.6-2	0.17-0.19	0.0-2.9	3.0-3.5	.28	.28			
	30-80	20-30	1.45-1.70	0.6-2	0.16-0.18	0.0-2.9	0.5-1.5	.32	.32			
277E:												
Deloit--------------	0-8	18-26	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	3.0-4.0	.24	.24	5	6	48
	8-30	24-30	1.40-1.45	0.6-2	0.17-0.19	0.0-2.9	3.0-3.5	.28	.28			
	30-80	20-30	1.45-1.70	0.6-2	0.16-0.18	0.0-2.9	0.5-1.5	.32	.32			
310B:												
Galva---------------	0-6	34-39	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	3.0-4.0	.32	.32	5	4	86
	6-11	34-39	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	3.0-3.5	.32	.32			
	11-31	30-39	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	1.0-1.5	.43	.43			
	31-45	25-30	1.35-1.45	0.6-2	0.20-0.22	3.0-5.9	0.0-0.5	.43	.43			
	45-60	22-30	1.60-1.80	0.6-2	0.16-0.22	3.0-5.9	0.0-0.5	.43	.43			
310C2:												
Galva, moderately eroded------------	0-7	34-39	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	2.0-3.0	.32	.32	5	4	86
	7-40	30-39	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.5-1.5	.43	.43			
	40-60	25-30	1.35-1.45	0.6-2	0.20-0.22	3.0-5.9	0.0-0.5	.43	.43			
366:												
Luton---------------	0-8	35-42	1.30-1.35	0.6-2	0.21-0.23	6.0-8.9	3.0-5.0	.32	.32	5	4	86
	8-25	35-42	1.30-1.35	0.6-2	0.21-0.23	6.0-8.9	3.0-4.5	.32	.32			
	25-38	40-75	1.30-1.35	0.2-0.6	0.12-0.14	6.0-8.9	0.0-1.0	.28	.28			
	38-60	40-75	1.35-1.45	0.2-0.6	0.11-0.13	6.0-8.9	0.0-0.5	.28	.28			

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	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	g/cc	In/hr	In/in	Pct	Pct					
436:												
Lakeport------------	0-12	32-50	1.30-1.35	0.1-2	0.18-0.20	6.0-8.9	3.0-4.0	.28	.28	5	4	86
	12-22	32-50	1.30-1.35	0.1-2	0.18-0.20	6.0-8.9	3.0-3.5	.28	.28			
	21-37	35-38	1.30-1.35	0.1-2	0.18-0.20	6.0-8.9	1.0-2.0	.32	.32			
	48-80	15-70	1.40-1.50	0.6-2	0.17-0.19	3.0-5.9	0.0-0.5	.43	.43			
446:												
Burcham-------------	0-7	18-27	1.35-1.45	0.6-2	0.21-0.23	3.0-5.9	3.0-5.0	.32	.32	5	6	48
	7-26	18-27	1.35-1.45	0.6-2	0.21-0.23	3.0-5.9	3.0-5.0	.32	.32			
	26-60	40-50	1.30-1.35	0.00-0.1	0.11-0.13	6.0-8.9	2.0-3.0	.32	.32			
465:												
Tieville------------	0-7	40-60	1.35-1.45	0.00-0.06	0.12-0.14	6.0-8.9	2.0-4.0	.28	.28	5	4L	86
	7-22	40-60	1.35-1.45	0.00-0.06	0.12-0.14	6.0-8.9	2.0-3.5	.28	.28			
	22-43	50-70	1.35-1.45	0.00-0.06	0.08-0.12	6.0-8.9	1.0-2.0	.28	.28			
	43-60	50-70	1.35-1.45	0.00-0.06	0.08-0.12	6.0-8.9	1.0-2.0	.28	.28			
485:												
Spillville----------	0-20	18-26	1.45-1.55	0.6-2	0.19-0.21	3.0-5.9	4.0-5.0	.24	.24	5	6	48
	20-54	18-26	1.45-1.55	0.6-2	0.19-0.21	3.0-5.9	4.0-5.0	.24	.24			
	54-80	14-24	1.55-1.70	0.6-2	0.15-0.18	0.0-2.9	2.0-3.0	.28	.28			
510:												
Monona, bench-------	0-8	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28	5	6	48
	8-15	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-3.5	.28	.28			
	15-30	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43			
	30-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
510B:												
Monona, bench-------	0-8	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28	5	6	48
	8-15	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-3.5	.28	.28			
	15-30	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43			
	30-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
510B2:												
Monona, bench, moderately eroded--	0-7	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.32	.32	5	6	48
	7-24	24-27	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	1.0-1.5	.43	.43			
	24-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
510C2:												
Monona, bench, moderately eroded--	0-7	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.43	.43	4	6	48
	7-24	24-27	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43			
	20-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
515:												
Percival------------	0-8	40-60	1.30-1.35	0.06-0.2	0.10-0.12	6.0-8.9	1.0-3.0	.28	.28	4	4	86
	8-24	40-60	1.30-1.35	0.06-0.2	0.10-0.12	6.0-8.9	0.0-2.0	.28	.28			
	24-60	2-10	1.30-1.50	6-20	0.02-0.04	0.0-2.9	0.0-0.5	.15	.15			
518:												
Morconick-----------	0-7	5-20	1.20-1.25	0.6-2	0.20-0.22	0.0-2.9	1.0-3.0	.32	.32	3	4L	86
	7-13	5-20	1.25-1.50	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
	13-80	2-20	1.25-1.50	6-20	0.02-0.07	0.0-2.9	0.0-0.5	.15	.15			
527:												
Anthon--------------	0-8	18-35	1.25-1.40	0.6-2	0.22-0.24	0.0-2.9	3.0-4.0	.28	.28	5	7	38
	8-29	18-35	1.25-1.40	0.6-2	0.22-0.24	0.0-2.9	3.0-3.5	.28	.28			
	29-45	18-35	1.25-1.40	0.6-2	0.22-0.24	0.0-2.9	0.5-1.5	.28	.28			
	45-59	18-30	1.35-1.50	0.6-2	0.14-0.19	0.0-2.9	0.0-0.5	.32	.32			
	59-80	1-5	1.55-1.65	20-63	0.02-0.04	0.0-2.9	0.0-0.5	.10	.10			

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	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	g/cc	In/hr	In/in	Pct	Pct					
527B:												
Anthon--------------	0-8	18-35	1.25-1.40	0.6-2	0.22-0.24	0.0-2.9	3.0-4.0	.28	.28	5	7	38
	8-29	18-35	1.25-1.40	0.6-2	0.22-0.24	0.0-2.9	3.0-3.5	.28	.28			
	29-45	18-35	1.25-1.40	0.6-2	0.22-0.24	0.0-2.9	0.5-1.5	.28	.28			
	45-59	18-30	1.35-1.50	0.6-2	0.14-0.19	0.0-2.9	0.0-0.5	.32	.32			
	59-80	1-5	1.55-1.65	20-63	0.02-0.04	0.0-2.9	0.0-0.5	.10	.10			
549:												
Modale silt loam----	0-7	10-30	1.20-1.30	0.6-2	0.21-0.23	3.0-5.9	1.0-3.0	.37	.37	5	4L	86
	7-24	10-18	1.20-1.30	0.6-2	0.21-0.23	3.0-5.9	1.0-3.0	.37	.37			
	24-60	50-72	1.35-1.45	0.00-0.06	0.11-0.13	6.0-8.9	0.5-1.0	.28	.28			
Modale silty clay loam---------------	0-7	10-32	1.20-1.30	0.6-2	0.21-0.23	0.0-2.9	1.0-2.0	.37	.37	5	3	86
	7-24	10-32	1.20-1.30	0.6-2	0.21-0.23	0.0-2.9	1.0-2.0	.37	.37			
	24-60	50-60	1.35-1.45	0.06-0.2	0.11-0.13	6.0-8.9	0.5-1.0	.28	.28			
552:												
Owego---------------	0-8	40-55	1.30-1.35	0.00-0.06	0.12-0.14	6.0-8.9	2.0-4.0	.32	.32	5	4	86
	8-14	40-50	1.30-1.35	0.00-0.06	0.12-0.14	6.0-8.9	0.5-1.5	.32	.32			
	14-23	15-30	1.30-1.40	0.6-2	0.20-0.22	3.0-5.9	0.0-0.5	.37	.37			
	23-32	48-58	1.30-1.40	0.00-0.06	0.20-0.22	3.0-5.9	1.0-3.0	.37	.37			
	32-55	48-58	1.35-1.45	0.00-0.06	0.11-0.13	6.0-8.9	0.0-1.0	.32	.32			
	55-80	48-70	1.35-1.45	0.00-0.06	0.11-0.13	6.0-8.9	0.0-0.5	.32	.32			
630:												
Danbury-------------	0-7	20-30	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	1.0-3.0	.32	.32	5	6	48
	7-32	18-35	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	1.0-2.5	.32	.32			
	32-64	26-40	1.30-1.40	0.2-0.6	0.18-0.20	6.0-8.9	3.0-4.0	.32	.32			
	64-80	26-38	1.30-1.40	0.2-0.6	0.18-0.20	6.0-8.9	2.0-3.0	.32	.32			
666B:												
Smithland-----------	0-7	27-36	1.28-1.32	0.6-2	0.21-0.23	3.0-5.9	5.0-7.0	.28	.28	5	7	38
	7-34	27-36	1.28-1.32	0.6-2	0.21-0.23	3.0-5.9	5.0-6.5	.28	.28			
	34-50	30-35	1.25-1.35	0.6-2	0.18-0.20	3.0-5.9	3.0-4.0	.28	.28			
	50-60	25-35	1.35-1.45	0.6-2	0.18-0.20	3.0-5.9	1.0-2.0	.32	.32			
Danbury-------------	0-7	18-31	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	1.0-3.0	.32	.32	5	6	48
	7-32	18-35	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	1.0-2.5	.32	.32			
	32-64	26-38	1.30-1.40	0.2-0.6	0.18-0.20	6.0-8.9	3.0-4.0	.32	.32			
	64-80	26-41	1.30-1.40	0.2-0.6	0.18-0.20	6.0-8.9	2.0-3.0	.32	.32			
Judson--------------	0-9	27-32	1.30-1.35	0.6-2	0.21-0.23	3.0-5.9	3.0-4.0	.28	.28	5	7	38
	9-28	30-35	1.35-1.45	0.6-2	0.21-0.23	3.0-5.9	3.0-3.5	.28	.28			
	28-52	25-32	1.35-1.45	0.6-2	0.21-0.23	3.0-5.9	1.0-2.0	.43	.43			
	52-60	25-32	1.35-1.45	0.6-2	0.21-0.23	3.0-5.9	0.5-1.0	.43	.43			
670:												
Rawles--------------	0-8	18-27	1.25-1.35	0.6-2	0.21-0.23	3.0-5.9	1.0-3.0	.32	.32	5	4L	86
	8-26	18-27	1.25-1.35	0.6-2	0.21-0.23	3.0-5.9	1.0-2.5	.32	.32			
	26-60	22-35	1.35-1.40	0.6-2	0.19-0.21	3.0-5.9	3.0-4.0	.32	.32			
700:												
Monona, bench-------	0-6	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.32	.32	5	7	38
	6-16	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-3.5	.32	.32			
	16-49	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43			
	49-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
700B:												
Monona, bench-------	0-6	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.32	.32	5	7	38
	6-16	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-3.5	.32	.32			
	16-49	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43			
	49-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	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	g/cc	In/hr	In/in	Pct	Pct					
700C2:												
Monona, bench, moderately eroded--	0-6	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.32	.32	5	7	38
	6-49	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43			
	49-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
700D2:												
Monona, bench, moderately eroded--	0-6	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.32	.32	5	7	38
	6-20	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43			
	20-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
701:												
Wilsey--------------	0-7	18-32	1.20-1.30	0.6-2	0.21-0.23	0.0-2.9	1.0-2.0	.32	.32	5	4L	86
	7-54	18-35	1.20-1.30	0.6-2	0.21-0.23	0.0-2.9	1.0-2.5	.32	.32			
	54-80	18-40	1.20-1.30	0.6-2	0.21-0.23	0.0-2.9	4.0-5.0	.32	.32			
709:												
Fairhaven, 32 to 40 inches to sand and gravel-------------	0-6	18-27	1.30-1.50	0.6-2	0.20-0.22	0.0-2.9	3.0-4.0	.24	.24	4	6	48
	6-12	18-27	1.30-1.50	0.6-2	0.20-0.22	0.0-2.9	3.0-3.5	.24	.24			
	12-25	18-30	1.35-1.50	0.6-2	0.14-0.19	0.0-2.9	0.5-1.0	.32	.32			
	25-39	27-35	1.40-1.60	0.6-2	0.15-0.17	3.0-5.9	0.5-1.0	.28	.32			
	39-80	1-5	1.55-1.65	6-20	0.02-0.04	0.0-2.9	0.0-0.5	.10	.10			
709B:												
Fairhaven, 32 to 40 inches to sand and gravel-------------	0-6	18-27	1.30-1.50	0.6-2	0.20-0.22	0.0-2.9	3.0-4.0	.24	.24	4	6	48
	6-12	18-27	1.30-1.50	0.6-2	0.20-0.22	0.0-2.9	3.0-3.5	.24	.24			
	12-25	18-30	1.35-1.50	0.6-2	0.14-0.19	0.0-2.9	0.5-1.0	.32	.32			
	25-39	27-35	1.40-1.60	0.6-2	0.15-0.17	3.0-5.9	0.5-1.0	.28	.32			
	39-80	1-5	1.55-1.65	6-20	0.02-0.04	0.0-2.9	0.0-0.5	.10	.10			
717D:												
Napier--------------	0-8	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-4.0	.28	.28	5	6	48
	8-29	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-3.5	.28	.28			
	29-48	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43			
	48-60	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
Gullied land.												
733:												
Calco---------------	0-8	24-35	1.25-1.30	0.6-2	0.21-0.23	6.0-8.9	5.0-7.0	.28	.28	5	4L	86
	8-38	24-35	1.25-1.30	0.6-2	0.21-0.23	6.0-8.9	5.0-7.0	.28	.28			
	38-46	24-35	1.25-1.30	0.6-2	0.21-0.23	6.0-8.9	3.0-5.0	.28	.28			
	46-80	24-35	1.30-1.45	0.6-2	0.18-0.20	3.0-5.9	1.0-3.0	.32	.32			
734:												
Holly Springs-------	0-7	27-40	1.30-1.35	0.2-0.6	0.21-0.23	6.0-8.9	5.0-7.0	.37	.37	5	4L	86
	7-26	27-40	1.30-1.35	0.2-0.6	0.21-0.23	6.0-8.9	5.0-6.5	.37	.37			
	26-36	38-70	1.30-1.40	0.06-0.2	0.11-0.13	6.0-8.9	2.0-4.0	.32	.32			
	36-60	45-55	1.30-1.40	0.06-0.2	0.10-0.12	6.0-8.9	1.0-2.0	.32	.32			
	60-80	50-65	1.30-1.40	0.00-0.06	0.10-0.12	6.0-8.9	0.5-1.5	.32	.32			
734+:												
Holly Springs, overwash----------	0-6	27-40	1.30-1.35	0.2-0.6	0.21-0.23	6.0-8.9	5.0-7.0	.37	.37	5	4L	86
	6-12	27-40	1.30-1.35	0.2-0.6	0.21-0.23	6.0-8.9	5.0-6.5	.37	.37			
	12-44	30-42	1.30-1.40	0.00-0.06	0.11-0.13	6.0-8.9	2.0-4.0	.32	.32			
	44-70	45-55	1.30-1.40	0.00-0.06	0.10-0.12	6.0-8.9	1.0-2.0	.32	.32			
	70-80	50-65	1.30-1.40	0.00-0.06	0.10-0.12	6.0-8.9	0.5-1.5	.32	.32			

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	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	g/cc	In/hr	In/in	Pct	Pct					
740C:												
Hawick--------------	0-5	5-15	1.35-1.55	2-6	0.13-0.15	0.0-2.9	1.0-4.0	.17	.17	3	3	86
	5-12	5-15	1.50-1.65	6-20	0.03-0.10	0.0-2.9	0.0-0.5	.10	.15			
	12-80	5-15	1.55-1.65	20-40	0.02-0.06	0.0-2.9	0.0-0.5	.10	.15			
740D:												
Hawick--------------	0-5	5-15	1.35-1.55	2-6	0.13-0.15	0.0-2.9	1.0-4.0	.17	.17	3	3	86
	5-12	5-15	1.50-1.65	6-20	0.03-0.10	0.0-2.9	0.0-0.5	.10	.15			
	12-80	5-15	1.55-1.65	20-40	0.02-0.06	0.0-2.9	0.0-0.5	.10	.15			
740E:												
Hawick--------------	0-5	5-15	1.35-1.55	2-6	0.13-0.15	0.0-2.9	1.0-4.0	.17	.17	3	3	86
	5-12	5-15	1.50-1.65	6-20	0.03-0.10	0.0-2.9	0.0-0.5	.10	.15			
	12-80	5-15	1.55-1.65	20-40	0.02-0.06	0.0-2.9	0.0-0.5	.10	.15			
740F:												
Hawick--------------	0-5	5-15	1.35-1.55	2-6	0.13-0.15	0.0-2.9	1.0-4.0	.17	.17	3	3	86
	5-12	5-15	1.50-1.65	6-20	0.03-0.10	0.0-2.9	0.0-0.5	.10	.15			
	12-80	5-15	1.55-1.65	20-40	0.02-0.06	0.0-2.9	0.0-0.5	.10	.15			
750:												
Ticonic-------------	0-8	2-5	1.20-1.50	6-20	0.05-0.09	0.0-2.9	0.5-1.0	.15	.15	5	1	220
	8-50	2-5	1.20-1.50	6-20	0.05-0.09	0.0-2.9	0.0-0.5	.15	.15			
	50-80	12-24	1.35-1.50	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.24	.24			
754:												
Larpenteur----------	0-8	20-30	1.20-1.25	0.6-2	0.21-0.23	0.0-2.9	3.0-4.0	.28	.28	5	6	48
	8-15	20-30	1.20-1.25	0.6-2	0.21-0.23	0.0-2.9	3.0-3.5	.28	.28			
	15-46	20-30	1.25-1.35	0.6-2	0.19-0.21	0.0-2.9	0.0-1.0	.43	.43			
	46-80	18-27	1.25-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
810B:												
Galva, bench--------	0-6	34-39	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	3.0-4.0	.32	.32	5	4	86
	6-11	34-39	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	3.0-3.5	.32	.32			
	11-31	30-39	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	1.0-1.5	.43	.43			
	31-45	25-30	1.35-1.45	0.6-2	0.20-0.22	3.0-5.9	0.0-0.5	.43	.43			
	45-60	22-30	1.60-1.80	0.6-2	0.16-0.22	3.0-5.9	0.0-0.5	.43	.43			
810C2:												
Galva, bench,												
moderately eroded--	0-7	34-39	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	2.0-3.0	.32	.32	5	4	86
	7-40	30-39	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.5-1.5	.43	.43			
	40-60	25-30	1.35-1.45	0.6-2	0.20-0.22	3.0-5.9	0.0-0.5	.43	.43			
847B:												
Judson--------------	0-9	27-32	1.30-1.35	0.6-2	0.21-0.23	3.0-5.9	3.0-4.0	.28	.28	5	7	38
	9-28	30-35	1.35-1.45	0.6-2	0.21-0.23	3.0-5.9	3.0-3.5	.28	.28			
	28-52	25-32	1.35-1.45	0.6-2	0.21-0.23	3.0-5.9	1.0-2.0	.43	.43			
	52-60	25-32	1.35-1.45	0.6-2	0.21-0.23	3.0-5.9	0.5-1.0	.43	.43			
Rawles--------------	0-8	18-27	1.25-1.35	0.6-2	0.21-0.23	3.0-5.9	1.0-3.0	.32	.32	5	4L	86
	8-26	18-27	1.25-1.35	0.6-2	0.21-0.23	3.0-5.9	1.0-2.5	.32	.32			
	26-60	22-35	1.35-1.40	0.6-2	0.19-0.21	3.0-5.9	3.0-4.0	.32	.32			
945:												
Albaton,												
depressional,												
drained------------	0-7	40-60	1.35-1.40	0.06-0.2	0.11-0.13	9.0-25.0	2.0-3.0	.28	.28	5	8	0
	7-60	40-70	1.35-1.45	0.00-0.06	0.11-0.13	9.0-25.0	0.0-1.0	.28	.28			
1137:												
Haynie--------------	0-7	15-25	1.20-1.35	0.6-2	0.18-0.23	0.0-2.9	1.0-3.0	.32	.32	5	4L	86
	7-60	15-18	1.20-1.35	0.6-2	0.18-0.23	0.0-2.9	0.0-1.0	.43	.43			

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	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	g/cc	In/hr	In/in	Pct	Pct					
1144:												
Blake---------------	0-7	27-38	1.25-1.30	0.6-2	0.20-0.22	3.0-5.9	1.0-3.0	.32	.32	5	4L	86
	7-24	22-35	1.25-1.30	0.6-2	0.20-0.22	3.0-5.9	0.0-1.0	.43	.43			
	24-60	10-20	1.30-1.35	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
1146:												
Onawa---------------	0-9	40-60	1.30-1.35	0.2-0.6	0.12-0.14	6.0-8.9	2.0-3.0	.32	.32	5	4	86
	9-36	50-67	1.30-1.40	0.06-0.2	0.12-0.14	6.0-8.9	0.0-1.0	.28	.28			
	36-80	10-18	1.40-1.50	0.6-6	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
1220:												
Nodaway, channeled--	0-7	18-27	1.25-1.35	0.6-2	0.20-0.23	0.0-2.9	2.0-3.0	.32	.32	5	6	48
	7-60	18-28	1.25-1.35	0.6-2	0.20-0.23	3.0-5.9	0.0-0.5	.43	.43			
1237B:												
Sarpy---------------	0-6	2-5	1.20-1.50	6-20	0.05-0.09	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	6-60	2-5	1.20-1.50	6-20	0.05-0.09	0.0-2.9	0.0-0.5	.15	.15			
1237C:												
Sarpy---------------	0-6	2-5	1.20-1.50	6-20	0.05-0.09	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	6-60	2-5	1.20-1.50	6-20	0.05-0.09	0.0-2.9	0.0-0.5	.15	.15			
1238:												
Sarpy---------------	0-6	2-5	1.20-1.50	6-20	0.05-0.09	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	6-60	2-5	1.20-1.50	6-20	0.05-0.09	0.0-2.9	0.5-1.0	.15	.15			
Morconick-----------	0-7	18-27	1.20-1.25	0.6-2	0.20-0.22	0.0-2.9	1.0-3.0	.32	.32	3	4L	86
	7-13	12-25	1.25-1.50	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
	13-80	2-15	1.25-1.50	6-20	0.02-0.07	0.0-2.9	0.0-0.5	.15	.15			
1513:												
Grable--------------	0-6	18-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	1.0-3.0	.32	.32	4	4L	86
	6-23	12-16	1.25-1.50	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
	23-60	2-10	1.20-1.50	6-20	0.02-0.07	0.0-2.9	0.0-0.5	.15	.15			
Morconick-----------	0-7	18-27	1.20-1.25	0.6-2	0.20-0.22	0.0-2.9	1.0-3.0	.32	.32	3	4L	86
	7-13	12-25	1.25-1.50	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
	13-80	2-15	1.25-1.50	6-20	0.02-0.07	0.0-2.9	0.0-0.5	.15	.15			
1524:												
Morconick-----------	0-7	18-27	1.20-1.25	0.6-2	0.20-0.22	0.0-2.9	1.0-3.0	.32	.32	3	4L	86
	7-13	12-25	1.25-1.50	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
	13-80	2-15	1.25-1.50	6-20	0.02-0.07	0.0-2.9	0.0-0.5	.15	.15			
1525:												
Scroll--------------	0-7	27-55	1.30-1.35	0.06-0.2	0.10-0.12	6.0-8.9	1.0-3.0	.32	.32	5	4	86
	7-11	18-35	1.30-1.35	0.2-0.6	0.20-0.22	3.0-5.9	0.0-1.0	.32	.32			
	11-60	2-12	1.30-1.50	6-20	0.02-0.04	0.0-2.9	0.0-0.5	.15	.15			
2515:												
Percival------------	0-7	40-60	1.30-1.35	0.06-0.2	0.10-0.12	6.0-8.9	1.0-3.0	.28	.28	4	4	86
	7-24	40-60	1.30-1.35	0.06-0.2	0.10-0.12	6.0-8.9	0.0-2.0	.28	.28			
	24-60	2-12	1.30-1.50	6-20	0.02-0.04	0.0-2.9	0.0-0.5	.15	.15			
Albaton-------------	0-7	40-60	1.35-1.40	0.06-0.2	0.11-0.13	9.0-25.0	2.0-3.0	.28	.28	5	4	86
	7-60	40-70	1.35-1.45	0.00-0.06	0.11-0.13	9.0-25.0	0.0-1.0	.28	.28			
3146:												
Onawa---------------	0-9	40-60	1.30-1.35	0.2-0.6	0.12-0.14	6.0-8.9	2.0-3.0	.32	.32	5	4	86
	9-36	50-67	1.30-1.40	0.06-0.2	0.12-0.14	6.0-8.9	0.0-1.0	.28	.28			
	36-80	10-18	1.40-1.50	0.6-6	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	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	g/cc	In/hr	In/in	Pct	Pct					
3146:												
Albaton	0-7	40-60	1.35-1.40	0.06-0.2	0.11-0.13	9.0-25.0	2.0-3.0	.28	.28	5	4	86
	7-60	40-70	1.35-1.45	0.00-0.06	0.11-0.13	9.0-25.0	0.0-1.0	.28	.28			
3275:												
Moville	0-6	10-18	1.25-1.30	0.6-2	0.21-0.23	0.0-2.9	1.0-3.0	.37	.37	5	4L	86
	6-28	10-18	1.25-1.30	0.6-2	0.21-0.23	0.0-2.9	1.0-3.0	.37	.37			
	28-80	40-65	1.35-1.45	0.00-0.06	0.11-0.13	6.0-8.9	3.0-4.0	.28	.28			
Holly Springs, overwash	0-6	27-40	1.30-1.35	0.2-0.6	0.21-0.23	6.0-8.9	5.0-7.0	.37	.37	5	4L	86
	6-12	27-40	1.30-1.35	0.2-0.6	0.21-0.23	6.0-8.9	5.0-6.5	.37	.37			
	12-44	30-42	1.30-1.40	0.00-0.06	0.11-0.13	6.0-8.9	2.0-4.0	.32	.32			
	44-70	45-55	1.30-1.40	0.00-0.06	0.10-0.12	6.0-8.9	1.0-2.0	.32	.32			
	70-80	50-65	1.30-1.40	0.00-0.06	0.10-0.12	6.0-8.9	0.5-1.5	.32	.32			
3440:												
Blencoe	0-8	40-55	1.30-1.35	0.06-0.2	0.12-0.14	6.0-8.9	3.0-5.0	.28	.28	5	4	86
	8-27	40-55	1.30-1.35	0.06-0.2	0.12-0.14	6.0-8.9	3.0-5.0	.28	.28			
	27-33	35-42	1.30-1.35	0.06-0.2	0.18-0.20	6.0-8.9	1.0-3.0	.43	.43			
	33-60	18-24	1.35-1.40	0.6-2	0.20-0.22	3.0-5.9	0.5-1.0	.43	.43			
Woodbury	0-7	40-55	1.30-1.35	0.06-0.2	0.12-0.14	6.0-8.9	5.0-7.0	.28	.28	5	4	86
	7-19	40-55	1.30-1.35	0.06-0.2	0.12-0.14	6.0-8.9	5.0-6.5	.28	.28			
	19-35	40-50	1.30-1.35	0.06-0.2	0.11-0.13	6.0-8.9	2.0-3.0	.32	.32			
	35-48	28-35	1.30-1.40	0.2-0.6	0.18-0.20	6.0-8.9	1.0-2.0	.43	.43			
	48-60	18-27	1.30-1.40	0.2-0.6	0.18-0.20	6.0-8.9	0.0-1.0	.43	.43			
3513:												
Grable	0-6	18-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	1.0-3.0	.32	.32	4	4L	86
	6-23	12-16	1.25-1.50	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
	23-60	2-10	1.20-1.50	6-20	0.02-0.07	0.0-2.9	0.0-0.5	.15	.15			
Morconick	0-7	18-27	1.20-1.25	0.6-2	0.20-0.22	0.0-2.9	1.0-3.0	.32	.32	3	4L	86
	7-13	12-25	1.25-1.50	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
	13-80	2-15	1.25-1.50	6-20	0.02-0.07	0.0-2.9	0.0-0.5	.15	.15			
3549:												
Modale silty clay loam	0-7	25-32	1.20-1.30	0.6-2	0.21-0.23	3.0-5.9	1.0-3.0	.37	.37	5	4L	86
	7-24	10-18	1.20-1.30	0.6-2	0.21-0.23	3.0-5.9	1.0-3.0	.37	.37			
	24-60	50-72	1.35-1.45	0.00-0.06	0.11-0.13	6.0-8.9	0.5-1.0	.28	.28			
Modale silt loam	0-7	25-30	1.20-1.30	0.6-2	0.21-0.23	3.0-5.9	1.0-3.0	.37	.37	5	4L	86
	7-24	25-30	1.20-1.30	0.6-2	0.21-0.23	3.0-5.9	1.0-3.0	.37	.37			
	24-60	50-65	1.35-1.45	0.00-0.1	0.11-0.13	6.0-8.9	0.5-1.0	.28	.28			
3686:												
Napa	0-6	45-60	1.20-1.30	0.00-0.06	0.13-0.18	9.0-25.0	0.5-2.0	.37	.37	5	7	38
	6-57	45-60	1.20-1.30	0.00-0.06	0.13-0.18	9.0-25.0	0.5-2.0	.37	.37			
	57-80	35-50	1.25-1.35	0.00-0.06	0.11-0.16	6.0-8.9	0.0-1.0	.37	.37			
Luton	0-8	40-75	1.30-1.35	0.00-0.06	0.12-0.14	6.0-8.9	3.0-5.0	.28	.28	5	4	86
	8-25	40-75	1.30-1.35	0.00-0.06	0.12-0.14	6.0-8.9	3.0-4.5	.28	.28			
	25-38	40-75	1.30-1.35	0.00-0.06	0.12-0.14	6.0-8.9	0.5-1.5	.28	.28			
	38-60	35-75	1.35-1.45	0.00-0.06	0.12-0.13	6.0-8.9	0.0-1.0	.28	.28			
Tieville	0-7	40-60	1.35-1.45	0.00-0.06	0.12-0.14	6.0-8.9	2.0-4.0	.28	.28	5	4L	86
	7-22	40-60	1.35-1.45	0.00-0.06	0.12-0.14	6.0-8.9	2.0-3.5	.28	.28			
	22-43	50-70	1.35-1.45	0.00-0.06	0.08-0.12	6.0-8.9	1.0-2.0	.28	.28			
	43-60	50-70	1.35-1.45	0.00-0.06	0.08-0.12	6.0-8.9	1.0-2.0	.28	.28			

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	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	g/cc	In/hr	In/in	Pct	Pct					
4000. Urban land												
4001C:												
Ida-----------------	0-8	18-27	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	2.0-3.0	.32	.32	5	4L	86
	8-60	18-25	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
Urban land.												
4001D:												
Ida-----------------	0-8	18-27	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43	4	4L	86
	8-80	18-25	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
Urban land.												
4001E:												
Ida-----------------	0-8	18-27	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43	4	4L	86
	8-80	18-25	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
Urban land.												
4001F:												
Ida-----------------	0-8	18-27	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	2.0-3.0	.32	.32	5	4L	86
	8-60	18-25	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
Urban land.												
4010B:												
Monona--------------	0-8	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28	5	6	48
	8-15	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-3.5	.28	.28			
	15-30	24-32	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43			
	30-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
Urban land.												
4010C:												
Monona--------------	0-8	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28	5	6	48
	8-15	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-3.5	.28	.28			
	15-30	24-32	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43			
	30-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
Urban land.												
4010D:												
Monona--------------	0-8	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28	5	6	48
	8-15	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-3.5	.28	.28			
	15-30	24-32	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43			
	30-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
Urban land.												
4010E:												
Monona--------------	0-8	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28	5	6	48
	8-15	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-3.5	.28	.28			
	15-30	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43			
	30-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
Urban land.												

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	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	g/cc	In/hr	In/in	Pct	Pct					
4012B:												
Napier--------------	0-8	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-4.0	.28	.28	5	6	48
	8-29	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-3.5	.28	.28			
	29-48	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43			
	48-60	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
Urban land.												
4012C:												
Napier--------------	0-8	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-4.0	.28	.28	5	6	48
	8-29	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-3.5	.28	.28			
	29-48	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43			
	48-60	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
Urban land.												
4170D:												
Napier--------------	0-8	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-4.0	.28	.28	5	6	48
	8-29	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-3.5	.28	.28			
	29-48	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43			
	48-60	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
Castana-------------	0-8	18-22	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	2.0-3.0	.28	.28	5	4L	86
	8-18	18-24	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	2.0-2.5	.32	.32			
	18-30	18-24	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
	30-60	18-24	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
Urban land.												
4600:												
Percival------------	0-7	40-60	1.30-1.35	0.06-0.2	0.10-0.12	6.0-8.9	1.0-3.0	.28	.28	4	4	86
	7-24	40-60	1.30-1.35	0.06-0.2	0.10-0.12	6.0-8.9	0.0-2.0	.28	.28			
	24-60	2-12	1.30-1.50	6-20	0.02-0.04	0.0-2.9	0.0-0.5	.15	.15			
Haynie--------------	0-7	15-25	1.20-1.35	0.6-2	0.18-0.23	0.0-2.9	1.0-3.0	.32	.32	5	4L	86
	7-60	15-18	1.20-1.35	0.6-2	0.18-0.23	0.0-2.9	0.0-1.0	.43	.43			
Urban land.												
4670:												
Rawles--------------	0-8	18-27	1.25-1.35	0.6-2	0.21-0.23	3.0-5.9	1.0-3.0	.32	.32	5	4L	86
	8-26	18-27	1.25-1.35	0.6-2	0.21-0.23	3.0-5.9	1.0-2.5	.32	.32			
	26-60	22-35	1.35-1.40	0.6-2	0.19-0.21	3.0-5.9	3.0-4.0	.32	.32			
Urban land.												
5010.												
Pits, sand and gravel												
5040:												
Udorthents, loamy---	0-80	---	---	0.00-2	---	---	---	---	---	--	---	---
5044:												
Fluvaquents---------	0-24	---	---	---	---	---	---	---	---	--	---	---
5060.												
Pits, clay												
5080.												
Udorthents, sanitary landfill												

Table 18.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	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	g/cc	In/hr	In/in	Pct	Pct					
SL. Sewage lagoons												
W. Water												

Table 19.--Chemical Properties of the Soils

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	pH	Pct	Pct	mmhos/cm	
1B3:							
Ida, severely eroded	0-6	20-25	6.6-8.4	0-25	0	0	0
	6-80	20-25	7.4-8.4	5-30	0	0	0
1C:							
Ida------------------	0-8	20-25	6.6-8.4	0-25	0	0	0
	8-60	20-25	7.4-8.4	5-30	0	0	0
1C3:							
Ida, severely eroded	0-6	20-25	6.6-8.4	0-25	0	0	0
	6-80	20-25	7.4-8.4	5-30	0	0	0
1D3:							
Ida, severely eroded	0-6	20-25	6.6-8.4	0-25	0	0	0
	6-80	20-25	7.4-8.4	5-30	0	0	0
1E3:							
Ida, severely eroded	0-6	20-25	6.6-8.4	0-25	0	0	0
	6-80	20-25	7.4-8.4	5-30	0	0	0
1F:							
Ida------------------	0-8	20-25	6.6-8.4	0-25	0	0	0
	8-60	20-25	7.4-8.4	5-30	0	0	0
1F3:							
Ida, severely eroded	0-6	20-25	6.6-8.4	0-25	0	0	0
	6-80	20-25	7.4-8.4	5-30	0	0	0
1G:							
Ida------------------	0-8	20-25	6.6-8.4	0-25	0	0	0
	8-80	20-25	7.4-8.4	5-30	0	0	0
2G:							
Hamburg--------------	0-4	5.0-15	6.6-8.4	0-25	0	0	0
	4-14	5.0-15	7.4-8.4	0-25	0	0	0
	14-60	5.0-15	7.4-8.4	0-30	0	0	0
3D:							
Castana--------------	0-8	20-25	7.4-8.4	5-30	0	0	0
	8-18	20-25	7.4-8.4	5-30	0	0	0
	18-30	20-25	7.4-8.4	5-30	0	0	0
	30-60	20-25	7.4-8.4	5-30	0	0	0
3E:							
Castana--------------	0-8	20-25	7.4-8.4	5-30	0	0	0
	8-18	20-25	7.4-8.4	5-30	0	0	0
	18-30	20-25	7.4-8.4	5-30	0	0	0
	30-60	20-25	7.4-8.4	5-30	0	0	0
8B:							
Judson---------------	0-9	25-30	5.6-7.3	0	0	0	0
	9-28	25-30	5.6-7.3	0	0	0	0
	28-52	25-30	6.1-7.8	0-15	0	0	0
	52-60	25-30	6.1-7.8	0-15	0	0	0

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	pH	Pct	Pct	mmhos/cm	
8C:							
Judson---------------	0-9	25-30	5.6-7.3	0	0	0	0
	9-28	25-30	5.6-7.3	0	0	0	0
	28-52	25-30	6.1-7.8	0-15	0	0	0
	52-60	25-30	6.1-7.8	0-15	0	0	0
10B:							
Monona---------------	0-8	25-30	5.6-7.3	0	0	0	0
	8-15	25-30	5.6-7.3	0	0	0	0
	15-30	25-30	6.1-7.3	0	0	0	0
	30-60	20-25	6.6-8.4	0-25	0	0	0
10B2:							
Monona, moderately eroded--------------	0-7	25-30	5.6-7.3	0	0	0	0
	7-24	25-30	6.1-7.3	0	0	0	0
	24-60	20-25	6.6-8.4	0-25	0	0	0
10C2:							
Monona, moderately eroded--------------	0-7	25-30	5.6-7.3	0	0	0	0
	7-24	25-30	6.1-7.3	0	0	0	0
	24-60	20-25	6.6-8.4	0-25	0	0	0
10D2:							
Monona, moderately eroded--------------	0-7	25-30	5.6-7.3	0	0	0	0
	7-24	25-30	6.1-7.3	0	0	0	0
	24-60	20-25	6.6-8.4	0-25	0	0	0
10D3:							
Monona, severely eroded--------------	0-7	25-30	5.6-7.3	0	0	0	0
	7-24	25-30	6.1-7.3	0	0	0	0
	24-60	20-25	6.6-8.4	0-25	0	0	0
10E:							
Monona---------------	0-8	25-30	5.6-7.3	0	0	0	0
	8-15	25-30	5.6-7.3	0	0	0	0
	15-30	25-30	6.1-7.3	0	0	0	0
	30-60	20-25	6.6-8.4	0-25	0	0	0
10E3:							
Monona, severely eroded--------------	0-7	25-30	5.6-7.3	0	0	0	0
	7-24	25-30	6.1-7.3	0	0	0	0
	24-60	20-25	6.6-8.4	0-25	0	0	0
10F:							
Monona---------------	0-8	25-30	5.6-7.3	0	0	0	0
	8-15	25-30	5.6-7.3	0	0	0	0
	15-30	25-30	6.1-7.3	0	0	0	0
	30-60	20-25	6.6-8.4	0-25	0	0	0
12B:							
Napier---------------	0-8	20-25	6.1-7.3	0	0	0	0
	8-29	20-25	6.1-7.3	0	0	0	0
	29-48	20-25	6.1-8.4	0-10	0	0	0
	48-60	20-25	6.6-8.4	0-10	0	0	0

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	pH	Pct	Pct	mmhos/cm	
12C:							
Napier	0-8	20-25	6.1-7.3	0	0	0	0
	8-29	20-25	6.1-7.3	0	0	0	0
	29-48	20-25	6.1-8.4	0-10	0	0	0
	48-60	20-25	6.6-8.4	0-10	0	0	0
17B:							
Napier	0-8	20-25	6.1-7.3	0	0	0	0
	8-29	20-25	6.1-7.3	0	0	0	0
	29-48	20-25	6.1-8.4	0-10	0	0	0
	48-60	20-25	6.6-8.4	0-10	0	0	0
Kennebec	0-8	30-36	5.6-7.3	0	0	0	0
	8-41	30-36	5.6-7.3	0	0	0	0
	41-54	30-36	6.1-7.3	0	0	0	0
	54-80	30-36	6.1-7.3	0	0	0	0
Colo	0-8	36-41	5.6-7.3	0	0	0	0
	8-34	36-41	5.6-7.3	0	0	0	0
	34-51	36-41	5.6-7.3	0	0	0	0
	51-60	30-36	5.6-7.3	0	0	0	0
26:							
Kennebec	0-9	25-30	5.6-7.3	0	0	0	0
	9-48	5.0-20	5.6-7.3	0	0	0	0
	48-59	0.0-5.0	6.1-7.3	0-15	0	0	0
	59-80	0.0-5.0	6.1-7.3	0-15	0	0	0
35F:							
Liston	0-5	25-30	7.4-8.4	0-15	0	0	0
	5-38	---	7.4-8.4	5-20	0	0	0
	38-80	---	7.4-8.4	5-20	0	0	0
Burchard	0-11	15-25	5.6-7.3	0	0	0	0
	11-24	15-25	6.1-7.3	0	0	0	0
	24-36	15-25	7.4-8.4	5-10	0	0	0
	36-60	10-20	7.4-8.4	1-15	0	0	0
35G:							
Liston	0-5	25-30	7.4-8.4	0-15	0	0	0
	5-38	---	7.4-8.4	5-20	0	0	0
	38-80	---	7.4-8.4	5-20	0	0	0
Burchard	0-11	15-25	5.6-7.3	0	0	0	0
	11-24	15-25	6.1-7.3	0	0	0	0
	24-36	15-25	7.4-8.4	5-10	0	0	0
	36-60	10-20	7.4-8.4	1-15	0	0	0
36:							
Salix	0-7	30-36	5.6-7.8	0-15	0	0	0
	7-15	30-36	6.1-7.8	0-15	0	0	0
	15-25	25-30	6.1-7.8	0-15	0	0	0
	25-40	15-20	7.4-8.4	0-30	0	0	0
	40-60	15-20	7.4-8.4	0-30	0	0	0
46:							
Keg	0-7	25-30	6.1-7.3	0	0	0	0
	7-29	25-30	6.1-7.3	0	0	0	0
	29-56	20-25	7.4-8.4	5-30	0	0	0
	56-80	20-25	7.4-8.4	5-30	0	0	0

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	pH	Pct	Pct	mmhos/cm	
47B:							
Napier----------------	0-8	20-25	6.1-7.3	0	0	0	0
	8-29	20-25	6.1-7.3	0	0	0	0
	29-48	20-25	6.1-8.4	0-10	0	0	0
	48-60	20-25	6.6-8.4	0-10	0	0	0
Rawles----------------	0-8	15-20	6.6-8.4	0-30	0	0	0
	8-26	15-20	6.6-8.4	0-30	0	0	0
	26-60	15-20	6.1-7.8	0-20	0	0	0
54:							
Zook------------------	0-6	36-41	5.6-7.8	0	0	0	0
	6-20	36-41	5.6-7.3	0	0	0	0
	20-52	36-41	6.1-7.3	0	0	0	0
	52-60	30-36	6.1-7.3	0	0	0	0
59E:							
Burchard--------------	0-11	15-25	5.6-7.3	0	0	0	0
	11-24	15-25	6.1-7.3	0	0	0	0
	24-36	15-25	7.4-8.4	5-10	0	0	0
	36-60	10-20	7.4-8.4	1-15	0	0	0
66:							
Luton-----------------	0-8	41-200	6.6-7.8	0-15	0	0	0
	8-25	41-200	6.6-7.8	0-15	0	0	0
	25-38	41-200	6.6-8.4	0-15	0	0	0
	38-60	41-200	6.6-8.4	0-25	0	0	0
67:							
Woodbury--------------	0-7	41-50	5.6-7.3	0	0	0	0
	7-19	41-50	6.1-7.3	0	0	0	0
	19-35	41-45	6.1-6.5	0	0	0	0
	35-48	35-41	6.6-7.8	0-2	0	0	0
	48-60	35-41	6.6-8.4	0-2	0	0	0
100B:							
Monona----------------	0-7	25-30	5.6-7.3	0	0	0	0
	7-20	25-30	5.6-7.3	0	0	0	0
	20-48	25-30	6.1-7.3	0	0	0	0
	48-80	25-30	6.6-8.4	0-25	0	0	0
100C2:							
Monona, moderately eroded--------------	0-6	25-30	5.6-7.3	0	0	0	0
	6-24	25-30	6.1-7.3	0	0	0	0
	24-80	25-30	6.6-8.4	0-25	0	0	0
100D2:							
Monona, moderately eroded--------------	0-6	25-30	5.6-7.3	0	0	0	0
	6-24	25-30	6.1-7.3	0	0	0	0
	24-80	25-30	6.6-8.4	0-25	0	0	0
100E2:							
Monona, moderately eroded--------------	0-6	25-30	5.6-7.3	0	0	0	0
	6-24	25-30	6.1-7.3	0	0	0	0
	24-80	25-30	6.6-8.4	0-25	0	0	0

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	pH	Pct	Pct	mmhos/cm	
101E2:							
Monona, moderately eroded-------------	0-6	25-30	5.6-7.3	0	0	0	0
	6-24	25-30	6.1-7.3	0	0	0	0
	24-80	20-25	6.6-8.4	0-25	0	0	0
Ida, moderately eroded-------------	0-6	20-25	6.6-8.4	0-25	0	0	0
	6-80	20-25	7.4-8.4	5-30	0	0	0
123:							
Grantcenter----------	0-6	30-36	5.6-7.3	0	0	0	0
	6-23	25-30	6.1-7.3	0-10	0	0	0
	23-56	15-20	6.6-7.8	0-10	0	0	0
	56-80	15-20	7.4-8.4	0-10	0	0	0
137:							
Haynie---------------	0-7	15-20	6.6-7.8	0-25	0	0	0
	7-60	15-20	7.4-8.4	5-30	0	0	0
144:							
Blake----------------	0-7	25-35	6.6-8.4	5-30	0	0	0
	7-24	20-30	7.4-8.4	5-30	0	0	0
	24-60	10-20	7.4-8.4	5-30	0	0	0
156:							
Albaton--------------	0-7	36-41	6.6-7.4	5-30	0	0	0
	7-60	41-50	7.4-8.4	5-30	0	0	0
170E:							
Napier---------------	0-8	20-25	6.1-7.3	0	0	0	0
	8-29	20-25	6.1-7.3	0	0	0	0
	29-48	20-25	6.1-8.4	0-10	0	0	0
	48-60	20-25	6.6-8.4	0-10	0	0	0
Castana--------------	0-8	20-25	7.4-8.4	5-30	0	0	0
	8-18	20-25	7.4-8.4	5-30	0	0	0
	18-30	20-25	7.4-8.4	5-30	0	0	0
	30-60	20-25	7.4-8.4	5-30	0	0	0
212:							
Kennebec-------------	0-8	30-36	5.6-7.3	0	0	0	0
	8-41	30-36	5.6-7.3	0	0	0	0
	41-54	30-36	6.1-7.3	0	0	0	0
	54-80	30-36	6.1-7.3	0	0	0	0
212+:							
Kennebec, overwash---	0-10	30-36	5.6-7.3	0	0	0	0
	10-41	30-36	5.6-7.3	0	0	0	0
	41-54	30-36	6.1-7.3	0	0	0	0
	54-80	30-36	6.1-7.3	0	0	0	0
220:							
Nodaway--------------	0-7	20-25	6.1-7.3	0	0	0.0-2.0	0
	7-60	20-25	6.1-7.3	0	0	0.0-2.0	0
237:							
Sarpy----------------	0-6	2.0-8.0	6.6-8.4	0-15	0	0	0
	6-60	2.0-8.0	6.6-8.4	0-15	0	0	0

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	pH	Pct	Pct	mmhos/cm	
237B:							
Sarpy----------------	0-6	2.0-8.0	6.6-8.4	0-15	0	0	0
	6-60	2.0-8.0	6.6-8.4	0-15	0	0	0
244:							
Blend----------------	0-7	41-50	5.6-7.3	0	0	0	0
	7-14	41-50	5.6-7.3	0	0	0	0
	14-32	36-41	6.1-7.8	0-20	0	0	0
	32-43	41-50	6.1-7.8	0-20	0	0	0
	43-60	41-50	7.4-8.4	0-20	0	0	0
255:							
Cooper---------------	0-8	25-30	6.1-7.8	0-15	0	0	0
	8-16	25-30	6.1-7.8	0-15	0	0	0
	16-24	25-30	6.6-7.8	0-25	0	0	0
	24-33	41-50	7.4-8.4	0-25	0	0	0
	33-60	41-50	7.4-8.4	0-25	0	0	0
266:							
Smithland------------	0-7	36-41	5.6-7.3	0	0	0	0
	7-34	36-41	5.6-7.3	0	0	0	0
	34-50	36-41	5.6-7.3	0	0	0	0
	50-60	30-36	6.1-7.3	0	0	0	0
266+:							
Smithland, overwash--	0-8	36-41	5.6-7.3	0	0	0	0
	8-34	36-41	5.6-7.3	0	0	0	0
	34-50	36-41	5.6-7.3	0	0	0	0
	50-60	30-36	6.1-7.3	0	0	0	0
277B:							
Deloit---------------	0-8	20-25	5.6-7.3	0	0	0	0
	8-30	20-25	6.1-7.8	0	0	0	0
	30-80	15-25	6.1-7.8	0-15	0	0	0
277C:							
Deloit---------------	0-8	20-25	6.1-7.3	0	0	0	0
	8-30	20-25	6.1-7.3	0	0	0	0
	30-80	15-25	6.1-7.8	0-15	0	0	0
277E:							
Deloit---------------	0-8	20-25	6.1-7.3	0	0	0	0
	8-30	20-25	6.1-7.3	0	0	0	0
	30-80	15-25	6.1-7.8	0-15	0	0	0
310B:							
Galva----------------	0-6	36-41	5.6-6.5	0	0	0	0
	6-11	36-41	5.6-6.5	0	0	0	0
	11-31	36-41	6.1-7.3	0	0	0	0
	31-45	36-41	6.6-8.4	0-25	0	0	0
	45-60	36-41	7.4-8.4	5-30	0	0	0
310C2:							
Galva, moderately eroded--------------	0-7	36-41	5.6-7.3	0	0	0	0
	7-40	36-41	6.1-7.3	0	0	0	0
	40-60	36-41	6.6-8.4	0-25	0	0	0

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	pH	Pct	Pct	mmhos/cm	
366:							
Luton----------------	0-8	41-200	6.6-7.8	0-15	0	0	0
	8-25	41-200	6.6-7.8	0-15	0	0	0
	25-38	41-200	6.6-8.4	0-15	0	0	0
	38-60	41-200	6.6-8.4	0-25	0	0	0
436:							
Lakeport-------------	0-12	30-36	5.1-7.3	0	0	0	0
	12-22	30-36	6.1-7.3	0	0	0	0
	21-37	25-30	6.1-7.3	0	0	0	0
	48-80	20-25	7.4-8.4	5-30	0	0	0
446:							
Burcham--------------	0-7	20-25	6.6-7.8	0-25	0	0	0
	7-26	20-25	6.6-7.8	0-25	0	0	0
	26-60	36-45	7.4-8.4	5-30	0	0	0
465:							
Tieville-------------	0-7	30-50	7.4-8.4	1-4	0	0	0
	7-22	30-50	7.4-8.4	1-4	0	0	0
	22-43	30-50	7.9-9.0	1-4	0	0	0
	43-60	30-50	7.9-9.0	1-4	0	0	0
485:							
Spillville-----------	0-20	20-25	5.6-7.3	0	0	0	0
	20-54	20-25	5.6-7.3	0	0	0	0
	54-80	20-25	5.6-7.3	0	0	0	0
510:							
Monona, bench--------	0-8	25-30	5.6-7.3	0	0	0	0
	8-15	25-30	5.6-7.3	0	0	0	0
	15-30	25-30	6.1-7.3	0	0	0	0
	30-60	20-25	6.6-8.4	0-25	0	0	0
510B:							
Monona, bench--------	0-8	25-30	5.6-7.3	0	0	0	0
	8-15	25-30	5.6-7.3	0	0	0	0
	15-30	25-30	6.1-7.3	0	0	0	0
	30-60	20-25	6.6-8.4	0-25	0	0	0
510B2:							
Monona, bench, moderately eroded---	0-7	25-30	5.6-7.3	0	0	0	0
	7-24	25-30	6.1-7.3	0	0	0	0
	24-60	20-25	6.6-8.4	0-25	0	0	0
510C2:							
Monona, bench, moderately eroded---	0-7	25-30	5.6-7.3	0	0	0	0
	7-24	25-30	6.1-7.3	0	0	0	0
	20-60	20-25	6.6-8.4	0-25	0	0	0
515:							
Percival-------------	0-8	36-41	7.4-8.4	0-15	0	0	0
	8-24	35-40	7.4-8.4	0-25	0	0	0
	24-60	5.0-15	7.4-8.4	0-25	0	0	0
518:							
Morconick------------	0-7	5.0-10	7.4-8.4	1-5	0	0	0
	7-13	15-20	7.4-8.4	1-5	0	0	0
	13-80	1.0-5.0	7.4-8.4	1-5	0	0	0

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	pH	Pct	Pct	mmhos/cm	
527:							
Anthon---------------	0-8	25-30	5.6-7.3	0	0	0	0
	8-29	25-30	5.6-7.3	0	0	0	0
	29-45	25-30	5.6-7.3	0	0	0	0
	45-59	5.0-20	5.6-7.3	0	0	0	0
	59-80	0.0-5.0	6.6-8.4	0-15	0	0	0
527B:							
Anthon---------------	0-8	25-30	5.6-7.3	0	0	0	0
	8-29	25-30	5.6-7.3	0	0	0	0
	29-45	25-30	5.6-7.3	0	0	0	0
	45-59	5.0-20	5.6-7.3	0	0	0	0
	59-80	0.0-5.0	6.6-8.4	0-15	0	0	0
549:							
Modale silt loam-----	0-7	15-20	7.4-8.4	5-30	0	0	0
	7-24	15-20	7.4-8.4	5-30	0	0	0
	24-60	41-55	7.4-8.4	5-30	0	0	0
Modale silty clay loam----------------	0-7	15-20	7.4-8.4	5-30	0	0	0
	7-24	15-20	7.4-8.4	5-30	0	0	0
	24-60	41-55	7.4-8.4	5-30	0	0	0
552:							
Owego----------------	0-8	36-41	5.6-7.3	0-15	0	0	0
	8-14	36-41	6.1-7.8	0-15	0	0	0
	14-23	30-36	7.4-8.4	5-30	0	0	0
	23-32	30-36	7.4-8.4	5-30	0	0	0
	32-55	41-50	7.4-8.4	5-30	0	0	0
	55-80	41-50	7.4-8.4	5-30	0	0	0
630:							
Danbury--------------	0-7	25-30	5.6-7.3	0	0	0	0
	7-32	25-30	5.6-7.3	0	0	0	0
	32-64	25-30	6.1-7.3	5-10	0	0	0
	64-80	25-30	5.6-7.3	5-10	0	0	0
666B:							
Smithland------------	0-7	36-41	5.6-7.3	0	0	0	0
	7-34	36-41	5.6-7.3	0	0	0	0
	34-50	36-41	5.6-7.3	0	0	0	0
	50-60	30-36	6.1-7.3	0	0	0	0
Danbury--------------	0-7	25-30	5.6-7.3	0	0	0	0
	7-32	25-30	5.6-7.3	0	0	0	0
	32-64	25-30	5.6-7.8	5-10	0	0	0
	64-80	25-30	5.6-7.8	5-10	0	0	0
Judson---------------	0-9	25-30	5.6-7.3	0	0	0	0
	9-28	25-30	5.6-7.3	0	0	0	0
	28-52	25-30	6.1-7.8	0-15	0	0	0
	52-60	25-30	6.1-7.8	0-15	0	0	0
670:							
Rawles---------------	0-8	15-20	6.6-8.4	0-30	0	0	0
	8-26	15-20	6.6-8.4	0-30	0	0	0
	26-60	15-20	6.1-7.8	0-20	0	0	0

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	pH	Pct	Pct	mmhos/cm	
700:							
Monona, bench--------	0-6	25-30	5.6-7.3	0	0	0	0
	6-16	25-30	5.6-7.3	0	0	0	0
	16-49	25-30	6.1-7.3	0	0	0	0
	49-80	25-30	6.6-8.4	0-25	0	0	0
700B:							
Monona, bench--------	0-6	25-30	5.6-7.3	0	0	0	0
	6-16	25-30	5.6-7.3	0	0	0	0
	16-49	25-30	6.1-7.3	0	0	0	0
	49-80	25-30	6.6-8.4	0-25	0	0	0
700C2:							
Monona, bench, moderately eroded---	0-6	25-30	5.6-7.3	0	0	0	0
	6-49	25-30	6.1-7.3	0	0	0	0
	49-80	25-30	6.6-8.4	0-25	0	0	0
700D2:							
Monona, bench, moderately eroded---	0-6	25-30	5.6-7.3	0	0	0	0
	6-20	25-30	6.1-7.3	0	0	0	0
	20-80	25-30	6.6-8.4	0-25	0	0	0
701:							
Wilsey---------------	0-7	15-20	7.4-8.4	5-30	0	0	0
	7-54	15-20	7.4-8.4	5-30	0	0	0
	54-80	15-20	6.6-8.4	5-30	0	0	0
709:							
Fairhaven, 32 to 40 inches to sand and gravel--------------	0-6	5.0-25	6.1-7.3	0	0	0	0
	6-12	5.0-25	6.1-7.3	0	0	0	0
	12-25	5.0-20	5.6-7.3	0	0	0	0
	25-39	15-30	6.1-8.4	0-10	0	0	0
	39-80	0.0-5.0	6.6-8.4	0-15	0	0	0
709B:							
Fairhaven, 32 to 40 inches to sand and gravel--------------	0-6	5.0-25	6.1-7.3	0	0	0	0
	6-12	5.0-25	6.1-7.3	0	0	0	0
	12-25	5.0-20	5.6-7.3	0	0	0	0
	25-39	15-30	6.1-8.4	0-10	0	0	0
	39-80	0.0-5.0	6.6-8.4	0-15	0	0	0
717D:							
Napier---------------	0-8	20-25	6.1-7.3	0	0	0	0
	8-29	20-25	6.1-7.3	0	0	0	0
	29-48	20-25	6.1-8.4	0-10	0	0	0
	48-60	20-25	6.6-8.4	0-10	0	0	0
Gullied land.							
733:							
Calco----------------	0-8	36-41	7.4-8.4	5-30	0	0	0
	8-38	36-41	7.4-8.4	5-30	0	0	0
	38-46	36-41	7.4-8.4	5-30	0	0	0
	46-80	36-41	7.4-8.4	5-30	0	0	0

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	pH	Pct	Pct	mmhos/cm	
734:							
Holly Springs--------	0-7	30-36	7.4-8.4	5-30	0	0	0
	7-26	30-36	7.4-8.4	5-30	0	0	0
	26-36	30-36	7.4-8.4	5-30	0	0	0
	36-60	40-50	7.4-8.4	5-30	0	0	0
	60-80	40-50	7.4-8.4	5-30	0	0	0
734+:							
Holly Springs, overwash------------	0-6	30-36	7.4-8.4	5-30	0	0	0
	6-12	30-36	7.4-8.4	5-30	0	0	0
	12-44	30-36	7.4-8.4	5-30	0	0	0
	44-70	40-50	7.4-8.4	5-30	0	0	0
	70-80	40-50	7.4-8.4	5-30	0	0	0
740C:							
Hawick---------------	0-5	1.0-10	6.1-7.8	0-10	0	0	0
	5-12	1.0-5.0	6.1-7.8	0-10	0	0	0
	12-80	1.0-5.0	7.4-8.4	5-15	0	0	0
740D:							
Hawick---------------	0-5	1.0-10	6.1-7.8	0-10	0	0	0
	5-12	1.0-5.0	6.1-7.8	0-10	0	0	0
	12-80	1.0-5.0	7.4-8.4	5-15	0	0	0
740E:							
Hawick---------------	0-5	1.0-10	6.1-7.8	0-10	0	0	0
	5-12	1.0-5.0	6.1-7.8	0-10	0	0	0
	12-80	1.0-5.0	7.4-8.4	5-15	0	0	0
740F:							
Hawick---------------	0-5	1.0-10	6.1-7.8	0-10	0	0	0
	5-12	1.0-5.0	6.1-7.8	0-10	0	0	0
	12-80	1.0-5.0	7.4-8.4	5-15	0	0	0
750:							
Ticonic--------------	0-8	2.0-6.0	6.6-8.4	0-5	0	0	0
	8-50	2.0-6.0	6.6-8.4	0-5	0	0	0
	50-80	10-20	7.4-8.4	0-15	0	0	0
754:							
Larpenteur-----------	0-8	30-36	6.6-8.4	0-10	0	0	0
	8-15	30-36	7.4-8.4	0-10	0	0	0
	15-46	15-20	7.4-8.4	5-15	0	0	0
	46-80	15-20	7.4-9.0	2-10	0	0	0
810B:							
Galva, bench---------	0-6	36-41	5.6-7.3	0	0	0	0
	6-11	36-41	5.6-7.3	0	0	0	0
	11-31	36-41	6.1-7.3	0	0	0	0
	31-45	36-41	6.6-8.4	0-25	0	0	0
	45-60	36-41	7.4-8.4	5-30	0	0	0
810C2:							
Galva, bench, moderately eroded---	0-7	36-41	5.6-7.3	0	0	0	0
	7-40	36-41	6.1-7.3	0	0	0	0
	40-60	36-41	6.6-8.4	0-25	0	0	0

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	pH	Pct	Pct	mmhos/cm	
847B:							
Judson	0-9	25-30	5.6-7.3	0	0	0	0
	9-28	25-30	5.6-7.3	0	0	0	0
	28-52	25-30	6.1-7.8	0-15	0	0	0
	52-60	25-30	6.1-7.8	0-15	0	0	0
Rawles	0-8	15-20	6.6-8.4	0-30	0	0	0
	8-26	15-20	6.6-8.4	0-30	0	0	0
	26-60	15-20	6.1-7.8	0-20	0	0	0
945:							
Albaton, depressional, drained	0-7	36-41	6.6-7.4	5-30	0	0	0
	7-60	41-50	7.4-8.4	5-30	0	0	0
1137:							
Haynie	0-7	15-20	6.6-8.4	0-25	0	0	0
	7-60	15-20	7.4-8.4	5-30	0	0	0
1144:							
Blake	0-7	25-35	6.6-8.4	5-30	0	0	0
	7-24	20-30	7.4-8.4	5-30	0	0	0
	24-60	10-20	7.4-8.4	5-30	0	0	0
1146:							
Onawa	0-9	36-41	7.4-8.4	5-30	0	0	0
	9-36	41-50	7.4-8.4	5-30	0	0	0
	36-80	15-20	7.4-8.4	5-30	0	0	0
1220:							
Nodaway, channeled	0-7	20-25	6.1-7.3	0	0	0.0-2.0	0
	7-60	20-25	6.1-7.3	0	0	0.0-2.0	0
1237B:							
Sarpy	0-6	2.0-6.0	6.6-8.4	0-15	0	0	0
	6-60	2.0-6.0	6.6-8.4	0-15	0	0	0
1237C:							
Sarpy	0-6	2.0-8.0	6.6-8.4	0-15	0	0	0
	6-60	2.0-8.0	6.6-8.4	0-15	0	0	0
1238:							
Sarpy	0-6	2.0-6.0	6.6-8.4	1-2	0	0	0
	6-60	2.0-6.0	6.6-8.4	1-2	0	0	0
Morconick	0-7	5.0-10	7.4-8.4	1-5	0	0	0
	7-13	15-20	7.4-8.4	1-5	0	0	0
	13-80	1.0-5.0	7.4-8.4	1-5	0	0	0
1513:							
Grable	0-6	15-20	7.4-8.4	5-30	0	0	0
	6-23	15-20	7.4-8.4	5-30	0	0	0
	23-60	5.0-10	7.4-9.0	5-30	0	0	0
Morconick	0-7	5.0-10	7.4-8.4	1-5	0	0	0
	7-13	15-20	7.4-8.4	1-5	0	0	0
	13-80	1.0-5.0	7.4-8.4	1-5	0	0	0

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	pH	Pct	Pct	mmhos/cm	
1524:							
Morconick------------	0-7	5.0-10	7.4-8.4	1-5	0	0	0
	7-13	15-20	7.4-8.4	1-5	0	0	0
	13-80	1.0-5.0	7.4-8.4	1-5	0	0	0
1525:							
Scroll---------------	0-7	36-41	7.4-8.4	0-15	0	0	0
	7-11	25-30	7.4-8.4	1-25	0	0	0
	11-60	5.0-15	7.4-8.4	1-25	0	0	0
2515:							
Percival-------------	0-7	36-41	7.4-8.4	0-15	0	0	0
	7-24	35-40	7.4-8.4	0-25	0	0	0
	24-60	5.0-15	7.4-8.4	0-25	0	0	0
Albaton--------------	0-7	36-41	6.6-7.4	5-30	0	0	0
	7-60	41-50	7.4-8.4	5-30	0	0	0
3146:							
Onawa----------------	0-9	36-41	7.4-8.4	5-30	0	0	0
	9-36	41-50	7.4-8.4	5-30	0	0	0
	36-80	15-20	7.4-8.4	5-30	0	0	0
Albaton--------------	0-7	36-41	6.6-7.4	5-30	0	0	0
	7-60	41-50	7.4-8.4	5-30	0	0	0
3275:							
Moville--------------	0-6	15-20	7.4-8.4	0	0	0	0
	6-28	15-20	7.4-8.4	0	0	0	0
	28-80	41-55	6.6-7.8	0	0	0	0
Holly Springs, overwash------------	0-6	30-36	7.4-8.4	5-30	0	0	0
	6-12	30-36	7.4-8.4	5-30	0	0	0
	12-44	30-36	7.4-8.4	5-30	0	0	0
	44-70	40-50	7.4-8.4	5-30	0	0	0
	70-80	40-50	7.4-8.4	5-30	0	0	0
3440:							
Blencoe--------------	0-8	41-50	6.1-7.3	0	0	0	0
	8-27	41-50	6.1-7.3	0	0	0	0
	27-33	41-50	6.6-7.8	0-20	0	0	0
	33-60	20-25	7.4-9.0	5-30	0	0	0
Woodbury-------------	0-7	41-50	6.1-7.3	0	0	0	0
	7-19	41-50	6.1-7.3	0	0	0	0
	19-35	41-45	6.1-6.5	0	0	0	0
	35-48	35-41	6.6-7.8	0-2	0	0	0
	48-60	35-41	6.6-7.8	0-2	0	0	0
3513:							
Grable---------------	0-6	15-20	7.4-8.4	5-30	0	0	0
	6-23	15-20	7.4-8.4	5-30	0	0	0
	23-60	5.0-10	7.4-9.0	5-30	0	0	0
Morconick------------	0-7	5.0-10	7.4-8.4	1-5	0	0	0
	7-13	15-20	7.4-8.4	1-5	0	0	0
	13-80	1.0-5.0	7.4-8.4	1-5	0	0	0

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	pH	Pct	Pct	mmhos/cm	
3549:							
Modale silty clay loam	0-7	15-20	7.4-8.4	5-30	0	0	0
	7-24	15-20	7.4-8.4	5-30	0	0	0
	24-60	41-55	7.4-8.4	5-30	0	0	0
Modale silt loam	0-7	15-20	7.4-8.4	5-30	0	0	0
	7-24	15-20	7.4-8.4	5-30	0	0	0
	24-60	41-55	7.4-8.4	5-30	0	0	0
3686:							
Napa	0-6	30-45	7.4-9.0	0-5	1-5	4.0-16.0	5-18
	6-57	30-45	7.4-9.0	0-5	1-5	4.0-16.0	5-18
	57-80	30-45	7.4-9.0	5-15	1-10	2.0-8.0	0-10
Luton	0-8	41-200	6.6-7.8	0-15	0	0	0
	8-25	41-200	6.6-7.8	0-15	0	0	0
	25-38	41-200	6.6-8.4	0-15	0	0	0
	38-60	41-200	6.6-8.4	0-25	0	0	0
Tieville	0-7	30-50	7.4-8.4	1-4	0	0	0
	7-22	30-50	7.4-8.4	1-4	0	0	0
	22-43	30-50	7.9-9.0	1-4	0	0	0
	43-60	30-50	7.9-9.0	1-4	0	0	0
4000.							
Urban land							
4001C:							
Ida	0-8	20-25	6.6-8.4	0-25	0	0	0
	8-60	20-25	7.4-8.4	5-30	0	0	0
Urban land.							
4001D:							
Ida	0-8	20-25	6.6-8.4	0-25	0	0	0
	8-80	20-25	7.4-8.4	5-30	0	0	0
Urban land.							
4001E:							
Ida	0-8	20-25	6.6-8.4	0-25	0	0	0
	8-80	20-25	7.4-8.4	5-30	0	0	0
Urban land.							
4001F:							
Ida	0-8	20-25	6.6-8.4	0-25	0	0	0
	8-60	20-25	7.4-8.4	5-30	0	0	0
Urban land.							
4010B:							
Monona	0-8	25-30	5.6-7.3	0	0	0	0
	8-15	25-30	5.6-7.3	0	0	0	0
	15-30	25-30	6.1-7.3	0	0	0	0
	30-60	20-25	6.6-8.4	0-25	0	0	0
Urban land.							

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	pH	Pct	Pct	mmhos/cm	
4010C:							
Monona---------------	0-8	25-30	5.6-7.3	0	0	0	0
	8-15	25-30	5.6-7.3	0	0	0	0
	15-30	25-30	6.1-7.3	0	0	0	0
	30-60	20-25	6.6-8.4	0-25	0	0	0
Urban land.							
4010D:							
Monona---------------	0-8	25-30	5.6-7.3	0	0	0	0
	8-15	25-30	5.6-7.3	0	0	0	0
	15-30	25-30	6.1-7.3	0	0	0	0
	30-60	20-25	6.6-8.4	0-25	0	0	0
Urban land.							
4010E:							
Monona---------------	0-8	25-30	5.6-7.3	0	0	0	0
	8-15	25-30	5.6-7.3	0	0	0	0
	15-30	25-30	6.1-7.3	0	0	0	0
	30-60	20-25	6.6-8.4	0-25	0	0	0
Urban land.							
4012B:							
Napier---------------	0-8	20-25	6.1-7.3	0	0	0	0
	8-29	20-25	6.1-7.3	0	0	0	0
	29-48	20-25	6.1-8.4	0-10	0	0	0
	48-60	20-25	6.6-8.4	0-10	0	0	0
Urban land.							
4012C:							
Napier---------------	0-8	20-25	6.1-7.3	0	0	0	0
	8-29	20-25	6.1-7.3	0	0	0	0
	29-48	20-25	6.1-8.4	0-10	0	0	0
	48-60	20-25	6.6-8.4	0-10	0	0	0
Urban land.							
4170D:							
Napier---------------	0-8	20-25	6.1-7.3	0	0	0	0
	8-29	20-25	6.1-7.3	0	0	0	0
	29-48	20-25	6.1-8.4	0-10	0	0	0
	48-60	20-25	6.6-8.4	0-10	0	0	0
Castana--------------	0-8	20-25	7.4-8.4	5-30	0	0	0
	8-18	20-25	7.4-8.4	5-30	0	0	0
	18-30	20-25	7.4-8.4	5-30	0	0	0
	30-60	20-25	7.4-8.4	5-30	0	0	0
Urban land.							
4600:							
Percival-------------	0-7	36-41	7.4-8.4	0-15	0	0	0
	7-24	35-40	7.4-8.4	0-25	0	0	0
	24-60	5.0-15	7.4-8.4	0-25	0	0	0

Table 19.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	Inches	meq/100 g	pH	Pct	Pct	mmhos/cm	
4600:							
Haynie---------------	0-7	15-20	6.6-8.4	0-25	0	0	0
	7-60	15-20	7.4-8.4	5-30	0	0	0
Urban land.							
4670:							
Rawles---------------	0-8	15-20	6.6-8.4	0-30	0	0	0
	8-26	15-20	6.6-8.4	0-30	0	0	0
	26-60	15-20	6.1-7.8	0-20	0	0	0
Urban land.							
5010. Pits, sand and gravel							
5040. Udorthents, loamy							
5044. Fluvaquents							
5060. Pits, clay							
5080. Udorthents, sanitary landfill							
SL. Sewage lagoons							
W. Water							

Table 20.--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	Hydrologic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
1B3:										
Ida, severely eroded------	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
1C:										
Ida-----------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
1C3:										
Ida, severely eroded------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
1D3:										
Ida, severely eroded------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
1E3:										
Ida, severely eroded------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
1F:										
Ida-----------------------	B	High								
			Jan-Dec	---	---	---	---	None	---	None
1F3:										
Ida, severely eroded------	B	High								
			Jan-Dec	---	---	---	---	None	---	None
1G:										
Ida-----------------------	B	High								
			Jan-Dec	---	---	---	---	None	---	None
2G:										
Hamburg-------------------	B	High								
			Jan-Dec	---	---	---	---	None	---	None
3D:										
Castana-------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
3E:										
Castana-------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
8B:										
Judson--------------------	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
8C:										
Judson--------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
10B:										
Monona--------------------	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
10B2:										
Monona, moderately eroded	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
10C2:										
Monona, moderately eroded	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
10D2:										
Monona, moderately eroded	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
10D3:										
Monona, severely eroded---	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
10E:										
Monona--------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
10E3:										
Monona, severely eroded---	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
10F:										
Monona--------------------	B	High								
			Jan-Dec	---	---	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
12B:										
Napier	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
12C:										
Napier	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
17B:										
Napier	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
Kennebec	B	Low								
			January	4.0-6.0	>6.0	---	---	None	---	None
			February	4.0-6.0	>6.0	---	---	None	Very brief	Frequent
			March	4.0-6.0	>6.0	---	---	None	Very brief	Frequent
			April	4.0-6.0	>6.0	---	---	None	Very brief	Frequent
			May	4.0-6.0	>6.0	---	---	None	Very brief	Frequent
			June	4.0-6.0	>6.0	---	---	None	Very brief	Frequent
			July	4.0-6.0	>6.0	---	---	None	Very brief	Frequent
			August	5.0-6.0	>6.0	---	---	None	Very brief	Frequent
			September	5.0-6.0	>6.0	---	---	None	Very brief	Frequent
			October	5.0-6.0	>6.0	---	---	None	Very brief	Frequent
			November	4.0-6.0	>6.0	---	---	None	Very brief	Frequent
			December	4.0-6.0	>6.0	---	---	None	---	None
Colo	B/D	Low								
			January	0.0-1.0	>6.0	---	---	None	---	None
			February	0.0-1.0	>6.0	---	---	None	Very brief	Frequent
			March	0.0-1.0	>6.0	---	---	None	Very brief	Frequent
			April	0.0-1.0	>6.0	---	---	None	Very brief	Frequent
			May	0.0-1.0	>6.0	---	---	None	Very brief	Frequent
			June	0.0-1.0	>6.0	---	---	None	Very brief	Frequent
			July	0.0-1.0	>6.0	---	---	None	Very brief	Frequent
			August	0.0-6.0	>6.0	---	---	None	Very brief	Frequent
			September	0.0-6.0	>6.0	---	---	None	Very brief	Frequent
			October	0.0-6.0	>6.0	---	---	None	Very brief	Frequent
			November	0.0-1.0	>6.0	---	---	None	Very brief	Frequent
			December	0.0-1.0	>6.0	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
26:										
Kennebec------------------	B	Low								
			January	4.0-6.0	>6.0	---	---	None	---	None
			February	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			March	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			April	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			May	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			June	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			July	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			August	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			September	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			October	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			November	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			December	4.0-6.0	>6.0	---	---	None	---	None
35F:										
Liston--------------------	B	Very high								
			Jan-Dec	---	---	---	---	None	---	None
Burchard------------------	B	Very high								
			Jan-Dec	---	---	---	---	None	---	None
35G:										
Liston--------------------	B	Very high								
			Jan-Dec	---	---	---	---	None	---	None
Burchard------------------	B	Very high								
			Jan-Dec	---	---	---	---	None	---	None
36:										
Salix---------------------	B	Low								
			January	4.0-6.0	>6.0	---	---	None	---	None
			February	4.0-6.0	>6.0	---	---	None	Brief	Rare
			March	4.0-6.0	>6.0	---	---	None	Brief	Rare
			April	4.0-6.0	>6.0	---	---	None	Brief	Rare
			May	4.0-6.0	>6.0	---	---	None	Brief	Rare
			June	4.0-6.0	>6.0	---	---	None	Brief	Rare
			July	4.0-6.0	>6.0	---	---	None	Brief	Rare
			August	5.0-6.0	>6.0	---	---	None	Brief	Rare
			September	5.0-6.0	>6.0	---	---	None	Brief	Rare
			October	5.0-6.0	>6.0	---	---	None	Brief	Rare
			November	4.0-6.0	>6.0	---	---	None	Brief	Rare
			December	4.0-6.0	>6.0	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
46:										
Keg------------------------	B	Low								
			January	---	---	---	---	None	Brief	Very rare
			February	---	---	---	---	None	Brief	Rare
			March	---	---	---	---	None	Brief	Rare
			April	---	---	---	---	None	Brief	Rare
			May	---	---	---	---	None	Brief	Rare
			June	---	---	---	---	None	Brief	Rare
			July	---	---	---	---	None	Brief	Rare
			August	---	---	---	---	None	Brief	Rare
			September	---	---	---	---	None	Brief	Rare
			October	---	---	---	---	None	Brief	Rare
			November	---	---	---	---	None	Brief	Rare
			December	---	---	---	---	None	Brief	Very rare
47B:										
Napier---------------------	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
Rawles---------------------	B	Low								
			January	2.0-4.0	>6.0	---	---	None	---	None
			February	2.0-4.0	>6.0	---	---	None	Very brief	Frequent
			March	2.0-4.0	>6.0	---	---	None	Very brief	Frequent
			April	2.0-4.0	>6.0	---	---	None	Very brief	Frequent
			May	2.0-4.0	>6.0	---	---	None	Very brief	Frequent
			June	2.0-4.0	>6.0	---	---	None	Very brief	Frequent
			July	2.0-4.0	>6.0	---	---	None	Very brief	Frequent
			August	5.0-6.0	>6.0	---	---	None	Very brief	Frequent
			September	5.0-6.0	>6.0	---	---	None	Very brief	Frequent
			October	5.0-6.0	>6.0	---	---	None	Very brief	Frequent
			November	2.0-4.0	>6.0	---	---	None	Very brief	Frequent
			December	2.0-4.0	>6.0	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
54:										
Zook----------------------	C/D	Medium								
			January	0.0-1.0	>6.0	---	---	None	---	None
			February	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			March	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			April	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			May	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			June	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			July	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			August	0.0-6.0	>6.0	---	---	None	Brief	Occasional
			September	0.0-6.0	>6.0	---	---	None	Brief	Occasional
			October	0.0-6.0	>6.0	---	---	None	Brief	Occasional
			November	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			December	0.0-1.0	>6.0	---	---	None	---	None
59E:										
Burchard------------------	B	High								
			Jan-Dec	---	---	---	---	None	---	None
66:										
Luton---------------------	D	Very high								
			January	0.0-1.0	>6.0	---	---	None	---	None
			February	0.0-1.0	>6.0	---	---	None	Brief	Rare
			March	0.0-1.0	>6.0	---	---	None	Brief	Rare
			April	0.0-1.0	>6.0	---	---	None	Brief	Rare
			May	0.0-1.0	>6.0	---	---	None	Brief	Rare
			June	0.0-1.0	>6.0	---	---	None	Brief	Rare
			July	0.0-1.0	>6.0	---	---	None	Brief	Rare
			August	0.0-6.0	>6.0	---	---	None	Brief	Rare
			September	0.0-6.0	>6.0	---	---	None	Brief	Rare
			October	0.0-6.0	>6.0	---	---	None	Brief	Rare
			November	0.0-1.0	>6.0	---	---	None	Brief	Rare
			December	0.0-1.0	>6.0	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
67:										
Woodbury------------------	D	High								
			January	0.0-1.0	>6.0	---	---	None	---	None
			February	0.0-1.0	>6.0	---	---	None	Brief	Rare
			March	0.0-1.0	>6.0	---	---	None	Brief	Rare
			April	0.0-1.0	>6.0	---	---	None	Brief	Rare
			May	0.0-1.0	>6.0	---	---	None	Brief	Rare
			June	0.0-1.0	>6.0	---	---	None	Brief	Rare
			July	0.0-1.0	>6.0	---	---	None	Brief	Rare
			August	0.0-6.0	>6.0	---	---	None	Brief	Rare
			September	0.0-6.0	>6.0	---	---	None	Brief	Rare
			October	0.0-6.0	>6.0	---	---	None	Brief	Rare
			November	0.0-1.0	>6.0	---	---	None	Brief	Rare
			December	0.0-1.0	>6.0	---	---	None	---	None
100B:										
Monona--------------------	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
100C2:										
Monona, moderately eroded	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
100D2:										
Monona, moderately eroded	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
100E2:										
Monona, moderately eroded	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
101E2:										
Monona, moderately eroded	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
Ida, moderately eroded----	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
123:										
Grantcenter	B	Low								
			January	1.0-3.5	>6.0	---	---	None	---	None
			February	1.0-3.5	>6.0	---	---	None	Brief	Rare
			March	1.0-3.5	>6.0	---	---	None	Brief	Rare
			April	1.0-3.5	>6.0	---	---	None	Brief	Rare
			May	1.0-3.5	>6.0	---	---	None	Brief	Rare
			June	1.0-3.5	>6.0	---	---	None	Brief	Rare
			July	1.0-3.5	>6.0	---	---	None	Brief	Rare
			August	3.5-6.0	>6.0	---	---	None	Brief	Rare
			September	3.5-6.0	>6.0	---	---	None	Brief	Rare
			October	3.5-6.0	>6.0	---	---	None	Brief	Rare
			November	1.0-3.5	>6.0	---	---	None	Brief	Rare
			December	1.0-3.5	>6.0	---	---	None	---	None
137:										
Haynie	B	Low								
			January	4.0-6.0	>6.0	---	---	None	---	None
			February	4.0-6.0	>6.0	---	---	None	Brief	Rare
			March	4.0-6.0	>6.0	---	---	None	Brief	Rare
			April	4.0-6.0	>6.0	---	---	None	Brief	Rare
			May	4.0-6.0	>6.0	---	---	None	Brief	Rare
			June	4.0-6.0	>6.0	---	---	None	Brief	Rare
			July	4.0-6.0	>6.0	---	---	None	Brief	Rare
			August	5.0-6.0	>6.0	---	---	None	Brief	Rare
			September	5.0-6.0	>6.0	---	---	None	Brief	Rare
			October	5.0-6.0	>6.0	---	---	None	Brief	Rare
			November	4.0-6.0	>6.0	---	---	None	Brief	Rare
			December	4.0-6.0	>6.0	---	---	None	---	None
144:										
Blake	B	Low								
			January	1.0-3.5	>6.0	---	---	None	---	None
			February	1.0-3.5	>6.0	---	---	None	Brief	Rare
			March	1.0-3.5	>6.0	---	---	None	Brief	Rare
			April	1.0-3.5	>6.0	---	---	None	Brief	Rare
			May	1.0-3.5	>6.0	---	---	None	Brief	Rare
			June	1.0-3.5	>6.0	---	---	None	Brief	Rare
			July	1.0-3.5	>6.0	---	---	None	Brief	Rare
			August	3.5-6.0	>6.0	---	---	None	Brief	Rare
			September	3.5-6.0	>6.0	---	---	None	Brief	Rare
			October	3.5-6.0	>6.0	---	---	None	Brief	Rare
			November	1.0-3.5	>6.0	---	---	None	Brief	Rare
			December	1.0-3.5	>6.0	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
156:										
Albaton-------------------	D	Very high								
			January	0.0-1.0	>6.0	---	---	None	---	None
			February	0.0-1.0	>6.0	---	---	None	Brief	Rare
			March	0.0-1.0	>6.0	---	---	None	Brief	Rare
			April	0.0-1.0	>6.0	---	---	None	Brief	Rare
			May	0.0-1.0	>6.0	---	---	None	Brief	Rare
			June	0.0-1.0	>6.0	---	---	None	Brief	Rare
			July	0.0-1.0	>6.0	---	---	None	Brief	Rare
			August	0.0-6.0	>6.0	---	---	None	Brief	Rare
			September	0.0-6.0	>6.0	---	---	None	Brief	Rare
			October	0.0-6.0	>6.0	---	---	None	Brief	Rare
			November	0.0-1.0	>6.0	---	---	None	Brief	Rare
			December	0.0-1.0	>6.0	---	---	None	---	None
170E:										
Napier--------------------	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
Castana-------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
212:										
Kennebec------------------	B	Low								
			January	4.0-6.0	>6.0	---	---	None	---	None
			February	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			March	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			April	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			May	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			June	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			July	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			August	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			September	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			October	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			November	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			December	4.0-6.0	>6.0	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
212+:										
Kennebec, overwash--------	B	Low								
			January	4.0-6.0	>6.0	---	---	None	---	None
			February	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			March	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			April	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			May	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			June	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			July	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			August	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			September	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			October	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			November	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			December	4.0-6.0	>6.0	---	---	None	---	None
220:										
Nodaway-------------------	B	Low								
			January	4.0-6.0	>6.0	---	---	None	---	None
			February	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			March	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			April	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			May	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			June	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			July	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			August	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			September	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			October	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			November	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			December	4.0-6.0	>6.0	---	---	None	---	None
237:										
Sarpy---------------------	A	Negligible								
			January	---	---	---	---	None	Brief	Very rare
			February	---	---	---	---	None	Brief	Rare
			March	---	---	---	---	None	Brief	Rare
			April	---	---	---	---	None	Brief	Rare
			May	---	---	---	---	None	Brief	Rare
			June	---	---	---	---	None	Brief	Rare
			July	---	---	---	---	None	Brief	Rare
			August	---	---	---	---	None	Brief	Rare
			September	---	---	---	---	None	Brief	Rare
			October	---	---	---	---	None	Brief	Rare
			November	---	---	---	---	None	Brief	Rare
			December	---	---	---	---	None	Brief	Very rare

Table 20.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
237B:										
Sarpy	A	Negligible								
			January	---	---	---	---	None	Brief	Very rare
			February	---	---	---	---	None	Brief	Rare
			March	---	---	---	---	None	Brief	Rare
			April	---	---	---	---	None	Brief	Rare
			May	---	---	---	---	None	Brief	Rare
			June	---	---	---	---	None	Brief	Rare
			July	---	---	---	---	None	Brief	Rare
			August	---	---	---	---	None	Brief	Rare
			September	---	---	---	---	None	Brief	Rare
			October	---	---	---	---	None	Brief	Rare
			November	---	---	---	---	None	Brief	Rare
			December	---	---	---	---	None	Brief	Very rare
244:										
Blend	D	High								
			January	0.0-1.0	>6.0	---	---	None	---	None
			February	0.0-1.0	>6.0	---	---	None	Brief	Rare
			March	0.0-1.0	>6.0	---	---	None	Brief	Rare
			April	0.0-1.0	>6.0	---	---	None	Brief	Rare
			May	0.0-1.0	>6.0	---	---	None	Brief	Rare
			June	0.0-1.0	>6.0	---	---	None	Brief	Rare
			July	0.0-1.0	>6.0	---	---	None	Brief	Rare
			August	0.0-6.0	>6.0	---	---	None	Brief	Rare
			September	0.0-6.0	>6.0	---	---	None	Brief	Rare
			October	0.0-6.0	>6.0	---	---	None	Brief	Rare
			November	0.0-1.0	>6.0	---	---	None	Brief	Rare
			December	0.0-1.0	>6.0	---	---	None	---	None
255:										
Cooper	B	Medium								
			January	1.0-3.5	>6.0	---	---	None	---	None
			February	1.0-3.5	>6.0	---	---	None	Brief	Rare
			March	1.0-3.5	>6.0	---	---	None	Brief	Rare
			April	1.0-3.5	>6.0	---	---	None	Brief	Rare
			May	1.0-3.5	>6.0	---	---	None	Brief	Rare
			June	1.0-3.5	>6.0	---	---	None	Brief	Rare
			July	1.0-3.5	>6.0	---	---	None	Brief	Rare
			August	3.5-6.0	>6.0	---	---	None	Brief	Rare
			September	3.5-6.0	>6.0	---	---	None	Brief	Rare
			October	3.5-6.0	>6.0	---	---	None	Brief	Rare
			November	1.0-3.5	>6.0	---	---	None	Brief	Rare
			December	1.0-3.5	>6.0	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
266:										
Smithland-----------------	B/D	Low								
			January	1.0-3.5	>6.0	---	---	None	---	None
			February	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			March	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			April	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			May	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			June	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			July	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			August	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			September	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			October	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			November	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			December	1.0-3.5	>6.0	---	---	None	---	None
266+:										
Smithland, overwash-------	B/D	Low								
			January	1.0-3.5	>6.0	---	---	None	---	None
			February	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			March	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			April	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			May	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			June	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			July	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			August	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			September	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			October	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			November	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			December	1.0-3.5	>6.0	---	---	None	---	None
277B:										
Deloit--------------------	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
277C:										
Deloit--------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
277E:										
Deloit--------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
310B:										
Galva	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
310C2:										
Galva, moderately eroded	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
366:										
Luton	D	Very high								
			January	0.0-1.0	>6.0	---	---	None	---	None
			February	0.0-1.0	>6.0	---	---	None	Brief	Rare
			March	0.0-1.0	>6.0	---	---	None	Brief	Rare
			April	0.0-1.0	>6.0	---	---	None	Brief	Rare
			May	0.0-1.0	>6.0	---	---	None	Brief	Rare
			June	0.0-1.0	>6.0	---	---	None	Brief	Rare
			July	0.0-1.0	>6.0	---	---	None	Brief	Rare
			August	0.0-6.0	>6.0	---	---	None	Brief	Rare
			September	0.0-6.0	>6.0	---	---	None	Brief	Rare
			October	0.0-6.0	>6.0	---	---	None	Brief	Rare
			November	0.0-1.0	>6.0	---	---	None	Brief	Rare
			December	0.0-1.0	>6.0	---	---	None	---	None
436:										
Lakeport	B	Low								
			January	1.0-3.5	>6.0	---	---	None	---	None
			February	1.0-3.5	>6.0	---	---	None	Brief	Rare
			March	1.0-3.5	>6.0	---	---	None	Brief	Rare
			April	1.0-3.5	>6.0	---	---	None	Brief	Rare
			May	1.0-3.5	>6.0	---	---	None	Brief	Rare
			June	1.0-3.5	>6.0	---	---	None	Brief	Rare
			July	1.0-3.5	>6.0	---	---	None	Brief	Rare
			August	3.5-6.0	>6.0	---	---	None	Brief	Rare
			September	3.5-6.0	>6.0	---	---	None	Brief	Rare
			October	3.5-6.0	>6.0	---	---	None	Brief	Rare
			November	1.0-3.5	>6.0	---	---	None	Brief	Rare
			December	1.0-3.5	>6.0	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
446:										
Burcham-------------------	B	Medium								
			January	1.0-3.5	>6.0	---	---	None	---	None
			February	1.0-3.5	>6.0	---	---	None	Brief	Rare
			March	1.0-3.5	>6.0	---	---	None	Brief	Rare
			April	1.0-3.5	>6.0	---	---	None	Brief	Rare
			May	1.0-3.5	>6.0	---	---	None	Brief	Rare
			June	1.0-3.5	>6.0	---	---	None	Brief	Rare
			July	1.0-3.5	>6.0	---	---	None	Brief	Rare
			August	3.5-6.0	>6.0	---	---	None	Brief	Rare
			September	3.5-6.0	>6.0	---	---	None	Brief	Rare
			October	3.5-6.0	>6.0	---	---	None	Brief	Rare
			November	1.0-3.5	>6.0	---	---	None	Brief	Rare
			December	1.0-3.5	>6.0	---	---	None	---	None
465:										
Tieville------------------	D	Very high								
			January	0.0-1.0	>6.0	---	---	None	---	None
			February	0.0-1.0	>6.0	---	---	None	Brief	Rare
			March	0.0-1.0	>6.0	---	---	None	Brief	Rare
			April	0.0-1.0	>6.0	---	---	None	Brief	Rare
			May	0.0-1.0	>6.0	---	---	None	Brief	Rare
			June	0.0-1.0	>6.0	---	---	None	Brief	Rare
			July	0.0-1.0	>6.0	---	---	None	Brief	Rare
			August	0.0-6.0	>6.0	---	---	None	Brief	Rare
			September	0.0-6.0	>6.0	---	---	None	Brief	Rare
			October	0.0-6.0	>6.0	---	---	None	Brief	Rare
			November	0.0-1.0	>6.0	---	---	None	Brief	Rare
			December	0.0-1.0	>6.0	---	---	None	---	None
485:										
Spillville----------------	B	Low								
			January	1.0-3.5	>6.0	---	---	None	---	None
			February	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			March	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			April	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			May	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			June	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			July	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			August	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			September	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			October	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			November	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			December	1.0-3.5	>6.0	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
510:										
Monona, bench	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
510B:										
Monona, bench	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
510B2:										
Monona, bench, moderately eroded	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
510C2:										
Monona, bench, moderately eroded	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
515:										
Percival	C	High								
			January	1.0-3.5	>6.0	---	---	None	---	None
			February	1.0-3.5	>6.0	---	---	None	Brief	Rare
			March	1.0-3.5	>6.0	---	---	None	Brief	Rare
			April	1.0-3.5	>6.0	---	---	None	Brief	Rare
			May	1.0-3.5	>6.0	---	---	None	Brief	Rare
			June	1.0-3.5	>6.0	---	---	None	Brief	Rare
			July	1.0-3.5	>6.0	---	---	None	Brief	Rare
			August	3.5-6.0	>6.0	---	---	None	Brief	Rare
			September	3.5-6.0	>6.0	---	---	None	Brief	Rare
			October	3.5-6.0	>6.0	---	---	None	Brief	Rare
			November	1.0-3.5	>6.0	---	---	None	Brief	Rare
			December	1.0-3.5	>6.0	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
518:										
Morconick-----------------	B	Low								
			January	---	---	---	---	None	Brief	Very rare
			February	---	---	---	---	None	Brief	Rare
			March	---	---	---	---	None	Brief	Rare
			April	---	---	---	---	None	Brief	Rare
			May	---	---	---	---	None	Brief	Rare
			June	---	---	---	---	None	Brief	Rare
			July	---	---	---	---	None	Brief	Rare
			August	---	---	---	---	None	Brief	Rare
			September	---	---	---	---	None	Brief	Rare
			October	---	---	---	---	None	Brief	Rare
			November	---	---	---	---	None	Brief	Rare
			December	---	---	---	---	None	Brief	Very rare
527:										
Anthon--------------------	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
527B:										
Anthon--------------------	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
549:										
Modale silt loam----------	C	Medium								
			January	1.0-3.5	>6.0	---	---	None	---	None
			February	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			March	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			April	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			May	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			June	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			July	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			August	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			September	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			October	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			November	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			December	1.0-3.5	>6.0	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
549:										
Modale silty clay loam----	C	Medium								
			January	1.0-3.5	>6.0	---	---	None	---	None
			February	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			March	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			April	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			May	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			June	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			July	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			August	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			September	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			October	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			November	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			December	1.0-3.5	>6.0	---	---	None	---	None
552:										
Owego---------------------	D	Very high								
			January	0.0-1.0	>6.0	---	---	None	---	None
			February	0.0-1.0	>6.0	---	---	None	Brief	Rare
			March	0.0-1.0	>6.0	---	---	None	Brief	Rare
			April	0.0-1.0	>6.0	---	---	None	Brief	Rare
			May	0.0-1.0	>6.0	---	---	None	Brief	Rare
			June	0.0-1.0	>6.0	---	---	None	Brief	Rare
			July	0.0-1.0	>6.0	---	---	None	Brief	Rare
			August	0.0-6.0	>6.0	---	---	None	Brief	Rare
			September	0.0-6.0	>6.0	---	---	None	Brief	Rare
			October	0.0-6.0	>6.0	---	---	None	Brief	Rare
			November	0.0-1.0	>6.0	---	---	None	Brief	Rare
			December	0.0-1.0	>6.0	---	---	None	---	None
630:										
Danbury-------------------	B	Low								
			January	2.0-4.0	>6.0	---	---	None	---	None
			February	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			March	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			April	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			May	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			June	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			July	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			August	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			September	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			October	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			November	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			December	2.0-4.0	>6.0	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
666B:										
Smithland	B/D	Low								
			January	1.0-3.5	>6.0	---	---	None	---	None
			February	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			March	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			April	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			May	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			June	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			July	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			August	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			September	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			October	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			November	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			December	1.0-3.5	>6.0	---	---	None	---	None
Danbury	B	Low								
			January	2.0-4.0	>6.0	---	---	None	---	None
			February	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			March	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			April	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			May	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			June	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			July	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			August	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			September	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			October	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			November	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			December	2.0-4.0	>6.0	---	---	None	---	None
Judson	B	Low								
			Jan-Dec	---	---	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
670:										
Rawles	B	Low								
			January	2.0-4.0	>6.0	---	---	None	---	None
			February	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			March	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			April	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			May	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			June	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			July	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			August	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			September	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			October	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			November	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			December	2.0-4.0	>6.0	---	---	None	---	None
700:										
Monona, bench	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
700B:										
Monona, bench	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
700C2:										
Monona, bench, moderately eroded	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
700D2:										
Monona, bench, moderately eroded	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
701:										
Wilsey--------------------	B	Low								
			January	---	---	---	---	None	Brief	Very rare
			February	---	---	---	---	None	Brief	Occasional
			March	---	---	---	---	None	Brief	Occasional
			April	---	---	---	---	None	Brief	Occasional
			May	---	---	---	---	None	Brief	Occasional
			June	---	---	---	---	None	Brief	Occasional
			July	---	---	---	---	None	Brief	Occasional
			August	---	---	---	---	None	Brief	Occasional
			September	---	---	---	---	None	Brief	Occasional
			October	---	---	---	---	None	Brief	Occasional
			November	---	---	---	---	None	Brief	Occasional
			December	---	---	---	---	None	Brief	Very rare
709:										
Fairhaven, 32 to 40 inches to sand and gravel-------	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
709B:										
Fairhaven, 32 to 40 inches to sand and gravel-------	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
717D:										
Napier--------------------	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
Gullied land.										
733:										
Calco---------------------	B/D	Low								
			January	0.0-1.0	>6.0	---	---	None	---	None
			February	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			March	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			April	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			May	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			June	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			July	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			August	0.0-6.0	>6.0	---	---	None	Brief	Occasional
			September	0.0-6.0	>6.0	---	---	None	Brief	Occasional
			October	0.0-6.0	>6.0	---	---	None	Brief	Occasional
			November	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			December	0.0-1.0	>6.0	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
734:										
Holly Springs	D	Very high								
			January	0.0-1.0	>6.0	---	---	None	---	None
			February	0.0-1.0	>6.0	---	---	None	Brief	Rare
			March	0.0-1.0	>6.0	---	---	None	Brief	Rare
			April	0.0-1.0	>6.0	---	---	None	Brief	Rare
			May	0.0-1.0	>6.0	---	---	None	Brief	Rare
			June	0.0-1.0	>6.0	---	---	None	Brief	Rare
			July	0.0-1.0	>6.0	---	---	None	Brief	Rare
			August	3.5-6.0	>6.0	---	---	None	Brief	Rare
			September	3.5-6.0	>6.0	---	---	None	Brief	Rare
			October	3.5-6.0	>6.0	---	---	None	Brief	Rare
			November	0.0-1.0	>6.0	---	---	None	Brief	Rare
			December	0.0-1.0	>6.0	---	---	None	---	None
734+:										
Holly Springs, overwash	D	Medium								
			January	0.0-1.0	>6.0	---	---	None	---	None
			February	0.0-1.0	>6.0	---	---	None	Brief	Rare
			March	0.0-1.0	>6.0	---	---	None	Brief	Rare
			April	0.0-1.0	>6.0	---	---	None	Brief	Rare
			May	0.0-1.0	>6.0	---	---	None	Brief	Rare
			June	0.0-1.0	>6.0	---	---	None	Brief	Rare
			July	0.0-1.0	>6.0	---	---	None	Brief	Rare
			August	3.5-6.0	>6.0	---	---	None	Brief	Rare
			September	3.5-6.0	>6.0	---	---	None	Brief	Rare
			October	3.5-6.0	>6.0	---	---	None	Brief	Rare
			November	0.0-1.0	>6.0	---	---	None	Brief	Rare
			December	0.0-1.0	>6.0	---	---	None	---	None
740C:										
Hawick	A	Low								
			Jan-Dec	---	---	---	---	None	---	None
740D:										
Hawick	A	Low								
			Jan-Dec	---	---	---	---	None	---	None
740E:										
Hawick	A	Low								
			Jan-Dec	---	---	---	---	None	---	None
740F:										
Hawick	A	Medium								
			Jan-Dec	---	---	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
750:										
Ticonic-------------------	A	Very low								
			January	---	---	---	---	None	Brief	Very rare
			February	---	---	---	---	None	Brief	Rare
			March	---	---	---	---	None	Brief	Rare
			April	---	---	---	---	None	Brief	Rare
			May	---	---	---	---	None	Brief	Rare
			June	---	---	---	---	None	Brief	Rare
			July	---	---	---	---	None	Brief	Rare
			August	---	---	---	---	None	Brief	Rare
			September	---	---	---	---	None	Brief	Rare
			October	---	---	---	---	None	Brief	Rare
			November	---	---	---	---	None	Brief	Rare
			December	---	---	---	---	None	Brief	Very rare
754:										
Larpenteur----------------	B	Low								
			January	1.0-3.5	>6.0	---	---	None	---	None
			February	1.0-3.5	>6.0	---	---	None	Brief	Rare
			March	1.0-3.5	>6.0	---	---	None	Brief	Rare
			April	1.0-3.5	>6.0	---	---	None	Brief	Rare
			May	1.0-3.5	>6.0	---	---	None	Brief	Rare
			June	1.0-3.5	>6.0	---	---	None	Brief	Rare
			July	1.0-3.5	>6.0	---	---	None	Brief	Rare
			August	3.5-6.0	>6.0	---	---	None	Brief	Rare
			September	3.5-6.0	>6.0	---	---	None	Brief	Rare
			October	3.5-6.0	>6.0	---	---	None	Brief	Rare
			November	1.0-3.5	>6.0	---	---	None	Brief	Rare
			December	1.0-3.5	>6.0	---	---	None	---	None
810B:										
Galva, bench--------------	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
810C2:										
Galva, bench, moderately eroded-------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
847B:										
Judson--------------------	B	Low								
			Jan-Dec	---	---	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
847B:										
Rawles--------------------	B	Low								
			January	2.0-4.0	>6.0	---	---	None	---	None
			February	2.0-4.0	>6.0	---	---	None	Very brief	Frequent
			March	2.0-4.0	>6.0	---	---	None	Very brief	Frequent
			April	2.0-4.0	>6.0	---	---	None	Very brief	Frequent
			May	2.0-4.0	>6.0	---	---	None	Very brief	Frequent
			June	2.0-4.0	>6.0	---	---	None	Very brief	Frequent
			July	2.0-4.0	>6.0	---	---	None	Very brief	Frequent
			August	5.0-6.0	>6.0	---	---	None	Very brief	Frequent
			September	5.0-6.0	>6.0	---	---	None	Very brief	Frequent
			October	5.0-6.0	>6.0	---	---	None	Very brief	Frequent
			November	2.0-4.0	>6.0	---	---	None	Very brief	Frequent
			December	2.0-4.0	>6.0	---	---	None	---	None
945:										
Albaton, depressional, drained------------------	D	Negligible								
			January	0.0-1.0	>6.0	---	---	None	---	None
			February	0.0-1.0	>6.0	0.0-1.0	Long	Occasional	Long	Frequent
			March	0.0-1.0	>6.0	0.0-1.0	Long	Occasional	Long	Frequent
			April	0.0-1.0	>6.0	0.0-1.0	Long	Occasional	Long	Frequent
			May	0.0-1.0	>6.0	0.0-1.0	Long	Occasional	Long	Frequent
			June	0.0-1.0	>6.0	0.0-1.0	Long	Occasional	Long	Frequent
			July	0.0-1.0	>6.0	0.0-1.0	Long	Occasional	Long	Frequent
			August	0.0-6.0	>6.0	0.0-1.0	Long	Occasional	Long	Frequent
			September	0.0-6.0	>6.0	0.0-1.0	Long	Occasional	Long	Frequent
			October	0.0-6.0	>6.0	0.0-1.0	Long	Occasional	Long	Frequent
			November	0.0-1.0	>6.0	0.0-1.0	Long	Occasional	Long	Frequent
			December	0.0-1.0	>6.0	---	---	None	---	None
1137:										
Haynie--------------------	B	Low								
			January	4.0-6.0	>6.0	---	---	None	---	None
			February	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			March	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			April	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			May	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			June	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			July	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			August	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			September	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			October	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			November	4.0-6.0	>6.0	---	---	None	Brief	Occasional
			December	4.0-6.0	>6.0	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
1144:										
Blake	B	Low								
			January	1.0-3.5	>6.0	---	---	None	---	None
			February	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			March	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			April	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			May	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			June	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			July	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			August	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			September	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			October	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			November	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			December	1.0-3.5	>6.0	---	---	None	---	None
1146:										
Onawa	D	High								
			January	1.0-3.5	>6.0	---	---	None	---	None
			February	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			March	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			April	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			May	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			June	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			July	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			August	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			September	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			October	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			November	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			December	1.0-3.5	>6.0	---	---	None	---	None
1220:										
Nodaway, channeled	B	Low								
			January	4.0-6.0	>6.0	---	---	None	---	None
			February	4.0-6.0	>6.0	---	---	None	Brief	Frequent
			March	4.0-6.0	>6.0	---	---	None	Brief	Frequent
			April	4.0-6.0	>6.0	---	---	None	Brief	Frequent
			May	4.0-6.0	>6.0	---	---	None	Brief	Frequent
			June	4.0-6.0	>6.0	---	---	None	Brief	Frequent
			July	4.0-6.0	>6.0	---	---	None	Brief	Frequent
			August	---	---	---	---	None	Brief	Frequent
			September	---	---	---	---	None	Brief	Frequent
			October	---	---	---	---	None	Brief	Frequent
			November	4.0-6.0	>6.0	---	---	None	Brief	Frequent
			December	4.0-6.0	>6.0	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
1237B:										
Sarpy---------------------	A	Negligible								
			January	---	---	---	---	None	Brief	Very rare
			February	---	---	---	---	None	Long	Occasional
			March	---	---	---	---	None	Long	Occasional
			April	---	---	---	---	None	Long	Occasional
			May	---	---	---	---	None	Long	Occasional
			June	---	---	---	---	None	Long	Occasional
			July	---	---	---	---	None	Long	Occasional
			August	---	---	---	---	None	Long	Occasional
			September	---	---	---	---	None	Long	Occasional
			October	---	---	---	---	None	Long	Occasional
			November	---	---	---	---	None	Long	Occasional
			December	---	---	---	---	None	Brief	Very rare
1237C:										
Sarpy---------------------	A	Very low								
			January	---	---	---	---	None	Brief	Very rare
			February	---	---	---	---	None	Long	Occasional
			March	---	---	---	---	None	Long	Occasional
			April	---	---	---	---	None	Long	Occasional
			May	---	---	---	---	None	Long	Occasional
			June	---	---	---	---	None	Long	Occasional
			July	---	---	---	---	None	Long	Occasional
			August	---	---	---	---	None	Long	Occasional
			September	---	---	---	---	None	Long	Occasional
			October	---	---	---	---	None	Long	Occasional
			November	---	---	---	---	None	Long	Occasional
			December	---	---	---	---	None	Brief	Very rare
1238:										
Sarpy---------------------	A	Negligible								
			January	---	---	---	---	None	Brief	Very rare
			February	---	---	---	---	None	Long	Occasional
			March	---	---	---	---	None	Long	Occasional
			April	---	---	---	---	None	Long	Occasional
			May	---	---	---	---	None	Long	Occasional
			June	---	---	---	---	None	Long	Occasional
			July	---	---	---	---	None	Long	Occasional
			August	---	---	---	---	None	Long	Occasional
			September	---	---	---	---	None	Long	Occasional
			October	---	---	---	---	None	Long	Occasional
			November	---	---	---	---	None	Long	Occasional
			December	---	---	---	---	None	Brief	Very rare

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
1238:										
Morconick	B	Low								
			January	---	---	---	---	None	Brief	Very rare
			February	---	---	---	---	None	Long	Occasional
			March	---	---	---	---	None	Long	Occasional
			April	---	---	---	---	None	Long	Occasional
			May	---	---	---	---	None	Long	Occasional
			June	---	---	---	---	None	Long	Occasional
			July	---	---	---	---	None	Long	Occasional
			August	---	---	---	---	None	Long	Occasional
			September	---	---	---	---	None	Long	Occasional
			October	---	---	---	---	None	Long	Occasional
			November	---	---	---	---	None	Long	Occasional
			December	---	---	---	---	None	Brief	Very rare
1513:										
Grable	B	Low								
			January	---	---	---	---	None	Brief	Very rare
			February	---	---	---	---	None	Brief	Occasional
			March	---	---	---	---	None	Brief	Occasional
			April	---	---	---	---	None	Brief	Occasional
			May	---	---	---	---	None	Brief	Occasional
			June	---	---	---	---	None	Brief	Occasional
			July	---	---	---	---	None	Brief	Occasional
			August	---	---	---	---	None	Brief	Occasional
			September	---	---	---	---	None	Brief	Occasional
			October	---	---	---	---	None	Brief	Occasional
			November	---	---	---	---	None	Brief	Occasional
			December	---	---	---	---	None	Brief	Very rare
Morconick	B	Low								
			January	---	---	---	---	None	Brief	Very rare
			February	---	---	---	---	None	Brief	Occasional
			March	---	---	---	---	None	Brief	Occasional
			April	---	---	---	---	None	Brief	Occasional
			May	---	---	---	---	None	Brief	Occasional
			June	---	---	---	---	None	Brief	Occasional
			July	---	---	---	---	None	Brief	Occasional
			August	---	---	---	---	None	Brief	Occasional
			September	---	---	---	---	None	Brief	Occasional
			October	---	---	---	---	None	Brief	Occasional
			November	---	---	---	---	None	Brief	Occasional
			December	---	---	---	---	None	Brief	Very rare

Table 20.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
1524:										
Morconick	B	Low								
			January	---	---	---	---	None	Brief	Very rare
			February	---	---	---	---	None	Brief	Occasional
			March	---	---	---	---	None	Brief	Occasional
			April	---	---	---	---	None	Brief	Occasional
			May	---	---	---	---	None	Brief	Occasional
			June	---	---	---	---	None	Brief	Occasional
			July	---	---	---	---	None	Brief	Occasional
			August	---	---	---	---	None	Brief	Occasional
			September	---	---	---	---	None	Brief	Occasional
			October	---	---	---	---	None	Brief	Occasional
			November	---	---	---	---	None	Brief	Occasional
			December	---	---	---	---	None	Brief	Very rare
1525:										
Scroll	C	High								
			January	1.0-3.5	>6.0	---	---	None	---	None
			February	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			March	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			April	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			May	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			June	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			July	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			August	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			September	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			October	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			November	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			December	1.0-3.5	>6.0	---	---	None	---	None
2515:										
Percival	C	High								
			January	1.0-3.5	>6.0	---	---	None	---	None
			February	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			March	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			April	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			May	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			June	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			July	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			August	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			September	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			October	3.5-6.0	>6.0	---	---	None	Brief	Occasional
			November	1.0-3.5	>6.0	---	---	None	Brief	Occasional
			December	1.0-3.5	>6.0	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
2515:										
Albaton-------------------	D	Very high								
			January	0.0-1.0	>6.0	---	---	None	---	None
			February	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			March	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			April	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			May	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			June	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			July	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			August	0.0-6.0	>6.0	---	---	None	Brief	Occasional
			September	0.0-6.0	>6.0	---	---	None	Brief	Occasional
			October	0.0-6.0	>6.0	---	---	None	Brief	Occasional
			November	0.0-1.0	>6.0	---	---	None	Brief	Occasional
			December	0.0-1.0	>6.0	---	---	None	---	None
3146:										
Onawa---------------------	D	High								
			January	1.0-3.5	>6.0	---	---	None	---	None
			February	1.0-3.5	>6.0	---	---	None	Brief	Rare
			March	1.0-3.5	>6.0	---	---	None	Brief	Rare
			April	1.0-3.5	>6.0	---	---	None	Brief	Rare
			May	1.0-3.5	>6.0	---	---	None	Brief	Rare
			June	1.0-3.5	>6.0	---	---	None	Brief	Rare
			July	1.0-3.5	>6.0	---	---	None	Brief	Rare
			August	3.5-6.0	>6.0	---	---	None	Brief	Rare
			September	3.5-6.0	>6.0	---	---	None	Brief	Rare
			October	3.5-6.0	>6.0	---	---	None	Brief	Rare
			November	1.0-3.5	>6.0	---	---	None	Brief	Rare
			December	1.0-3.5	>6.0	---	---	None	---	None
Albaton-------------------	D	Very high								
			January	0.0-1.0	>6.0	---	---	None	---	None
			February	0.0-1.0	>6.0	---	---	None	Brief	Rare
			March	0.0-1.0	>6.0	---	---	None	Brief	Rare
			April	0.0-1.0	>6.0	---	---	None	Brief	Rare
			May	0.0-1.0	>6.0	---	---	None	Brief	Rare
			June	0.0-1.0	>6.0	---	---	None	Brief	Rare
			July	0.0-1.0	>6.0	---	---	None	Brief	Rare
			August	0.0-6.0	>6.0	---	---	None	Brief	Rare
			September	0.0-6.0	>6.0	---	---	None	Brief	Rare
			October	0.0-6.0	>6.0	---	---	None	Brief	Rare
			November	0.0-1.0	>6.0	---	---	None	Brief	Rare
			December	0.0-1.0	>6.0	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
3275:										
Moville-------------------	C	High								
			January	1.0-3.5	>6.0	---	---	None	Brief	Very rare
			February	1.0-3.5	>6.0	---	---	None	Brief	Rare
			March	1.0-3.5	>6.0	---	---	None	Brief	Rare
			April	1.0-3.5	>6.0	---	---	None	Brief	Rare
			May	1.0-3.5	>6.0	---	---	None	Brief	Rare
			June	1.0-3.5	>6.0	---	---	None	Brief	Rare
			July	1.0-3.5	>6.0	---	---	None	Brief	Rare
			August	3.5-6.0	>6.0	---	---	None	Brief	Rare
			September	3.5-6.0	>6.0	---	---	None	Brief	Rare
			October	3.5-6.0	>6.0	---	---	None	Brief	Rare
			November	1.0-3.5	>6.0	---	---	None	Brief	Rare
			December	1.0-3.5	>6.0	---	---	None	Brief	Very rare
Holly Springs, overwash---	D	Medium								
			January	0.0-1.0	>6.0	---	---	None	Brief	Very rare
			February	0.0-1.0	>6.0	---	---	None	Brief	Rare
			March	0.0-1.0	>6.0	---	---	None	Brief	Rare
			April	0.0-1.0	>6.0	---	---	None	Brief	Rare
			May	0.0-1.0	>6.0	---	---	None	Brief	Rare
			June	0.0-1.0	>6.0	---	---	None	Brief	Rare
			July	0.0-1.0	>6.0	---	---	None	Brief	Rare
			August	3.5-6.0	>6.0	---	---	None	Brief	Rare
			September	3.5-6.0	>6.0	---	---	None	Brief	Rare
			October	3.5-6.0	>6.0	---	---	None	Brief	Rare
			November	0.0-1.0	>6.0	---	---	None	Brief	Rare
			December	0.0-1.0	>6.0	---	---	None	Brief	Very rare
3440:										
Blencoe-------------------	D	High								
			January	1.0-3.5	>6.0	---	---	None	---	None
			February	1.0-3.5	>6.0	---	---	None	Brief	Rare
			March	1.0-3.5	>6.0	---	---	None	Brief	Rare
			April	1.0-3.5	>6.0	---	---	None	Brief	Rare
			May	1.0-3.5	>6.0	---	---	None	Brief	Rare
			June	1.0-3.5	>6.0	---	---	None	Brief	Rare
			July	1.0-3.5	>6.0	---	---	None	Brief	Rare
			August	3.5-6.0	>6.0	---	---	None	Brief	Rare
			September	3.5-6.0	>6.0	---	---	None	Brief	Rare
			October	3.5-6.0	>6.0	---	---	None	Brief	Rare
			November	1.0-3.5	>6.0	---	---	None	Brief	Rare
			December	1.0-3.5	>6.0	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
3440:										
Woodbury------------------	D	High								
			January	0.0-1.0	>6.0	---	---	None	---	None
			February	0.0-1.0	>6.0	---	---	None	Brief	Rare
			March	0.0-1.0	>6.0	---	---	None	Brief	Rare
			April	0.0-1.0	>6.0	---	---	None	Brief	Rare
			May	0.0-1.0	>6.0	---	---	None	Brief	Rare
			June	0.0-1.0	>6.0	---	---	None	Brief	Rare
			July	0.0-1.0	>6.0	---	---	None	Brief	Rare
			August	0.0-6.0	>6.0	---	---	None	Brief	Rare
			September	0.0-6.0	>6.0	---	---	None	Brief	Rare
			October	0.0-6.0	>6.0	---	---	None	Brief	Rare
			November	0.0-1.0	>6.0	---	---	None	Brief	Rare
			December	0.0-1.0	>6.0	---	---	None	---	None
3513:										
Grable--------------------	B	Low								
			January	---	---	---	---	None	Brief	Very rare
			February	---	---	---	---	None	Brief	Rare
			March	---	---	---	---	None	Brief	Rare
			April	---	---	---	---	None	Brief	Rare
			May	---	---	---	---	None	Brief	Rare
			June	---	---	---	---	None	Brief	Rare
			July	---	---	---	---	None	Brief	Rare
			August	---	---	---	---	None	Brief	Rare
			September	---	---	---	---	None	Brief	Rare
			October	---	---	---	---	None	Brief	Rare
			November	---	---	---	---	None	Brief	Rare
			December	---	---	---	---	None	Brief	Very rare
Morconick-----------------	B	Low								
			January	---	---	---	---	None	Brief	Very rare
			February	---	---	---	---	None	Brief	Rare
			March	---	---	---	---	None	Brief	Rare
			April	---	---	---	---	None	Brief	Rare
			May	---	---	---	---	None	Brief	Rare
			June	---	---	---	---	None	Brief	Rare
			July	---	---	---	---	None	Brief	Rare
			August	---	---	---	---	None	Brief	Rare
			September	---	---	---	---	None	Brief	Rare
			October	---	---	---	---	None	Brief	Rare
			November	---	---	---	---	None	Brief	Rare
			December	---	---	---	---	None	Brief	Very rare

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
3549:										
Modale silty clay loam----	C	Medium								
			January	1.0-3.5	>6.0	---	---	None	---	None
			February	1.0-3.5	>6.0	---	---	None	Brief	Rare
			March	1.0-3.5	>6.0	---	---	None	Brief	Rare
			April	1.0-3.5	>6.0	---	---	None	Brief	Rare
			May	1.0-3.5	>6.0	---	---	None	Brief	Rare
			June	1.0-3.5	>6.0	---	---	None	Brief	Rare
			July	1.0-3.5	>6.0	---	---	None	Brief	Rare
			August	3.5-6.0	>6.0	---	---	None	Brief	Rare
			September	3.5-6.0	>6.0	---	---	None	Brief	Rare
			October	3.5-6.0	>6.0	---	---	None	Brief	Rare
			November	1.0-3.5	>6.0	---	---	None	Brief	Rare
			December	1.0-3.5	>6.0	---	---	None	---	None
Modale silt loam----------	C	Medium								
			January	1.0-3.5	>6.0	---	---	None	---	None
			February	1.0-3.5	>6.0	---	---	None	Brief	Rare
			March	1.0-3.5	>6.0	---	---	None	Brief	Rare
			April	1.0-3.5	>6.0	---	---	None	Brief	Rare
			May	1.0-3.5	>6.0	---	---	None	Brief	Rare
			June	1.0-3.5	>6.0	---	---	None	Brief	Rare
			July	1.0-3.5	>6.0	---	---	None	Brief	Rare
			August	3.5-6.0	>6.0	---	---	None	Brief	Rare
			September	3.5-6.0	>6.0	---	---	None	Brief	Rare
			October	3.5-6.0	>6.0	---	---	None	Brief	Rare
			November	1.0-3.5	>6.0	---	---	None	Brief	Rare
			December	1.0-3.5	>6.0	---	---	None	---	None
3686:										
Napa----------------------	D	Very high								
			January	0.0-1.0	>6.0	---	---	None	---	None
			February	0.0-1.0	>6.0	---	---	None	Brief	Rare
			March	0.0-1.0	>6.0	---	---	None	Brief	Rare
			April	0.0-1.0	>6.0	---	---	None	Brief	Rare
			May	0.0-1.0	>6.0	---	---	None	Brief	Rare
			June	0.0-1.0	>6.0	---	---	None	Brief	Rare
			July	0.0-1.0	>6.0	---	---	None	Brief	Rare
			August	0.0-6.0	>6.0	---	---	None	Brief	Rare
			September	0.0-6.0	>6.0	---	---	None	Brief	Rare
			October	0.0-6.0	>6.0	---	---	None	Brief	Rare
			November	0.0-1.0	>6.0	---	---	None	Brief	Rare
			December	0.0-1.0	>6.0	---	---	None	---	None

Table 20.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
3686:										
Luton	D	Very high								
			January	0.0-1.0	>6.0	---	---	None	---	None
			February	0.0-1.0	>6.0	---	---	None	Brief	Rare
			March	0.0-1.0	>6.0	---	---	None	Brief	Rare
			April	0.0-1.0	>6.0	---	---	None	Brief	Rare
			May	0.0-1.0	>6.0	---	---	None	Brief	Rare
			June	0.0-1.0	>6.0	---	---	None	Brief	Rare
			July	0.0-1.0	>6.0	---	---	None	Brief	Rare
			August	0.0-6.0	>6.0	---	---	None	Brief	Rare
			September	0.0-6.0	>6.0	---	---	None	Brief	Rare
			October	0.0-6.0	>6.0	---	---	None	Brief	Rare
			November	0.0-1.0	>6.0	---	---	None	Brief	Rare
			December	0.0-1.0	>6.0	---	---	None	---	None
Tieville	D	Very high								
			January	0.0-1.0	>6.0	---	---	None	---	None
			February	0.0-1.0	>6.0	---	---	None	Brief	Rare
			March	0.0-1.0	>6.0	---	---	None	Brief	Rare
			April	0.0-1.0	>6.0	---	---	None	Brief	Rare
			May	0.0-1.0	>6.0	---	---	None	Brief	Rare
			June	0.0-1.0	>6.0	---	---	None	Brief	Rare
			July	0.0-1.0	>6.0	---	---	None	Brief	Rare
			August	0.0-6.0	>6.0	---	---	None	Brief	Rare
			September	0.0-6.0	>6.0	---	---	None	Brief	Rare
			October	0.0-6.0	>6.0	---	---	None	Brief	Rare
			November	0.0-1.0	>6.0	---	---	None	Brief	Rare
			December	0.0-1.0	>6.0	---	---	None	---	None
4000.										
Urban land										
4001C:										
Ida	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
Urban land.										
4001D:										
Ida	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
Urban land.										

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
4001E:										
Ida------------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
Urban land.										
4001F:										
Ida------------------------	B	High								
			Jan-Dec	---	---	---	---	None	---	None
Urban land.										
4010B:										
Monona---------------------	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
Urban land.										
4010C:										
Monona---------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
Urban land.										
4010D:										
Monona---------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
Urban land.										
4010E:										
Monona---------------------	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
Urban land.										
4012B:										
Napier---------------------	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
Urban land.										

Table 20.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
4012C:										
Napier	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
Urban land.										
4170D:										
Napier	B	Low								
			Jan-Dec	---	---	---	---	None	---	None
Castana	B	Medium								
			Jan-Dec	---	---	---	---	None	---	None
Urban land.										
4600:										
Percival	C	High								
			January	1.0-3.5	>6.0	---	---	None	---	None
			February	1.0-3.5	>6.0	---	---	None	Brief	Rare
			March	1.0-3.5	>6.0	---	---	None	Brief	Rare
			April	1.0-3.5	>6.0	---	---	None	Brief	Rare
			May	1.0-3.5	>6.0	---	---	None	Brief	Rare
			June	1.0-3.5	>6.0	---	---	None	Brief	Rare
			July	1.0-3.5	>6.0	---	---	None	Brief	Rare
			August	3.5-6.0	>6.0	---	---	None	Brief	Rare
			September	3.5-6.0	>6.0	---	---	None	Brief	Rare
			October	3.5-6.0	>6.0	---	---	None	Brief	Rare
			November	1.0-3.5	>6.0	---	---	None	Brief	Rare
			December	1.0-3.5	>6.0	---	---	None	---	None
Haynie	B	Low								
			January	4.0-6.0	>6.0	---	---	None	---	None
			February	4.0-6.0	>6.0	---	---	None	Brief	Rare
			March	4.0-6.0	>6.0	---	---	None	Brief	Rare
			April	4.0-6.0	>6.0	---	---	None	Brief	Rare
			May	4.0-6.0	>6.0	---	---	None	Brief	Rare
			June	4.0-6.0	>6.0	---	---	None	Brief	Rare
			July	4.0-6.0	>6.0	---	---	None	Brief	Rare
			August	5.0-6.0	>6.0	---	---	None	Brief	Rare
			September	5.0-6.0	>6.0	---	---	None	Brief	Rare
			October	5.0-6.0	>6.0	---	---	None	Brief	Rare
			November	4.0-6.0	>6.0	---	---	None	Brief	Rare
			December	4.0-6.0	>6.0	---	---	None	---	None
Urban land.										

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
				Ft	Ft	Ft				
4670:										
Rawles	B	Low								
			January	2.0-4.0	>6.0	---	---	None	---	None
			February	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			March	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			April	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			May	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			June	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			July	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			August	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			September	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			October	5.0-6.0	>6.0	---	---	None	Brief	Occasional
			November	2.0-4.0	>6.0	---	---	None	Brief	Occasional
			December	2.0-4.0	>6.0	---	---	None	---	None
Urban land.										
5010.										
Pits, sand and gravel										
5040:										
Udorthents, loamy	---	Medium								
			Jan-Dec	---	---	---	---	None	---	None
5044:										
Fluvaquents	---	Very low								
			January	0.0-1.0	>6.0	---	---	None	---	None
			February	0.0-1.0	>6.0	0.0-1.0	Long	Frequent	Long	Frequent
			March	0.0-1.0	>6.0	0.0-1.0	Long	Frequent	Long	Frequent
			April	0.0-1.0	>6.0	0.0-1.0	Long	Frequent	Long	Frequent
			May	0.0-1.0	>6.0	0.0-1.0	Long	Frequent	Long	Frequent
			June	0.0-1.0	>6.0	0.0-1.0	Long	Frequent	Long	Frequent
			July	0.0-1.0	>6.0	0.0-1.0	Long	Frequent	Long	Frequent
			August	0.0-6.0	>6.0	0.0-1.0	Long	Frequent	Long	Frequent
			September	0.0-6.0	>6.0	0.0-1.0	Long	Frequent	Long	Frequent
			October	0.0-6.0	>6.0	0.0-1.0	Long	Frequent	Long	Frequent
			November	0.0-1.0	>6.0	0.0-1.0	Long	Frequent	Long	Frequent
			December	0.0-1.0	>6.0	---	---	None	---	None
5060.										
Pits, clay										
5080.										
Udorthents, sanitary landfill										

Table 20.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Surface runoff	Months	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
SL. Sewage lagoons										
W. Water										

Table 21.--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	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
1B3:			
Ida, severely eroded	High	Low	Low
1C:			
Ida	High	Low	Low
1C3:			
Ida, severely eroded	High	Low	Low
1D3:			
Ida, severely eroded	High	Low	Low
1E3:			
Ida, severely eroded	High	Low	Low
1F:			
Ida	High	Low	Low
1F3:			
Ida, severely eroded	High	Low	Low
1G:			
Ida	High	Low	Low
2G:			
Hamburg	High	Low	Low
3D:			
Castana	High	Low	Low
3E:			
Castana	High	Low	Low
8B:			
Judson	High	Moderate	Low
8C:			
Judson	High	Moderate	Low
10B:			
Monona	High	Low	Low
10B2:			
Monona, moderately eroded	High	Low	Low
10C2:			
Monona, moderately eroded	High	Low	Low
10D2:			
Monona, moderately eroded	High	Low	Low
10D3:			
Monona, severely eroded	High	Low	Low

Table 21.--Soil Features--Continued

Map symbol and soil name	Potential for frost action	Risk of corrosion	
		Uncoated steel	Concrete
10E:			
Monona	High	Low	Low
10E3:			
Monona, severely eroded	High	Low	Low
10F:			
Monona	High	Low	Low
12B:			
Napier	High	Low	Low
12C:			
Napier	High	Low	Low
17B:			
Napier	High	Low	Low
Kennebec	High	Moderate	Low
Colo	High	High	Moderate
26:			
Kennebec	High	Low	Moderate
35F:			
Liston	Moderate	High	Low
Burchard	Moderate	Moderate	Low
35G:			
Liston	Moderate	High	Low
Burchard	Moderate	Moderate	Moderate
36:			
Salix	High	Moderate	Low
46:			
Keg	High	Low	Low
47B:			
Napier	High	Low	Low
Rawles	High	Moderate	Low
54:			
Zook	High	High	Moderate
59E:			
Burchard	Moderate	Moderate	Low
66:			
Luton	Moderate	High	Low
67:			
Woodbury	High	High	Low
100B:			
Monona	High	Low	Low

Table 21.--Soil Features--Continued

Map symbol and soil name	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
100C2:			
Monona, moderately eroded	High	Low	Low
100D2:			
Monona, moderately eroded	High	Low	Low
100E2:			
Monona, moderately eroded	High	Low	Low
101E2:			
Monona, moderately eroded	High	Low	Low
Ida, moderately eroded	High	Low	Low
123:			
Grantcenter	High	Moderate	Low
137:			
Haynie	High	Low	Low
144:			
Blake	High	High	Low
156:			
Albaton	Moderate	High	Low
170E:			
Napier	High	Low	Low
Castana	High	Low	Low
212:			
Kennebec	High	Moderate	Low
212+:			
Kennebec, overwash	High	Moderate	Low
220:			
Nodaway	High	Moderate	Low
237:			
Sarpy	Low	Low	Low
237B:			
Sarpy	Low	Low	Low
244:			
Blend	High	High	Low
255:			
Cooper	High	High	Low
266:			
Smithland	High	High	Moderate
266+:			
Smithland, overwash	High	High	Moderate

Table 21.--Soil Features--Continued

Map symbol and soil name	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
277B:			
Deloit	Moderate	Moderate	Low
277C:			
Deloit	Moderate	Moderate	Low
277E:			
Deloit	Moderate	Moderate	Low
310B:			
Galva	High	Moderate	Moderate
310C2:			
Galva, moderately eroded	High	Moderate	Moderate
366:			
Luton	Moderate	High	Low
436:			
Lakeport	High	High	Low
446:			
Burcham	High	High	Low
465:			
Tieville	Moderate	High	Low
485:			
Spillville	Moderate	High	Moderate
510:			
Monona, bench	High	Low	Low
510B:			
Monona, bench	High	Low	Low
510B2:			
Monona, bench, moderately eroded	High	Low	Low
510C2:			
Monona, bench, moderately eroded	High	Low	Low
515:			
Percival	Moderate	High	Low
518:			
Morconick	Low	Low	Low
527:			
Anthon	High	Moderate	Low
527B:			
Anthon	High	Moderate	Low
549:			
Modale silt loam	High	High	Low
Modale silty clay loam	High	High	Low

Table 21.--Soil Features--Continued

Map symbol and soil name	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
552:			
Owego	Moderate	High	Low
630:			
Danbury	High	High	Low
666B:			
Smithland	High	High	Moderate
Danbury	High	High	Low
Judson	High	Moderate	Low
670:			
Rawles	High	Moderate	Low
700:			
Monona, bench	High	Low	Low
700B:			
Monona, bench	High	Low	Low
700C2:			
Monona, bench, moderately eroded	High	Low	Low
700D2:			
Monona, bench, moderately eroded	High	Low	Low
701:			
Wilsey	High	Low	Low
709:			
Fairhaven, 32 to 40 inches to sand and gravel	Low	Low	Low
709B:			
Fairhaven, 32 to 40 inches to sand and gravel	Low	Low	Low
717D:			
Napier	High	Low	Low
Gullied land.			
733:			
Calco	High	High	Low
734:			
Holly Springs	High	High	Low
734+:			
Holly Springs, overwash	High	High	Low
740C:			
Hawick	Low	Low	Low
740D:			
Hawick	Low	Low	Low

Table 21.--Soil Features--Continued

Map symbol and soil name	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
740E:			
Hawick	Low	Low	Low
740F:			
Hawick	Low	Low	Low
750:			
Ticonic	Low	Low	Low
754:			
Larpenteur	High	High	Low
810B:			
Galva, bench	High	Moderate	Moderate
810C2:			
Galva, bench, moderately eroded	High	Moderate	Moderate
847B:			
Judson	High	Moderate	Low
Rawles	High	Moderate	Low
945:			
Albaton, depressional, drained	High	High	Low
1137:			
Haynie	High	Low	Low
1144:			
Blake	High	High	Low
1146:			
Onawa	High	High	Low
1220:			
Nodaway, channeled	High	Moderate	Low
1237B:			
Sarpy	Low	Low	Low
1237C:			
Sarpy	Low	Low	Low
1238:			
Sarpy	Low	Low	Low
Morconick	Low	Low	Low
1513:			
Grable	Low	Low	Low
Morconick	Low	Low	Low
1524:			
Morconick	Low	Low	Low
1525:			
Scroll	Moderate	High	Low

Table 21.--Soil Features--Continued

Map symbol and soil name	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
2515:			
Percival	Moderate	High	Low
Albaton	Moderate	High	Low
3146:			
Onawa	High	High	Low
Albaton	Moderate	High	Low
3275:			
Moville	High	High	Low
Holly Springs, overwash	High	High	Low
3440:			
Blencoe	High	High	Low
Woodbury	High	High	Low
3513:			
Grable	Low	Low	Low
Morconick	Low	Low	Low
3549:			
Modale silty clay loam	High	High	Low
Modale silt loam	High	High	Low
3686:			
Napa	Moderate	High	Moderate
Luton	Moderate	High	Low
Tieville	Moderate	High	Low
4000.			
Urban land			
4001C:			
Ida	High	Low	Low
Urban land.			
4001D:			
Ida	High	Low	Low
Urban land.			
4001E:			
Ida	High	Low	Low
Urban land.			
4001F:			
Ida	High	Low	Low
Urban land.			
4010B:			
Monona	High	Low	Low
Urban land.			

Table 21.--Soil Features--Continued

Map symbol and soil name	Potential for frost action	Risk of corrosion	
		Uncoated steel	Concrete
4010C:			
Monona	High	Low	Low
Urban land.			
4010D:			
Monona	High	Low	Low
Urban land.			
4010E:			
Monona	High	Low	Low
Urban land.			
4012B:			
Napier	High	Low	Low
Urban land.			
4012C:			
Napier	High	Low	Low
Urban land.			
4170D:			
Napier	High	Low	Low
Castana	High	Low	Low
Urban land.			
4600:			
Percival	Moderate	High	Low
Haynie	High	Low	Low
Urban land.			
4670:			
Rawles	High	Moderate	Low
Urban land.			
5010. Pits, sand and gravel			
5040. Udorthents, loamy			
5044. Fluvaquents			
5060. Pits, clay			
5080. Udorthents, sanitary landfill			
SL. Sewage lagoons			

Table 21.--Soil Features--Continued

Map symbol and soil name	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
W. Water			

Table 22.--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
Albaton	Fine, smectitic, calcareous, mesic Vertic Fluvaquents
Anthon	Fine-silty, mixed, superactive, mesic Cumulic Hapludolls
Blake	Fine-silty, mixed, superactive, calcareous, mesic Aquic Udifluvents
*Blencoe	Fine, smectitic, mesic Aquertic Hapludolls
Blend	Fine, smectitic, mesic Fluvaquentic Vertic Endoaquolls
Burcham	Fine-silty over clayey, mixed, superactive, mesic Aquic Hapludolls
Burchard	Fine-loamy, mixed, superactive, mesic Typic Argiudolls
Calco	Fine-silty, mixed, superactive, calcareous, mesic Cumulic Endoaquolls
Castana	Fine-silty, mixed, superactive, mesic Entic Hapludolls
Colo	Fine-silty, mixed, superactive, mesic Cumulic Endoaquolls
Cooper	Fine-silty over clayey, mixed, superactive, mesic Fluvaquentic Hapludolls
Danbury	Fine-silty, mixed, superactive, nonacid, mesic Oxyaquic Udifluvents
Deloit	Fine-loamy, mixed, superactive, mesic Cumulic Hapludolls
Dow	Fine-silty, mixed, superactive, calcareous, mesic Typic Udorthents
*Fairhaven	Fine-loamy, mixed, superactive, mesic Typic Hapludolls
Galva	Fine-silty, mixed, superactive, mesic Typic Hapludolls
*Galva	Fine-silty, mixed, superactive, mesic Dystric Eutrudepts
Grable	Coarse-silty over sandy or sandy-skeletal, mixed, superactive, calcareous, mesic Mollic Udifluvents
Grantcenter	Fine-silty, mixed, superactive, mesic Aquic Hapludolls
Hamburg	Coarse-silty, mixed, superactive, calcareous, mesic Typic Udorthents
*Hawick	Sandy, mixed, mesic Typic Eutrudepts
Haynie	Coarse-silty, mixed, superactive, calcareous, mesic Mollic Udifluvents
Holly Springs	Fine, smectitic, calcareous, mesic Cumulic Vertic Endoaquolls
Ida	Fine-silty, mixed, superactive, calcareous, mesic Typic Udorthents
Judson	Fine-silty, mixed, superactive, mesic Cumulic Hapludolls
*Keg	Coarse-loamy, mixed, superactive, mesic Cumulic Hapludolls
Kennebec	Fine-silty, mixed, superactive, mesic Cumulic Hapludolls
Lakeport	Fine, smectitic, mesic Aquertic Hapludolls
*Larpenteur	Fine-loamy, mixed, superactive, mesic Aquic Hapludolls
Liston	Fine-loamy, mixed, superactive, mesic Typic Eutrudepts
Luton	Fine, smectitic, mesic Typic Endoaquerts
Modale	Coarse-silty over clayey, mixed, superactive, calcareous, mesic Aquic Udifluvents
Monona	Fine-silty, mixed, superactive, mesic Typic Hapludolls
*Monona	Fine-silty, mixed, superactive, mesic Dystric Eutrudepts
Morconick	Sandy, mixed, mesic Mollic Udifluvents
Moville	Coarse-silty over clayey, mixed, superactive, calcareous, mesic Aquic Udifluvents
*Napa	Fine, smectitic, mesic Vertic Endoaquolls
Napier	Fine-silty, mixed, superactive, mesic Cumulic Hapludolls
Nodaway	Fine-silty, mixed, superactive, nonacid, mesic Mollic Udifluvents
*Onawa	Fine, smectitic, calcareous, mesic Aquertic Udifluvents
Owego	Fine, smectitic, nonacid, mesic Vertic Endoaquepts
Percival	Clayey over sandy or sandy-skeletal, smectitic over mixed, calcareous, mesic Aquic Udifluvents
Pilot Grove	Sandy, mixed, mesic Typic Hapludolls
Rawles	Fine-silty, mixed, superactive, calcareous, mesic Oxyaquic Udifluvents
Salix	Fine-silty, mixed, superactive, mesic Typic Hapludolls
Sarpy	Mixed, mesic Typic Udipsamments
Scroll	Fine-silty over sandy or sandy-skeletal, mixed, active, calcareous, mesic Aquic Udifluvents
Smithland	Fine-silty, mixed, superactive, mesic Aquic Cumulic Hapludolls
Spillville	Fine-loamy, mixed, superactive, mesic Cumulic Hapludolls
*Ticonic	Sandy over loamy, mixed, active, calcareous, mesic Mollic Udifluvents
Tieville	Fine, smectitic, calcareous, mesic Vertic Endoaquolls
Wilsey	Fine-silty, mixed, superactive, calcareous, mesic Mollic Udifluvents
Woodbury	Fine, smectitic, mesic Vertic Endoaquolls
Zook	Fine, smectitic, mesic Cumulic Vertic Endoaquolls