Series 1958, No. 22 Issued July 1962

SOIL SURVEY

Iowa County Wisconsin

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
UNIVERSITY OF WISCONSIN
Wisconsin Geological and Natural History Survey
Soil Survey Division
and
Wisconsin Agricultural Experiment Station

HOW TO USE THE SOIL SURVEY REPORT

THIS SURVEY of Iowa County will serve several groups of readers. It will help farmers in planning the kind of management that will protect their soils and provide good yields; assist engineers in selecting sites for roads, buildings, ponds, and other structures; serve as a reference for students and teachers; help prospective farmers, land appraisers, bankers, and real estate agents to decide the worth of a particular farm; and add to the soil scientist's fund of knowledge.

In making this soil survey, soil scientists walked over the county. They dug holes and examined surface soils and subsoils; measured slopes with a hand level; noticed differences in the growth of crops, weeds, and grasses; and, in fact, recorded all the things about the soils that they believed might affect their suitability for farming, engineering, and related uses.

The scientists plotted the boundaries of the soils on aerial photographs. Then, from these photographs cartographers prepared the detailed soil map in the back of this report. Fields, woods, roads, streams, and many other landmarks that can be seen on the map are helpful in locating the area in which you are interested.

Locating the soils

Use the index to map sheets at the back of this report to locate areas on the large map. The index is a small map of the county on which numbered rectangles have been drawn to show where each sheet of the large map is located. When the correct sheet of the large map has been located, it will be seen that boundaries of the soils are outlined and that there is a symbol for each kind of soil. All areas marked with the same symbol are the same kind of soil wherever they appear on the map. The symbol will be inside the area if there is enough room; otherwise, it will be outside the area and a pointer will show where the symbol belongs.

Finding information

Some readers will be more interested in one part of the report than another, for the report has special sections for different groups as well as sections that may be of value to all. The introductory part, which discusses general geographic features of the county, the climate, the water supplies, and the kinds of vegetation, will be of interest mainly to those not familiar with the county. Those not familiar with the county may also want to refer to the sections "Soil Associations," "Agriculture," and "Additional Facts About the County."

Farmers and those who work with farmers will be interested mainly in the section "Descriptions of Soils" and in the section "Use and Management of the Soils." Study of these sections will aid them in identifying soils on a farm, in learning ways the soils can be managed, and in judging what yields can be expected. The "Guide to Mapping Units" at the back of the report will simplify use of the map and the report. This guide gives the map symbol for each soil, the name of the soil, the page on which the soil is described, the capability unit in which the soil has been placed, and the page where the capability unit is described.

Engineers will want to refer to the section "Engineering Properties of the Soils." Tables in that section show characteristics of the soils that affect engineering.

Soil scientists will find information about how the soils were formed and how they were classified in the section "Formation, Classification, and Morphology of Soils."

Students, teachers, and other users will find information about soils and their management in various parts of the report, depending on their particular interest.

* * *

This soil survey is part of the technical assistance furnished by the Soil Conservation Service to the Iowa County Soil Conservation District. Work on the survey was completed in 1958. Unless otherwise indicated all statements refer to conditions at the time the survey was in progress.

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SOIL SURVEY OF IOWA COUNTY, WISCONSIN

REPORT BY A. J. KLINGELHOETS, SOIL CONSERVATION SERVICE

FIELDWORK BY STUART W. TORRANCE, BUREL S. BUTMAN, H. R. SATTERFIELD, RONALD C. WEBER, AND OTHERS,[1] SOIL CONSERVATION SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH THE WISCONSIN GEOLOGICAL AND NATURAL HISTORY SURVEY, SOIL SURVEY DIVISION, AND THE WISCONSIN AGRICULTURAL EXPERIMENT STATION, UNIVERSITY OF WISCONSIN

IOWA COUNTY is in the southwestern part of Wisconsin (fig. 1). It is bounded on the north by the Wisconsin River, beyond which are Richland and Sauk Counties. It is bounded on the east and southeast by Dane and Green Counties. Grant County forms the western boundary, and Lafayette County, the southern.

The land area of Iowa County is 761 square miles, or 487,040 acres. An additional 7 square miles, or 4,480 acres, is covered by water. The county has 14 civil townships. Dodgeville, the county seat, is near the center of the county.

Description of the County

In this section the general geographic features of the county are described. Also described are the climate, the kinds of vegetation, and the water supply.

Physiography, Relief, and Drainage

Iowa County lies within the unglaciated part of Wisconsin. It is in the western upland physiographic region of the state (*4*).[2] In general, the county is a dissected plateau that has fairly broad, rolling ridges and steep-sided valleys (fig. 2).

The most striking topographical feature in the county is the steep escarpment that faces the Wisconsin River. The ridge above the escarpment is known as Military Ridge. It extends through the towns of Cobb, Edmund, Dodgeville, Ridgeway, and Barneveld. Reaching southward from its crest is a long, gentle back slope that has a drop in elevation of about 6 feet per mile. In the town of Brigham in the east-central part of the county, near Blue Mounds, is an outlier of Maquoketa shale capped with Niagara limestone. Here, the elevation is 1,716 feet. This point is among the highest in the State.

The ridges range in elevation from 1,400 feet at Barneveld, in the eastern part of the county, to 1,200 feet, near Dodgeville, and to 1,100 feet, near Livingston in the southwestern part of the county. The bottoms of the valleys are 300 or more feet below the tops of the ridges and are between ¼ and 1¼ miles wide. They are deepest and widest near the Wisconsin River. Above the present flood plains are several levels of river terraces. The topography of the terraces is more gentle than that on the ridges, although in some places the terraces are highly dissected by streams.

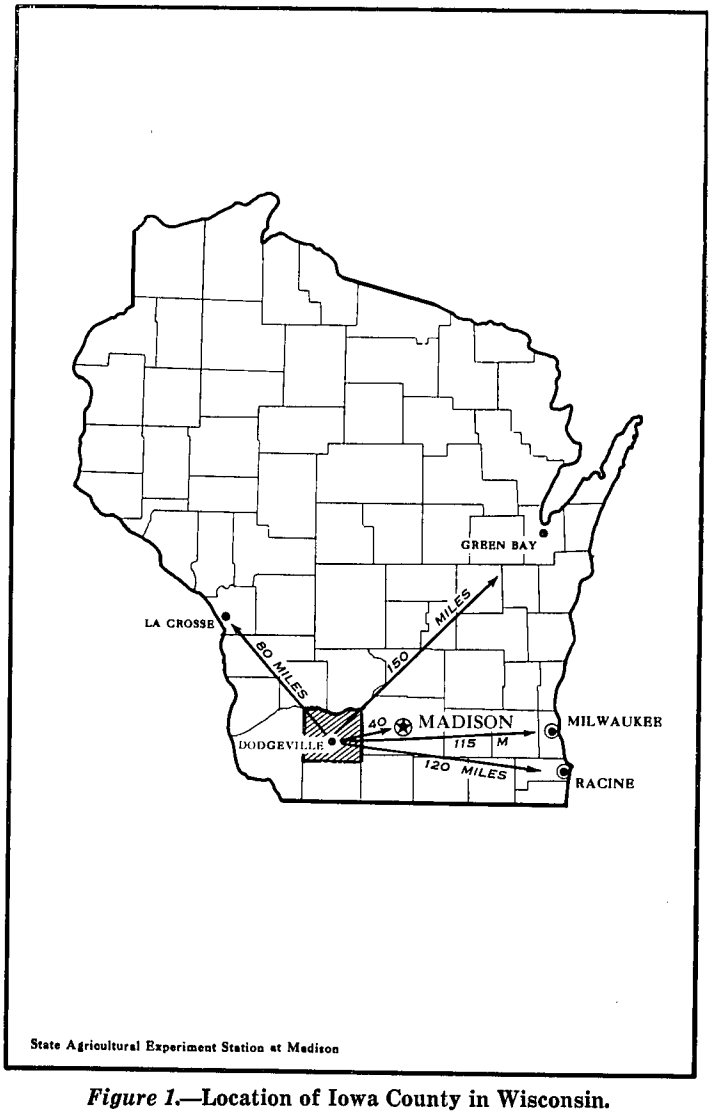

Figure 1.—**Location of Iowa County in Wisconsin.**

[1] Other soil scientists who assisted in mapping are JOHN KEYES, CARL GLOCKER, E. M. WATSON, H. C. CRIBE, FENTON GRAY, S. B. CANNON, and J. H. AXLEY, Soil Conservation Service.

[2] Italic numbers in parentheses refer to Literature Cited, p. 97.

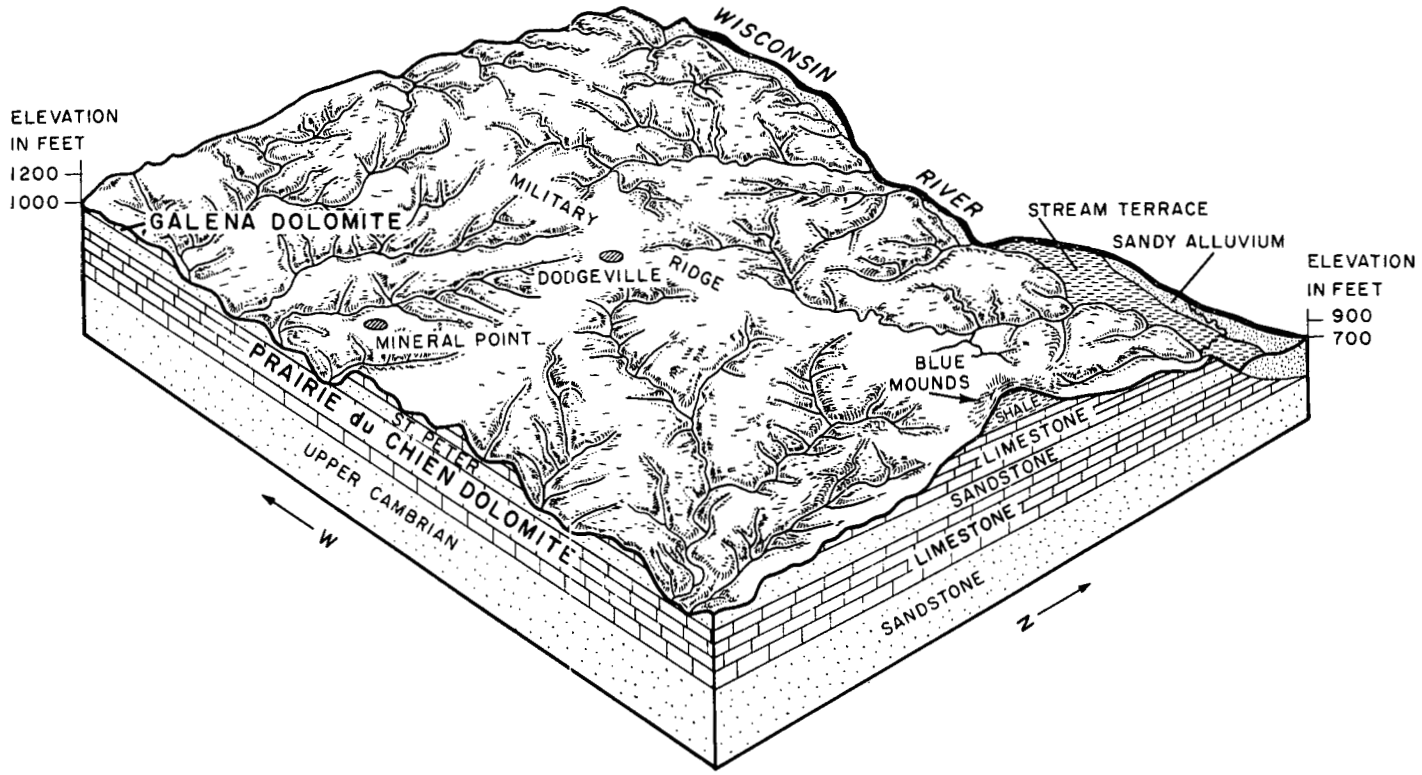

Figure 2.—**Relief map of Iowa County, Wis., showing the physiography, drainage pattern, and geology. By F. D. Hole, Soil Survey Division, Wisconsin Geological and Natural History Survey, University of Wisconsin.**

Most parts of the county are well drained. The Wisconsin River, which flows along the northern boundary, carries drainage water from the north side of Military Ridge into the Mississippi River. In the area south of Military Ridge, the Pecatonica River and its tributaries, and smaller streams, provide drainage to the Mississippi River. Many of the smaller streams are fed by numerous springs from which there is a permanent flow of water.

Geology

Galena and Platteville dolomite make up the larger part of the bedrock (see fig. 2) of Iowa County (*3*, *4*). Fairly large areas of Prairie du Chien dolomite and of Upper Cambrian (Croixian) sandstone of various formations are exposed in the northern part of the county along the bluffs of the Wisconsin River. Outcrops of St. Peter sandstone (fig. 3) occur between areas of Galena-Platteville and Prairie du Chien dolomite, especially in the southeastern part of the county and along the deeper valleys. Maquoketa shale underlies some of the soils in the town of Brigham near Blue Mounds. The Hixton and Hesch soils formed from materials weathered from exposed Cambrian and St. Peter sandstones.

The nearly level bedding of the Galena-Platteville dolomite, which forms a cap over the St. Peter sandstone, causes the ridges to be fairly level on top. The dolomite slopes southward with a drop of 5 or 6 feet per mile.

All of the uplands and many of the valley slopes and terraces are covered with a mantle of loess. This silty material was probably blown onto the uplands from the bottom lands of the Mississippi River during or soon after glacial times. It ranges from 1 to more than 10 feet in thickness. The deepest deposits are along the Grant County line, but the deposits become thinner toward the eastern edge of the county. The soils of the upland ridges formed partly in loess and partly in materials weathered from the underlying bedrock (fig. 4). The silt probably was calcareous at the time it was deposited. In many of the deep, loessal soils, there is free lime in many places at a depth of 5 feet or more.

On the lowest stream terraces along the Wisconsin River, sandy glacial outwash is exposed. This is the parent material of the Plainfield and Sparta soils.

Climate

The climate of Iowa County is marked by wide extremes in temperature, within seasons as well as between seasons. Table 1, compiled from records of the U.S. Weather Bureau at Dodgeville, Wis., gives climatic data for the county.

Precipitation is distributed fairly evenly throughout the county. Much of it falls as rain during the growing season, but, in winter, precipitation is chiefly in the form of snow. The average annual snowfall is 39 inches per year. The frost-free season is about 146 days. Although the growing season in Iowa County is short, it is long enough for corn and other crops commonly grown to mature.

Water Supply

This county has an abundant supply of underground water (*8*). All of the geologic formations underlying

TABLE 1.—*Temperature and precipitation at Dodgeville, Iowa County, Wis.*

[Elevation, 1,220 feet]

Month	Temperature [1]			Precipitation [2]			
	Average	Absolute maximum	Absolute minimum	Average	Driest year (1901)	Wettest year (1916)	Average snowfall
	°F.	°F.	°F.	*Inches*	*Inches*	*Inches*	*Inches*
January	16.1	54	−29	1.19	0.74	4.30	9.0
February	17.7	52	−31	1.19	.85	1.20	8.2
March	30.2	75	−11	1.71	1.75	3.82	8.6
April	45.9	87	10	2.20	.95	2.30	1.2
May	57.5	90	26	4.82	3.54	4.35	.3
June	66.2	98	29	4.23	1.62	7.50	0
July	71.7	107	41	3.98	4.22	.46	0
August	69.4	99	32	3.12	.62	2.27	[3]
September	62.3	99	18	3.34	4.13	7.20	[3]
October	50.5	96	13	2.28	2.71	3.50	.4
November	34.5	86	−12	1.72	1.10	1.42	3.2
December	22.1	60	−22	1.29	1.27	.89	8.1
Year	45.3	107	−31	31.07	23.50	39.21	39.0

[1] Average temperature based on a 33-year record, through 1955; highest temperature on a 36-year record and lowest temperature on a 35-year record, through 1952.

[2] Average precipitation based on a 33-year record, through 1955; wettest and driest years based on a 23-year record, in the period 1897–1955; snowfall based on a 30-year record, through 1952.

[3] Trace.

the soils contain water. The main source is the Upper Cambrian sandstone. In areas on alluvial fans on the bottom lands of streams and on terraces in the valleys, water is obtained mainly from shallow wells. In places springs furnish an abundance of cold, clear water for domestic use. Many of the springs are the sources of permanent streams. The water obtained from them is hard, and the content of minerals is high.

Only a small acreage is irrigated, but irrigation could be extended in areas where the soil is sandy. Crops on some of the sandy soils near the Wisconsin River would respond well to supplemental irrigation, and the river would provide a good supply of water. Other streams could furnish a limited amount of water for use on nearby soils that are suited to irrigation. The cost of pumping water from the deep valleys to the uplands would generally be prohibitive. Irrigation, therefore, is likely to be limited to soils of the bottom lands and terraces.

Vegetation

Most of Iowa County is in the Central Hardwood Forest region of the United States (*6*). Some of it, however, is in the prairie area that extends northward from Illinois. The county lies within an area, called a tension zone, in which minor changes in climate may cause changes in the vegetation. For example, if the climate becomes cooler or wetter than it is at the present time, the forests will encroach upon the prairie areas. But, if the climate becomes drier or warmer, the prairie grasses will encroach upon the forests.

Originally, much of the area was covered by forests. The prairies were mainly along the Wisconsin River and along Military Ridge, where the topography was nearly level to gently sloping. Today, nearly all of the land that is accessible and suitable for crops is used for that

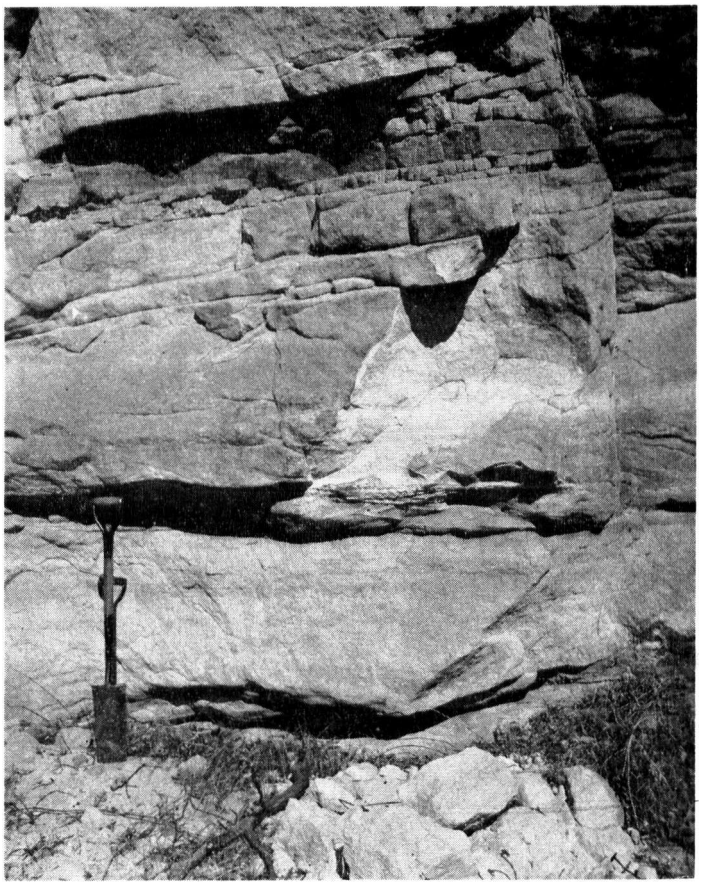

Figure 3.—St. Peter sandstone exposed in a roadcut and showing the different strata.

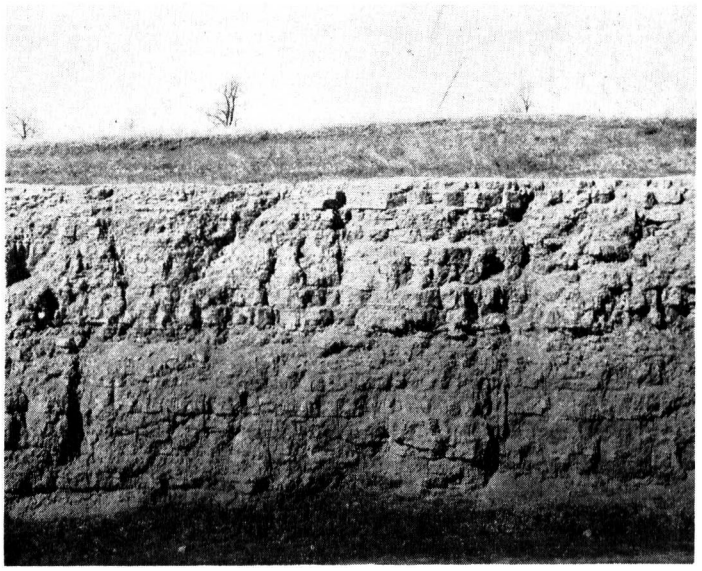

Figure 4.—Limestone bedrock underlying a Dodgeville silt loam on uplands.

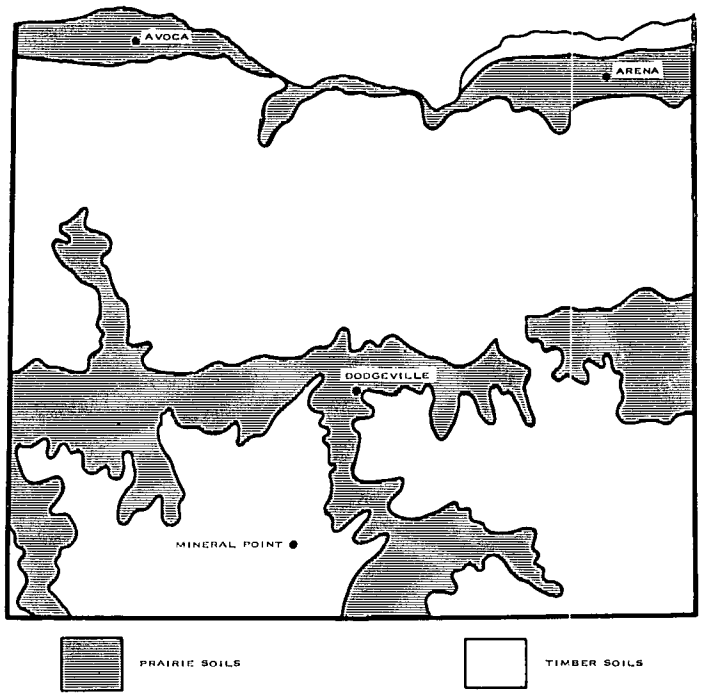

Figure 5.—**Distribution of prairie and timber soils in Iowa County, Wis.**

purpose or is pastured. Forests occupy the more rolling and steep or wet areas. The general distribution of the prairie and timber soils in Iowa County is shown in figure 5. A limited amount of the acreage that is wooded could be cleared, and some of the wet areas could be drained to make them suitable for crops. On the other hand, the steeper, eroded areas should be reforested rather than kept in crops.

The forests were probably encroaching upon the prairies when white men first came into the area. Evidence of such extension can be seen in woodlands, consisting mainly of oak and hickory, that still have an understory of prairie plants. It is also apparent in the dark color of many of the soils, which indicates that prairie grasses once covered the areas, and in the isolated prairie areas that are surrounded by forests. The rate at which the forests encroached was probably slowed by the Indians who burned the trees so that they could have open areas for their campsites and fields.

How Soils are Named, Mapped, and Classified

Soil scientists made this survey to learn what kinds of soils are in Iowa County, where they are located, and how they can be used. They went into the county knowing they likely would find many soils they had already seen, and perhaps some they had not. As they traveled over the county, they observed steepness, length, and shape of slopes; size and speed of streams; kinds of native plants or crops; kinds of rock; and many facts about the soils. They dug or bored many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down to the rock material that has not been changed much by leaching or by roots of plants.

The soil scientists made comparisons among the profiles they studied, and they compared these profiles with those in counties nearby and in places more distant. They classified and named the soils according to uniform procedures. To use this report efficiently, it is necessary to know the kinds of groupings most used in a local soil classification.

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, all the soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or other geographic feature near the place where a soil of that series was first described and mapped. Fayette and Gale, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in natural characteristics.

Many soil series contain soils that are alike except for the texture of their surface layer. According to this difference in texture, separations known as soil types are made. Within a series, all the soils having a surface layer of the same texture belong to one soil type. For example, Gale silt loam and Gale stony silt loam are two soil types in the Gale series. The difference in the texture of their surface layers is apparent from their names.

Some soil types vary so much in slope, degree of erosion, number and size of stones, or some other feature affecting their use, that practical suggestions about their management could not be made if they were shown on the soil map as one unit. Such soil types are divided into soil phases. The name of a soil phase indicates a feature that affects management. For example, Gale silt loam, 12 to 20 percent slopes, is one of several phases of Gale silt loam, a soil type that ranges from nearly level to steep.

After a fairly detailed guide for classifying and naming the soils had been worked out, the soil scientists drew soil boundaries on aerial photographs. They used photos for their base map because they show woodlands, buildings, field borders, trees, and similar detail that greatly help in drawing boundaries accurately. The soil map in the back of this report was prepared from the same aerial photographs.

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning management of farms and fields, a mapping unit is nearly equivalent to a soil type or a soil phase. It is not exactly equivalent, because it is not practical to show on such a map all the small, scattered bits of soil of some other kind that have been seen within an area that is dominantly of a recognized soil type or soil phase.

In preparing some detailed maps, the soil scientist finds that the differences between two soils are sometimes too small to justify separate recognition, even though the soils are not regularly associated geographically. Therefore, the soils are shown as one mapping unit, or as an undifferentiated group. The unit is named for the major soil series in it, for example, Sogn and Dodgeville silt loams, shallow. Also, in most mapping, there are areas to be shown that are so rocky, so shallow, or so fre-

quently worked by wind and water that they cannot be called soils. These areas are shown on a soil map like other mapping units, but they are given descriptive names, such as Riverwash or Steep stony and rocky land, and are called land types rather than soils.

Only part of the soil survey was done when the soil scientist had named and described the soil series and mapping units, and had shown the location of the mapping units on the soil map. The mass of detailed information he had recorded then needed to be presented in different ways for different groups of users, among them farmers, managers of woodlands, and engineers.

To do this efficiently, he had to consult with persons in other fields of work and jointly prepare with them groupings that would be of practical value to different users. Such groupings are the capability classes, subclasses, and units, designed mainly for those interested in producing crops and tame pasture, and the classifications used by engineers who build highways or structures to conserve soil and water.

Soil Associations

In a county or other large tract, it is easy to see differences in the land as one travels from place to place. There are differences in the steepness, length, and shape of slopes; in the size and speed of the streams; in the kinds of native plants; and in the ways the soils are farmed or otherwise used. Along with the differences that are easy to see, there are many differences in the kinds of soils. The characteristics of the soils influence the kind of farming and other uses that can be made of the land.

After studying the soils and the way they are arranged, it is possible to make a map that shows the main patterns of soils. Each soil association generally contains a few major soils and several other minor soils in a pattern that is characteristic, although not strictly uniform. The soils within any one area are likely to differ greatly among themselves in some properties, for example, in slope, depth, stoniness, or natural drainage. Thus, the soil association map does not show the kind of soil at any particular place, but it gives a pattern that has in it several kinds of soils. The map is useful to people who want a general idea of the soils, who want to compare different parts of a county, or who want to know the location of large areas that would be suitable for a certain kind of farming or other land use.

The six soil associations, or kinds of soil patterns, in Iowa County are shown on the map in figure 6. The associations are named for the major soil series in them. The soils that are of major extent in one soil association may also be present, to a lesser extent, but in a somewhat different pattern, in other soil associations. The soil associations are discussed in the following pages. More detailed information about the soils is given in the section "Descriptions of Soils."

Association 1

Dark-colored, deep, silty soils on gently sloping uplands: Tama, Dodgeville, deep

This soil association consists of dark-colored, deep, silty soils that are nearly level to sloping. The soils are on broad ridgetops. The Tama and deep Dodgeville soils are predominant. They formed under prairie, mainly in windblown silt.

The soils in this association are fairly easy to manage. They are among the most desirable soils for agriculture of any in the county.

Association 2

Dark-colored, moderately deep to thin soils on sloping uplands: Dodgeville, Sogn

The soils in this association are dark colored and silty and are moderately deep to thin. They are gently sloping to strongly sloping. The soils are on fairly narrow ridgetops. Dodgeville and Sogn soils are predominant. They formed in silt over clayey material weathered from limestone bedrock. The original vegetation was prairie grasses.

The soils in this association have a thinner solum than those in association 1, mainly because they formed in a thinner layer of silt.

In most of the acreage, the soils are suited to agriculture. More careful management is needed, however, than is required for the soils in association 1.

Association 3

Light-colored, deep, silty soils on sloping uplands: Dubuque, deep, Fayette

This soil association is made up chiefly of light-colored, deep Dubuque soils and soils of the Fayette series. The soils are on fairly broad ridgetops that are gently sloping to sloping. They formed under a hardwood forest in moderately deep to deep deposits of silt laid down by wind.

The soils in this association are likely to erode. They require careful management to protect them from erosion, but they are otherwise suited to agriculture.

Association 4

Light-colored, moderately deep to thin soils on rolling uplands: Dubuque, Steep stony and rocky land

This soil association is made up mainly of Dubuque soils and of areas of Steep stony and rocky land. The soils are in rolling areas along the major streams and on steep slopes between upland ridges and the bottoms of valleys. They are stony in many places. Outcrops of rock are common.

The Dubuque soils formed in moderately thin deposits of silt that overlie clayey material weathered from limestone. Steep stony and rocky land is made up of outcrops of rock and of small areas of soils that are medium textured; the small areas of soil material are moderately deep to shallow over limestone and sandstone bedrock.

Some areas of Dubuque soils in this association are suited to cultivated crops. Generally, however, most of this association is best suited to pasture or to trees.

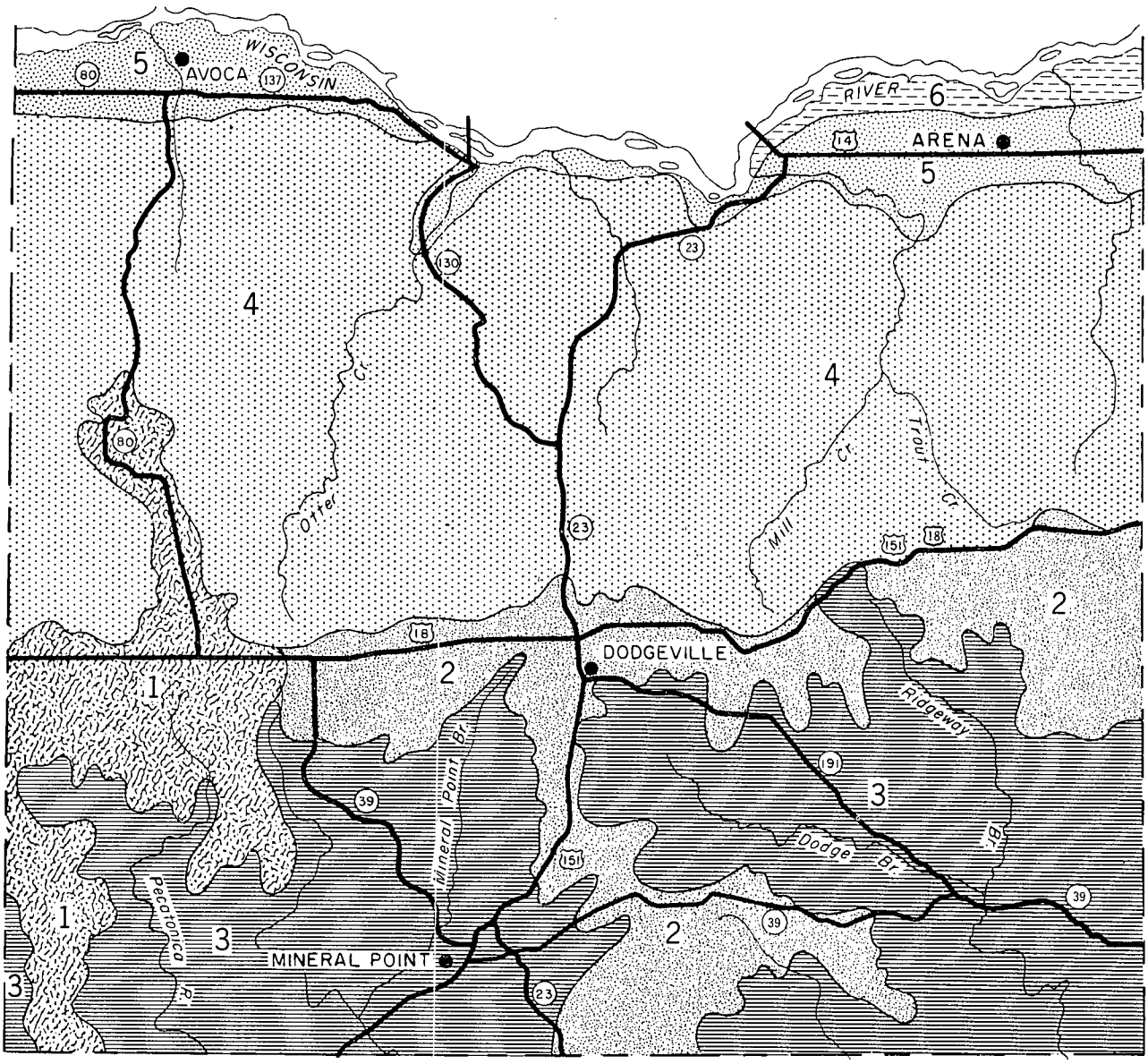

Figure 6.—**Legend for soil association map.**

1. **Dark-colored, deep, silty soils on gently sloping uplands: Tama, Dodgeville, deep.**
2. **Dark-colored, moderately deep to thin soils on sloping uplands: Dodgeville, Sogn.**
3. **Light-colored, deep, silty soils on sloping uplands: Dubuque, deep, Fayette.**
4. **Light-colored, moderately deep to thin soils on rolling uplands: Dubuque, Steep stony and rocky land.**
5. **Loamy to sandy soils on nearly level stream terraces: Dakota, Sparta, Gotham.**
6. **Alluvial land on flood plains subject to overflow: Loamy alluvial land.**

Association 5

Loamy to sandy soils on nearly level stream terraces: Dakota, Sparta, Gotham

This soil association is made up mainly of nearly level Dakota, Sparta, and Gotham soils. The soils are moderately deep and are underlain by sandy outwash. They are medium textured to light textured. The Dakota and Sparta soils are dark colored, and the Gotham are moderately dark colored. The soils are on stream benches, or terraces, above the flood plains of major streams in the county. They are mostly along the Wisconsin River.

The soils in this association are used intensively for agriculture. They are likely to be droughty, but they are productive if well managed.

Association 6

Alluvial land on flood plains subject to overflow: Loamy alluvial land

This soil association is made up principally of Loamy alluvial land and Loamy alluvial land, poorly drained. Typically, the soils consist of a mixture of sediments deposited by water. They are nearly level and are on

flood plains where they are likely to be flooded by overflow from adjacent streams. Generally, the water table is high.

Some of the better drained areas of this association are not subject to frequent overflow and can be used for cultivated crops. Most of the association, however, is probably best used for limited pasture, for trees, or for wildlife areas.

Use and Management of the Soils

This section has several main parts. The first explains the system of capability classification used by the Soil Conservation Service. Next is a summary of basic practices of management that apply to all of the soils. Then, management of groups of soils, the capability units, is described. This is followed by estimated yields of principal crops, and after that is information about the management of the soils for woodland and for engineering.

Capability Groups of Soils

The capability classification is a grouping that shows, in a general way, how suitable soils are for most kinds of farming. It is a practical grouping based on the limitations of the soils, on the risk of damage when they are used, and on the way they respond to treatment.

In this sytem all the kinds of soil are grouped at three levels, the capability class, subclass, and unit. The eight capability classes in the broadest grouping are designated by Roman numerals I though VIII. In class I are the soils that have few limitations, the widest range of use, and the least risk of damage when they are used. The soils in the other classes have progressively greater natural limitations. In class VIII are soils and landforms so rough, shallow, or otherwise limited that they do not produce worthwhile yields of crops, forage, or wood products.

The subclasses indicate major kinds of limitations within the classes. Within most of the classes, there can be as many as four subclasses. The subclass is indicated be adding a small letter, *e*, *s*, *w*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; *w* means that water in or on the soil will interfere with the growth of plants or with cultivation (in some soils the wetness can be partly corrected by artificial drainage) ; and *c*, used in only some parts of the country, indicates that the chief limitation is a climate that is too cold or too dry.

In class I there are no subclasses, because the soils of this class have few or no limitations. Class V can contain, at the most, only subclasses *w*, *s*, and *c* because the soils in it have little or no susceptibility to erosion but have other limitations that limit their use largely to pasture, range, woodland, or wildlife.

Within the subclasses are the capability units, groups of soils enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus, the capability unit is a convenient grouping for making many statements about the management of soils. Capability units are generally identified by Arabic numbers assigned locally, for example, IIe–1 or IIIe–2.

Soils are classified in capability classes, subclasses, and units in accordance with the degree and kind of their permanent limitations. The grouping does not take into consideration major, and generally expensive, landforming that would change the slope, depth, or other characteristics of the soil. It also does not take into consideration possible, but unlikely, major reclamation projects.

The capability classes, subclasses, and units in which the soils of Iowa County are classified are defined in the listing that follows. The soils were assigned to capability units on a statewide basis. Because not all of the capability units in the State are represented in this county, the numbering of the units may not be consecutive. For example, no soils of capability unit IIe–3 have been recognized in Iowa County; therefore, this capability unit is not discussed in this report.

Class I.—Soils that have few limitations that restrict their use.
- Unit I–1: Deep, dominantly well drained to moderately well drained, nearly level soils.

Class II.—Soils that have some limitations that reduce the choice of plants or that require moderate conservation practices.
- Subclass IIe.—Soils subject to moderate erosion if they are not protected.
  - Unit IIe–1: Deep, well drained to moderately well drained, gently sloping soils.
  - Unit IIe–2: Moderately deep, well-drained, gently sloping soils that are underlain by sand or by clay weathered from bedrock.
  - Unit IIe–6: Moderately deep, gently sloping soils with subsoils that are moderately slow in permeability.
- Subclass IIs.—Soils that have moderate limitations of moisture capacity or tilth.
  - Unit IIs–1: Moderately deep, well-drained, nearly level soils that are underlain by loose sand.
- Subclass IIw.—Soils that have moderate limitations because of excess water.
  - Unit IIw–1: Dark-colored, deep soils that are somewhat poorly drained or poorly drained.
  - Unit IIw–2: Light-colored, deep soils that are somewhat poorly drained.
  - Unit IIw–5: Moderately deep soil that overlies loose sand and has a high water table.
  - Unit IIw–11: Deep, moderately well drained to well drained soils on flood plains or along small drainageways, where they are subject to overflow.

Class III.—Soils that have severe limitations that reduce the choice of plants, or that require special conservation practices, or both.
- Subclass IIIe.—Soils subject to severe erosion if they are cultivated and not protected.
  - Unit IIIe–1: Deep, well drained to moderately well drained, loamy soils that are gently sloping to sloping.

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Unit IIIe–2: Moderately deep, well-drained, gently sloping to sloping, medium-textured soils that are underlain by loose sand, clay, or bedrock.
Unit IIIe–3: Thin, well-drained, gently sloping soils that are underlain by sandstone or limestone bedrock.
Unit IIIe–6: Moderately deep, sloping soils with subsoils that have moderately slow permeability.
Subclass IIIs.—Soils that have severe limitations of moisture capacity or tilth.
Unit IIIs–2: Moderately deep, nearly level to gently sloping soils that are underlain by loose sand or bedrock.
Subclass IIIw.—Soils that have severe limitations because of excess water.
Unit IIIw–2: Deep, somewhat poorly drained, gently sloping soils.
Unit IIIw–3: Deep, poorly drained soil that has a slowly permeable, clayey subsoil.
Unit IIIw–5: Deep, nearly level, sandy soil that has a high water table.
Unit IIIw–9: Deep, poorly drained, organic soils.
Unit IIIw–14: Deep, medium-textured soils on flood plains that are subject to frequent flooding.

Class IV.—Soils that have very severe limitations that restrict the choice of plants, require very careful management, or both.
Subclass IVe.—Soils subject to very severe erosion if they are cultivated and not protected.
Unit IVe–1: Deep, well-drained, silty soils.
Unit IVe–2: Well-drained, sloping soils that are moderately deep over bedrock.
Unit IVe–3: Dominantly somewhat excessively drained, thin soils that overlie bedrock.
Unit IVe–7: Moderately deep, strongly sloping sandy loams that overlie loose sand or bedrock.
Subclass IVs.—Soils that have very severe limitations of stoniness, low moisture capacity, or other soil features.
Unit IVs–3: Deep loamy fine sands that are nearly level to sloping.
Unit IVs–4: Sloping, stony soil that is moderately deep over bedrock.

Class V.—Soils not likely to erode but that have other limitations, impractical to remove without major reclamation, that limit their use largely to pasture, woodland, or to food and cover for wildlife.
Subclass Vw.—Soils too wet for cultivation; drainage or protection not feasible.
Unit Vw–7: Thin deposits of organic material over loose sand on stream bottoms.
Unit Vw–15: Mixed, alluvial deposits on stream bottoms.

Class VI.—Soils with severe limitations that make them generally unsuitable for cultivation and that limit their use largely to pasture, woodland, or wildlife.
Subclass VIe.—Soils severely limited, chiefly by risk of erosion if protective cover is not maintained.
Unit VIe–1: Deep, well-drained, silty soils that are strongly sloping to steep.
Unit VIe–2: Well-drained, strongly sloping to steep soils that are moderately deep over bedrock.
Unit VIe–3: Thin, sloping to strongly sloping soils over limestone or sandstone bedrock.
Unit VIe–7: Moderately deep, strongly sloping soils over loose sand or bedrock.
Subclass VIs.—Soils generally unsuitable for cultivation and limited for other uses by their moisture capacity, stones, or other features.
Unit VIs–6: Sloping to steep, stony soils.

Class VII.—Soils that have very severe limitations that make them unsuitable for cultivation without major reclamation, and that restrict their use largely to pasture, woodland, or wildlife.
Subclass VIIe.—Soils very severely limited, chiefly by risk of erosion if protective cover is not maintained.
Unit VIIe–2: Well-drained, steep, moderately deep soils that overlie bedrock.
Unit VIIe–3: Strongly sloping to steep, thin soils that overlie bedrock.
Unit VIIe–7: Moderately deep, sloping to steep soils that overlie loose sand or bedrock.
Subclass VIIs.—Soils very severely limited by moisture capacity, stones, or other soil features.
Unit VIIs–3: Deep, loose sands that are subject to severe wind erosion.
Unit VIIs–6: Steep, stony soils or soils that are shallow over bedrock.

Class VIII.—Soils and land types that have limitations that preclude their use, without major reclamation, for commerical production of plants and that restrict their use to recreation, wildlife, or water supply.
Subclass VIIIw.—Extremely wet or marshy land.
Unit VIIIw–15: Marshy areas along stream bottoms.

Basic Practices of Management

In this subsection management practices suitable for all of the soils of the county are briefly described. In addition to these general practices, however, the farmer will need to know what kind of soils he has on his particular farm; to take into account the livestock, machinery, and other equipment he owns; the labor and capital at his disposal; and other resources available.

Most of the soils in the county require practices to prevent erosion. Therefore, the farmer will need to know what kinds of crops to grow to protect his soils and what kind of cropping system to choose. He must decide what kinds of practices—terracing, stripcropping, using grassed waterways, or tilling on the contour—he will need to use to protect his soils (fig. 7). In addition, he must determine whether to use his soils for crops or whether they should be kept under a protective cover of grass or trees.

To avoid repeating for each capability unit practices that fit all soils that are suitable for crops, pasture, trees, or wildlife, the following practices are summarized and are to be considered along with the practices suggested in each capability unit.

Figure 7.—**Field in which stripcropping has been practiced to control erosion. In this field close-growing crops are growing in strips alternating with corn.**

Cropping Systems

1. Choose a cropping system in which crops that will add organic matter to the soils and improve tilth are grown at least part of the time. Plowing under a crop for green manure or plowing under crop residues will also add organic matter and improve tilth.
2. To help protect the soils from erosion, include close-growing crops, such as small grains, legumes, and grasses, in the cropping system.

Tilled Crops

1. Apply lime and fertilizer in the amounts indicated by soil tests and field trials; generally, supplemental applications of nitrogen are required on most soils for corn grown after a nonleguminous crop.
2. Return crop residues to the soil, and add barnyard manure and green manure to supply fresh organic matter as well as to improve soil tilth.
3. To dispose of excess water, build new waterways or reshape old ones where necessary; reseed and maintain to keep them working well.
4. Seed headlands (areas in which to turn machinery at the edges of fields) and keep them in grass.
5. Cultivate only to prepare the seedbed and to control weeds; do not cultivate if the soil is wet, or the soil may puddle.

Pasture Renovation

1. Test the soil to determine need for lime and fertilizer; generally, supplemental applications of nitrogen are needed on most soils for grass meadows or pasture.
2. Apply lime 6 months before seeding.
3. If feasible, remove stones, stumps, and other obstructions that will interfere with the use of farm equipment.
4. Prepare a good seedbed:
   (a) Plow the level to gently sloping soils on the contour.
   (b) Work the more sloping soils so as to leave a

mulch on the surface, but do not plow. Start preparing the seedbed several weeks or months before the date of seeding, by destroying the weeds through cultivation, spraying, or both.

5. Reseed:
   (a) Use legumes and grasses that are best suited to the soils and that will be productive at the season when pasture is needed.
   (b) Inoculate the legumes.
   (c) Seed the pasture mixture with a companion crop that will help control erosion; use no more than 2 bushels of oats per acre.
   (d) Cover seed lightly; use a cultipacker seeder or similar implement that will put seed at the proper depth. If seed is broadcast, a cultipacker will help cover the seed and firm the seedbed.
   (e) Apply enough phosphate at the time of seeding to supply most of the needs for 4 to 6 years. Topdressings of potash will probably be needed 1 or 2 years later.
   (f) To keep the companion crop from competing too strongly with the young forage plants, pasture it when the plants are 8 inches high.

Pasture improvement and maintenance:

1. Control grazing:
   (a) Avoid overgrazing throughout the season.
   (b) Delay grazing in spring until the ground is firm and growth is well started.
   (c) Do not graze pastures for 1 month before the first hard frost in fall (normally, September 30). Provide this protection every year if the pasture contains alfalfa, and at least every other year if the pasture is grass.
   (d) Divide the pasture into three or more parts, and rotate grazing. This gives the plants a chance to recover and prolongs the life of legumes and grasses.
2. Control weeds and brush:
   (a) Mow weeds before they set seed.
   (b) Spray to control weeds and brush, where it is more economical and effective than mowing.
3. Topdress with lime and fertilizer:
   (a) Lime acid soils to encourage legumes that will furnish nitrogen for the grasses in the pasture mixture.
   (b) Test the soils, and apply phosphate and potash to increase yields.
   (c) Apply nitrogen to grass in spring if early grazing is desired. If enough moisture is available, nitrogen will increase the total yield of grasses and improve its protein content. Applying nitrogen repeatedly tends to encourage the grasses and forces the legumes out of the pasture mixture.

Woodlands

Management and improvement:

1. Protect the areas from grazing and trampling by livestock.
2. Prevent fires.
3. Remove cull and weed trees.
4. Practice selective cutting to favor the more desirable kinds of trees.

Wildlife Areas

1. Do not burn fence rows, roadsides, odd areas, or sloughs.
2. On upland soils plant low-growing shrubs along permanent fences, and maintain existing shrubs.
3. Improve for wildlife all abandoned land, odd corners of fields, and idle areas. For best results, areas need to be at least one-fourth acre in size. Keep livestock out of these areas.
4. On upland soils plant and maintain evergreens and shrubs in a rod-wide border between woods and fields.
5. Do not drain ponds and depressed areas that are suitable for wildlife.
6. Improve marshy areas by providing level ditches or by otherwise controlling the level of the water.

Drainage

1. Use surface and tile drains to improve soils that are normally wet.
2. For wet soils that cannot be tiled or ditched, choose crops that tolerate water and add adequate amounts of fertilizer.

Management by Capability Units

Soils in one capability unit have about the same limitations and similar risks of damage. The soils in one unit, therefore, need about the same kind of management, though they may have formed from different kinds of parent material and in different ways. The capability units are described in the following pages. The soils in each unit are listed, and management suitable for all the soils of one unit is suggested.

Capability unit I–1

The soils in this unit are deep, dominantly well drained to moderately well drained, and nearly level. They have moderately permeable subsoils and high moisture-supplying capacity. These soils are easy to manage and conserve and are easy to maintain in good tilth. They can be cultivated safely under ordinary good farming practices. The following soils are in this unit:

Bertrand silt loam, 0 to 2 percent slopes.
Dodgeville silt loam, deep, 0 to 2 percent slopes.
Fayette silt loam, uplands, 0 to 2 percent slopes.
Jackson silt loam, 0 to 2 percent slopes.
Muscatine silt loam.
Richwood silt loam, 0 to 2 percent slopes.
Tama silt loam, 0 to 2 percent slopes.
Toddville silt loam, 0 to 2 percent slopes.

If fertility is kept high, these soils can be used intensively for corn, small grains, and forage crops, and for peas, potatoes, tobacco, and other special crops. The soils are also well suited to pasture or wildlife areas, and the light-colored soils are well suited to trees.

Suitable cropping systems for these soils are—

2 years of row crops followed by 1 year each of a small grain and hay.
2 years of row crops followed by 1 year of a small grain and then 2 years of hay.
1 year each of a row crop and a small grain followed by 2 years of hay.
Continuous row crops with a cover crop of rye; or continuous row crops if all crop residues are

plowed under and fertility is kept high. If row crops are grown consecutively, use minimum tillage and keep a cover crop on the field after the row crop has been harvested.

Capability unit IIe-1

This unit is made up of deep, well drained to moderately well drained, gently sloping soils. The soils are moderately permeable and are moderately high in moisture-supplying capacity. They are subject to moderate erosion. Good tilth is fairly easy to maintain. The following soils are in this unit:

Bertrand silt loam, 2 to 6 percent slopes.
Bertrand silt loam, 2 to 6 percent slopes, moderately eroded.
Dodgeville silt loam, deep, 2 to 6 percent slopes.
Dodgeville silt loam, deep, 2 to 6 percent slopes, moderately eroded.
Downs silt loam, 2 to 6 percent slopes.
Downs silt loam, 2 to 6 percent slopes, moderately eroded.
Dubuque silt loam, deep, 2 to 6 percent slopes.
Dubuque silt loam, deep, 2 to 6 percent slopes, moderately eroded.
Fayette silt loam, uplands, 2 to 6 percent slopes.
Fayette silt loam, uplands, 2 to 6 percent slopes, moderately eroded.
Fayette silt loam, valleys, 2 to 6 percent slopes.
Fayette silt loam, valleys, 2 to 6 percent slopes, moderately eroded.
Jackson silt loam, 2 to 6 percent slopes.
Lindstrom silt loam, 2 to 6 percent slopes.
Lindstrom silt loam, 2 to 6 percent slopes, moderately eroded.
Richwood silt loam, 2 to 6 percent slopes.
Richwood silt loam, 2 to 6 percent slopes, moderately eroded.
Rozetta silt loam, 2 to 6 percent slopes, moderately eroded.
Tama silt loam, 2 to 6 percent slopes.
Tama silt loam, 2 to 6 percent slopes, moderately eroded.
Toddville silt loam, 2 to 6 percent slopes.

These soils are suited to corn, small grains, and forage crops, and to tobacco, potatoes, peas, and other special crops. They are also suited to pasture, and the areas can be used to provide food and cover for wildlife. Trees grow well on the light-colored soils in this unit. The soils can be cultivated safely if care is used to protect them from further erosion. Contour stripcropping and terracing are suitable practices to help control further erosion.

Suggested management practices and cropping systems are—

Contour farming: 1 year each of a row crop and a small grain followed by 2 years of hay.
Contour stripcropping: 2 years of row crops, 1 year of a small grain, and then 2 years of hay.
Terracing: 2 years of row crops and 1 year each of a small grain and hay; or 1 year each of a row crop, a small grain, and hay.
Terracing plus wheel-track planting: 5 years of row crops followed by 1 year of a small grain and then 2 years of hay.

Capability unit IIe-2

This unit is made up of moderately deep, well-drained, gently sloping soils that are underlain by sand or by clay weathered from bedrock. The soils are 2 to 3 feet thick. They are moderate in moisture-supplying capacity and are slightly droughty. The soils are subject to moderate erosion. The following soils are in this unit:

Dakota loam, 2 to 6 percent slopes.
Dodgeville silt loam, 2 to 6 percent slopes.
Dodgeville silt loam, 2 to 6 percent slopes, moderately eroded.
Dubuque silt loam, 2 to 6 percent slopes.
Dubuque silt loam, 2 to 6 percent slopes, moderately eroded.
Gale silt loam, 2 to 6 percent slopes.
Gale silt loam, 2 to 6 percent slopes, moderately eroded.
Hesch loam, 2 to 6 percent slopes, moderately eroded.
Tell silt loam, 2 to 6 percent slopes.
Tell silt loam, 2 to 6 percent slopes, moderately eroded.

These soils are well suited to corn, small grains, grasses, and legumes. They also can be used for pasture, for trees, or for wildlife areas. Trees, however, are not well suited to the dark-colored soils in this unit.

If these soils are used for tilled crops, practices are required to protect them from erosion. Contour stripcropping and terracing help prevent erosion and a corresponding lowering of the moisture-holding capacity. The soils are easy to work if the content of organic matter is kept high.

Suggested management practices and cropping systems are—

Contour farming: 1 year each of a row crop and a small grain, and then 2 or 3 years of hay.
Contour stripcropping: 1 year each of a row crop and a small grain, and then 2 years of hay; or 2 years of row crops, 1 year of a small grain, and then 2 years of hay.
Terracing: 2 years of row crops followed by 1 year of a small grain, and then 2 years of hay; or 2 years of row crops followed by 1 year each of a small grain and hay.

Capability unit IIe-6

In this unit are moderately deep, gently sloping soils with subsoils that are moderately slow in permeability. The soils are silty and overlie clayey material weathered from the bedrock. They have good moisture-supplying capacity. These soils are subject to moderate erosion. The Derinda soil has stones on the surface that are numerous enough to hinder tillage. The following soils are in this unit:

Derinda stony silt loam, 2 to 6 percent slopes.
Norwalk silt loam, deep, 2 to 6 percent slopes, moderately eroded.

These soils are suited to corn, small grains, grasses, and legumes. They are fairly well suited to trees and are suitable as wildlife areas.

The soils in this unit are fairly easy to work if the content of organic matter is kept high, erosion is controlled, and excess water is diverted from the areas. In addition, the stones on the Derinda soil need to be removed. Using diversions or terraces on the slopes above will protect these soils from receiving excess water. Stripcropping and terracing help to protect them from erosion.

Suggested management practices and cropping systems are—

Contour farming: 1 year each of a row crop and a small grain and then 2 or more years of hay.
Contour stripcropping: 1 year each of a row crop and a small grain and then 2 years of hay; or 2 years of row crops, 1 year of a small grain, and 3 years of hay.

Terracing: 2 years of row crops followed by 1 year of a small grain and then 2 years of hay; or 2 years of row crops followed by 1 year each of a small grain and hay.

Capability unit IIs-1

This unit is made up of moderately deep, well-drained, nearly level soils that are underlain by loose sand. The soils are on terraces along streams. They have moderate moisture-supplying capacity, but during extended dry periods they are likely to be slightly droughty. The following soils are in this unit:

Dakota loam, 0 to 2 percent slopes.
Tell silt loam, 0 to 2 percent slopes.

These soils are suited to corn, small grains, grasses, and legumes. They are also suited to use as wildlife areas, and the Tell soil is suitable for trees.

If the content of organic matter is kept high, these soils are fairly easy to work. Practices are required to conserve moisture, especially during dry seasons. Using a suitable cropping system and adding manure will help to build up the supply of organic matter. These practices also help to conserve moisture and improve tilth.

Suggested cropping systems are—

1 year each of a row crop and a small grain followed by 2 years of hay.

2 years of row crops and 1 year each of a small grain and hay if all stover and straw are retained on the field.

2 years of row crops and 1 year each of a small grain and hay if large amounts of manure are added when row crops are grown.

Capability unit IIw-1

This unit is made up of dark-colored, deep soils that are somewhat poorly drained or poorly drained. The soils are nearly level and are on low terraces along streams or are on flood plains. Their moisture-holding capacity is high. During wet periods, they are likely to be saturated or flooded. The following soils are in this unit:

Boaz silt loam.
Ettrick silt loam.
Lawson silt loam.
Rowley silt loam.

If adequately drained, these soils are well suited to corn, small grains, grasses, and legumes. Alsike and ladino clovers can be grown, instead of alfalfa, on areas that are not adequately drained. The soils are poorly suited to trees but provide excellent habitats for wildlife.

The soils in this unit are easy to work if the content of organic matter is kept high. Protection from flooding should be provided where needed. Using a suitable cropping system and adding manure will help to build up the supply of organic matter and will help conserve moisture and improve tilth.

Tile drains or open ditches can be used to drain the soils. If tile drains are used, good structure must be maintained in the surface layer so that excess water can enter the soil and move down to the tile. In some places diversions and terraces may be needed to keep excess water off these soils.

Suggested cropping systems are—

If these soils are protected from flooding and are adequately drained, 1 year each of a row crop, a small grain, and hay.

If stover and straw are left on the field, 2 years of row crops followed by 1 year each of a small grain and hay.

Capability unit IIw-2

In this unit are light-colored, deep soils that are somewhat poorly drained. The soils are nearly level. Except for the Stronghurst soil, which is on uplands, they are along streams. The following soils are in this unit:

Curran silt loam, 0 to 3 percent slopes.
Osseo silt loam, 0 to 2 percent slopes.
Stronghurst silt loam, 0 to 2 percent slopes.

If flooding has been controlled and the soils are adequately drained, they can be used intensively and are well suited to corn, small grains, grasses, and legumes. In areas that have not been adequately drained, alsike and ladino clovers can be grown instead of alfalfa. These soils are well suited to trees and to use as wildlife areas.

Surface drains are generally used on these soils. In some places tile drains can be used if outlets are available. If tile drains are used, good structure must be maintained in the soils so that excess moisture can infiltrate and move down to the tile. Adding organic matter and working the soil only when it is dry enough to prevent puddling will help maintain the structure. In places diversions or terraces will be needed on the uplands to control erosion and to keep surplus water off the Stronghurst soil.

Suggested cropping systems are—

If stover and straw are left on the field, 1 year each of a row crop, a small grain, and hay; or 2 years of row crops followed by 1 year each of a small grain and hay.

Capability unit IIw-5

Only one soil—Meridian loam, somewhat poorly drained variant—is in this unit. This soil is moderately deep and overlies loose sand. It is nearly level and has a high water table. In wet seasons the water table is likely to be near the surface.

The high water table in this soil causes the growth of plants to be restricted. As a result, yields are low. If the soil is adequately drained, however, it can be used intensively and is well suited to corn, small grains, grasses, and legumes. In areas that have not been drained, alsike and ladino clovers can be grown instead of alfalfa. This soil is suitable for trees and for wildlife areas.

If outlets are available, open ditches and surface drains can be used to provide drainage. Diversions can be used to keep runoff from adjacent soils off the areas.

Suggested cropping systems are—

If the soil has not been adequately drained, 1 year each of a row crop and a small grain followed by 2 years of hay.

If the soil has been adequately drained, 2 years of row crops followed by 1 year each of a small grain and hay, or 1 year each of a row crop, a small grain, and hay.

Capability unit IIw-11

This unit consists of deep, moderately well drained to well drained soils on flood plains or in small drainageways where they are subject to overflow. The soils are nearly level to gently sloping. They have good permeability and moderately high moisture-supplying capacity. In most areas, however, crops may be damaged by occasional flooding. The following soils are in this unit:

Arenzville silt loam.
Chaseburg fine sandy loam, 0 to 2 percent slopes.
Chaseburg fine sandy loam, 2 to 6 percent slopes.
Chaseburg silt loam, 0 to 2 percent slopes.
Chaseburg silt loam, 2 to 6 percent slopes.
Huntsville silt loam.
Judson silt loam, 0 to 2 percent slopes.
Judson silt loam, 2 to 6 percent slopes.

If these soils are adequately protected from flooding and from deposition of inert or waste materials, they are well suited to corn, small grains, grasses, and legumes. They are also suited to potatoes, peas, and tobacco and other special crops. On the nearly level soils, row crops can be grown continuously if the supply of plant nutrients and content of organic matter are kept high, and if good tilth is maintained. Areas that are flooded frequently or that cannot be reached by farm machinery are best used for pasture, for trees, or for wildlife.

Dikes can be used in some areas to protect these soils from damage resulting from stream overflow. Terracing and stripcropping the slopes above the areas will help to keep materials unsuitable for cultivation from washing onto them.

Suggested management practices and cropping systems are—

If the soils are protected from flooding and deposition, 1 year each of a row crop, a small grain, and hay. If row crops are grown continuously, use minimum tillage, apply large amounts of manure, and return crop residues to the field.

Capability unit IIIe-1

This unit consists of deep, well drained to moderately well drained, loamy soils that are gently sloping to sloping. These soils are on uplands and terrace benches. They have good permeability and moderately high moisture-holding capacity. The hazard of water erosion is moderate. The following soils are in this unit:

Bertrand silt loam, 6 to 12 percent slopes, moderately eroded.
Chaseburg fine sandy loam, 6 to 12 percent slopes.
Chaseburg silt loam, 6 to 12 percent slopes.
Dodgeville soils, deep, 2 to 6 percent slopes, severely eroded.
Dodgeville silt loam, deep, 6 to 12 percent slopes, moderately eroded.
Downs silt loam, 6 to 12 percent slopes, moderately eroded.
Dubuque silt loam, deep, 6 to 12 percent slopes.
Dubuque silt loam, deep, 6 to 12 percent slopes, moderately eroded.
Fayette silt loam, uplands, 6 to 12 percent slopes.
Fayette silt loam, uplands, 6 to 12 percent slopes, moderately eroded.
Fayette silt loam, valleys, 6 to 12 percent slopes, moderately eroded.
Judson silt loam, 6 to 12 percent slopes.
Lindstrom silt loam, 6 to 12 percent slopes.
Lindstrom silt loam, 6 to 12 percent slopes, moderately eroded.
Richwood silt loam, 6 to 12 percent slopes.
Richwood silt loam, 6 to 12 percent slopes, moderately eroded.
Tama silt loam, 6 to 12 percent slopes, moderately eroded.

These soils should not be used for row crops unless practices are applied to protect them from water erosion. If the soils are protected from erosion, they are suited to corn, small grains, grasses, and legumes, as well as to tobacco, potatoes, peas, and other special crops. The soils are also suited to trees and to use as wildlife areas. The light-colored soils are better suited to trees, however, than the dark-colored ones.

If the soils are cultivated, contour stripcropping and terracing are required to help prevent erosion.

Suitable management practices and cropping systems are—

Contour farming: 1 year each of a row crop and a small grain and then 2 years of hay.
Contour stripcropping: 2 years of row crops followed by 1 year of a small grain and then 2 years of hay.
Terracing: 2 years of row crops followed by 1 year each of a small grain and hay; or 1 year each of a row crop, a small grain, and hay.

If no special management practices are used, suitable cropping systems are the following:

1 year of a small grain and then 2 years of hay.
1 year each of a row crop and a small grain and then 3 years of hay.

Capability unit IIIe-2

In this unit are moderately deep, well-drained, gently sloping to sloping, medium-textured soils that are underlain by loose sand, clay, or bedrock. The soils have good permeability and moderate moisture-holding capacity. In dry periods, however, crops are damaged by lack of moisture. The hazard of water erosion is severe. The following soils are in this unit:

Dodgeville silt loam, 6 to 12 percent slopes.
Dodgeville silt loam, 6 to 12 percent slopes, moderately eroded.
Dodgeville soils, 2 to 6 percent slopes, severely eroded.
Dubuque silt loam, 6 to 12 percent slopes.
Dubuque silt loam, 6 to 12 percent slopes, moderately eroded.
Dubuque soils, 2 to 6 percent slopes, severely eroded.
Gale silt loam, 6 to 12 percent slopes.
Gale silt loam, 6 to 12 percent slopes, moderately eroded.
Hesch loam, 6 to 12 percent slopes, moderately eroded.
Tell silt loam, 6 to 12 percent slopes, moderately eroded.

These soils are suited to corn, small grains, grasses, and legumes. Most of them are also suitable for trees and for use as wildlife areas. Trees do not grow well, however, on the Dodgeville soils in this unit.

All of these soils require practices to improve structure, to reduce runoff, and to improve the moisture-holding capacity. They also need practices to control erosion. Some of the soils have already lost most or all of their original surface layer and part of their subsoil through erosion. Further erosion will result in a corresponding lowering of moisture-holding capacity and lower yields. The severely eroded soils need large amounts of manure.

Suggested management practices and cropping systems are—

Contour farming: 1 year each of a row crop and a small grain followed by 3 years of hay.

Contour stripcropping: 2 years of row crops followed by 1 year of a small grain and 2 years of hay; or 1 year each of a row crop and a small grain followed by 2 years of hay.
Terracing: 2 years of row crops followed by 1 year of a small grain and 2 years of hay.

If no special management practices are used, a suitable cropping system is:

1 year of a small grain and 2 or more years of hay.

Capability unit IIIe-3

This unit consists of thin, well-drained, gently sloping soils that are underlain by sandstone or limestone bedrock. The soils are fairly low in moisture-storing capacity and are likely to be droughty. The following soils are in this unit:

Dodgeville silt loam, shallow, 2 to 6 percent slopes, moderately eroded.
Northfield loam, 2 to 6 percent slopes, moderately eroded.

These soils are suited to corn, small grains, grasses, and legumes. They are also suited to use as wildlife areas. Trees can be grown on the Northfield soil.

The soils in this unit require practices to conserve moisture and to help protect them from erosion. Generally, terracing cannot be used because the soils are too shallow, but contour stripcropping can be used to help control erosion. Diversions will be needed in places where the areas above these soils have long slopes.

Suggested management practices and cropping systems are—

Contour farming: 1 year each of a row crop and a small grain followed by 2 years of hay.
Contour stripcropping: 2 years of row crops followed by 1 year of a small grain and then by 2 years of hay.

If no special management practices are used, a suitable cropping system is 1 year of a small grain and then hay or pasture.

Capability unit IIIe-6

This unit consists of moderately deep, sloping soils with subsoils in which permeability is moderately slow. As a result of the moderately slow permeability, the movement of water through the soils is restricted. During wet periods, crops are likely to be damaged by excess water. The hazard of erosion is severe, and, in addition, the Derinda soil has many stones on the surface. The following soils are in this unit:

Derinda stony silt loam, 6 to 12 percent slopes.
Norwalk silt loam, deep, 6 to 12 percent slopes, moderately eroded.

These soils are suited to corn, small grains, grasses, and legumes. They are also suited to trees and to use as wildlife areas.

Practices are needed to improve the structure and permeability of these soils, to help control erosion, and to improve tilth. Diversions are required on the slopes above them to keep excess water off the areas. Terracing or stripcropping will help to protect the soils from erosion.

Suggested management practices and cropping systems are—

Contour farming: 1 year each of a row crop and a small grain followed by 2 years of hay.
Contour stripcropping: 2 years of row crops followed by 1 year of a small grain and 2 years of hay; or 1 year each of a row crop and a small grain followed by 2 years of hay.
Terracing: 2 years of row crops followed by 1 year each of a small grain and hay.

If no special management practices are used, a suitable cropping system is the following:

1 year each of a row crop and a small grain and then 3 years of hay.

Capability unit IIIs-2

This unit consists of moderately deep, nearly level to gently sloping soils that are underlain by loose sand or bedrock. The soils are somewhat excessively drained. They are rapidly permeable and have low moisture-holding capacity. Consequently, they are droughty, and in dry periods crops are often damaged by lack of moisture. If left unprotected, the soils are likely to be eroded by wind or water. The following soils are in this unit:

Dakota sandy loam, 0 to 2 percent slopes.
Dakota sandy loam, 2 to 6 percent slopes.
Dakota sandy loam, 2 to 6 percent slopes, moderately eroded.
Hixton sandy loam, 2 to 6 percent slopes, moderately eroded.
Meridian sandy loam, 0 to 2 percent slopes.
Meridian sandy loam, 2 to 6 percent slopes.
Meridian sandy loam, 2 to 6 percent slopes, moderately eroded.

These soils are suited to all of the cultivated crops commonly grown in the county. They are better suited to crops that tolerate dry weather, however, than to crops that need large amounts of moisture. The soils are suited to pasture and trees and can be used as wildlife areas.

The soils in this unit require practices to conserve moisture and to protect them from erosion. Keeping the surface of the soils rough or using crop residues as a mulch will help protect them from wind erosion and from loss of moisture. In addition, crop residues and green manure ought to be turned under and barnyard manure should be added. Wind stripcropping and planting shelterbelts in suitable places will help protect the soils from damage by wind. Contour stripcropping will help to control both wind and water erosion.

Crops on these soils respond well to supplemental irrigation, especially during periods of low rainfall. The nearly level areas can be used intensively for cultivated crops if wind erosion is controlled and the content of organic matter is kept high.

For the gently sloping areas, suitable management practices and cropping systems are—

Contour stripcropping: 2 years of row crops followed by 1 year of a small grain and then by 2 years of hay; or 1 year each of a row crop and a small grain followed by 2 years of hay.
Terracing: 1 year each of a row crop, a small grain, and hay; or 2 years of row crops followed by 1 year each of a small grain and hay.

If no special management practices are used, a suggested cropping system is—

1 year of a row crop followed by a small grain and then by 3 years of hay.

Capability unit IIIw-2

This unit consists of deep, somewhat poorly drained soils that are gently sloping. The soils have moderate to moderately slow permeability and high moisture-holding capacity. The Osseo soil is on the floors of narrow valleys, where it is subject to overflow by streams. The floodwaters also deposit waste materials that are not suitable for agriculture on this soil. The Stronghurst soils are on uplands and are subject to moderate erosion. The following soils are in this unit:

Osseo silt loam, 2 to 6 percent slopes.
Stronghurst silt loam, 2 to 6 percent slopes.
Stronghurst silt loam, 2 to 6 percent slopes, moderately eroded.

If the soils in this unit are drained, they can be used safely for cultivated crops and are well suited to corn and to small grains, grasses, and legumes. The Osseo soil, however, in addition to drainage, will require protection from floods. If the soils have not been adequately drained, alsike and ladino clovers should be grown instead of alfalfa. The soils are also suitable for trees and for use as wildlife areas.

Diversions or terraces can be used to keep surplus water off these soils. Contour stripcropping will help to protect the soils from erosion. Surface ditches and tile drains can be used to provide drainage if suitable outlets are available.

Suggested management practices and cropping systems are—

Contour farming: 1 year each of a row crop and a small grain and then 2 years of hay.
Contour stripcropping: 2 years of row crops, 1 year of a small grain, and then 2 years of hay.
Terracing: 1 year each of a row crop, a small grain, and hay; or 2 years of row crops followed by 1 year each of a small grain and hay.

If no special management practices are used, a suitable cropping system is—

1 year each of a row crop and a small grain and then 3 years of hay.

Capability unit IIIw-3

Only one soil—Millsdale silty clay loam, shale variant—is in this unit. This soil is deep and poorly drained. It has a slowly permeable, clayey subsoil. The soil is gently sloping and is on uplands. It is likely to be wet and has a moderate susceptibility to water erosion. Protection from runoff from adjacent higher lying areas is required.

If it is adequately drained, this soil is suited to corn, small grains, grasses, and legumes. If adequate drainage has not been provided, however, alfalfa should not be grown. The soil is well suited to pasture or to use as wildlife areas, but even if drained, it is poorly suited to trees.

Diversions or terraces can be used to keep runoff water off this soil, and terracing and stripcropping will help to protect it from erosion. The use of tile, to provide drainage is questionable, but surface drains can be used.

If this soil has been drained, suggested management practices and cropping systems are—

Contour stripcropping: 2 years of row crops, 1 year of a small grain, and 2 years of hay.
Terracing: 1 year each of a row crop, a small grain, and hay; or 2 years of row crops and 1 year each of a small grain and hay.

If adequate drainage has not been established, keep the soil in pasture or hay.

Capability unit IIIw-5

Only one soil—Dillon loamy fine sand—is in this unit. This soil is on terraces along streams. It is deep, nearly level, and sandy. The water table is high, and drainage is required if crops are to make satisfactory yields. If drained, the areas require protection from wind erosion.

If this soil is drained, it is suited to corn, small grains, grasses, legumes, and special crops. It is also well suited to trees. If it has not been drained, it has only a limited use as pasture but is suitable for wildlife areas.

Tile drains are not satisfactory for this soil, but, if outlets are available, open ditches can be used to provide drainage. In many places, however, ditches are hard to maintain. Wind stripcropping, planting windbreaks, and keeping a cover crop on the soil will help to control wind erosion.

If good drainage is established, suggested management practices and cropping systems are—

1 year each of a row crop and a small grain followed by 2 years of hay; 2 years of row crops and 1 year of a small grain and hay with all stover and straw left on the field; or 2 years of row crops and 1 year each of a small grain and hay if large amounts of manure are applied when row crops are grown.

Capability unit IIIw-9

This unit is made up of deep, poorly drained, organic soils. The soils are nearly level and are on bottoms along streams. They must be drained if crops are to make satisfactory yields. If the soils are drained, the larger areas are likely to require protection from wind erosion. The following soils are in this unit:

Peat and Muck, deep.
Wallkill silt loam.

If these soils are drained, they are suited to corn, small grains, grasses, and legumes, and to tobacco, potatoes, peas, and other special crops. Row crops can be grown continuously if drainage is provided and the soils are well managed. Areas that have not been drained can be used to a limited extent for pasture and trees but are also well suited to use as wildlife areas.

Tile drains or open ditches can be used to provide drainage if adequate outlets are available. If drainage is controlled, the water table can be kept at or near the surface when crops are not being grown. Controlled drainage will help to prevent rapid oxidation and settling of these soils. Wind stripcropping, planting shelterbelts, and growing cover crops will help to protect the larger areas from wind erosion.

Capability unit IIIw-14

In this unit are deep, medium-textured soils on flood plains that are subject to frequent overflow. In most places the water table is at a depth of 5 feet or less. The areas require protection from flooding, and in some places surface drainage is needed. The following soils are in this unit:

Loamy alluvial land.
Orion silt loam.

Unless these soils are protected from flooding, they are best used for pasture, trees, or wildlife areas. If they have been protected from flooding, the soils are well suited to corn, small grains, grasses, and legumes, and to tobacco, potatoes, peas, and other special crops. Cleared areas that have not been protected from flooding are best kept in permanent pasture.

Dikes can be used to protect the soils from flooding. In some places surface drainage is required if high yields are to be obtained.

If the areas have been protected from flooding, a suggested cropping system is—

2 years of row crops followed by 1 year each of a small grain and hay.

Capability unit IVe-1

This unit is made up of deep, well-drained, silty soils that are sloping to strongly sloping. The soils are on uplands. They have moderate moisture-supplying capacity. Because of their strong slopes, all of these soils are subject to severe erosion, and some are already seriously eroded. If they are used for cultivated crops, these soils require practices to protect them from erosion. The following soils are in this unit:

Dodgeville soils, deep, 6 to 12 percent slopes, severely eroded.
Dodgeville silt loam, deep, 12 to 20 percent slopes.
Dodgeville silt loam, deep, 12 to 20 percent slopes, moderately eroded.
Dubuque soils, deep, 6 to 12 percent slopes, severely eroded.
Dubuque silt loam, deep, 12 to 20 percent slopes.
Dubuque silt loam, deep, 12 to 20 percent slopes, moderately eroded.
Fayette silt loam, uplands, 6 to 12 percent slopes, severely eroded.
Fayette silt loam, uplands, 12 to 20 percent slopes.
Fayette silt loam, uplands, 12 to 20 percent slopes, moderately eroded.
Fayette silt loam, valleys, 12 to 20 percent slopes, moderately eroded.
Lindstrom silt loam, 12 to 20 percent slopes.
Lindstrom silt loam, 12 to 20 percent slopes, moderately eroded.

These soils will require careful management if they are cultivated. Nevertheless, they are suited to corn, small grains, grasses, and legumes, and they are also suited to trees and to use as wildlife areas. Trees grow better on the light-colored soils in this unit, however, than on the dark-colored ones.

Terracing or contour stripcropping is needed to control erosion on these soils. Grassed waterways that will carry runoff water safely to natural drainageways should also be used.

Suggested management practices and cropping systems are—

Contour stripcropping: 1 year each of a row crop and a small grain followed by 3 years of hay.
Terracing: 1 year each of a row crop and a small grain and then 2 years of hay. Diversion terraces can be substituted for regular field terraces.

If contour stripcropping or terracing is not used, the cropping system should consist of small grains and hay.

Capability unit IVe-2

This unit consists of well-drained, sloping soils that are moderately deep over bedrock. The soils are on uplands. All of them are stony, are subject to severe erosion, or are eroded. They are moderately low in moisture-holding capacity and require practices to conserve moisture. The following soils are in this unit:

Dodgeville soils, 6 to 12 percent slopes, severely eroded.
Dodgeville silt loam, 12 to 20 percent slopes.
Dodgeville silt loam, 12 to 20 percent slopes, moderately eroded.
Dubuque soils, 6 to 12 percent slopes, severely eroded.
Dubuque silt loam, 12 to 20 percent slopes.
Dubuque silt loam, 12 to 20 percent slopes, moderately eroded.
Gale silt loam, 6 to 12 percent slopes, severely eroded.
Gale silt loam, 12 to 20 percent slopes.
Gale silt loam, 12 to 20 percent slopes, moderately eroded.
Hesch loam, 12 to 20 percent slopes, moderately eroded.

These soils are suited to small grains and hay. Most of them are also suited to trees or to use as wildlife areas. Trees, however, are not well suited to the dark-colored soils in this unit. If the soils are used for row crops, they should be terraced or stripcropped. After testing the soils, add enough lime and fertilizer to raise fertility to a high level. Then, supply enough additional plant nutrients during each rotation to keep the fertility high.

Suggested management practices and cropping systems are-

Contour stripcropping: 1 year each of a row crop and a small grain and 3 years of hay.
Contour stripcropping and wheel-track planting: 1 year each of a row crop and a small grain followed by 2 years of hay.
Terracing: 1 year each of a row crop and a small grain and then 2 years of hay.

If no special management practices are used, the cropping system should consist of a small grain and hay.

Capability unit IVe-3

In this unit are soils that are dominantly somewhat excessively drained and that are shallow over bedrock. The soils are sloping and are on uplands where depth to bedrock is generally between 1 and 2 feet. They have moderately low moisture-holding capacity and are droughty, especially during extended periods of dry weather. Further erosion will make them even more droughty. The following soils are in this unit:

Dodgeville silt loam, shallow, 4 to 12 percent slopes.
Dodgeville silt loam, shallow, 6 to 12 percent slopes, moderately eroded.
Northfield loam, 6 to 12 percent slopes.
Northfield loam, 6 to 12 percent slopes, moderately eroded.
Northfield sandy loam, 6 to 12 percent slopes.
Northfield sandy loam, 6 to 12 percent slopes, moderately eroded.
Sogn and Dodgeville silt loams, shallow, 2 to 6 percent slopes.
Sogn and Dodgeville silt loams, shallow, 2 to 6 percent slopes, moderately eroded.

These soils are suited to small grains, legumes, hay, and permanent pasture. They have limited suitability for trees. Small areas where rock outcrops are common can be used to provide cover for wildlife.

Because these soils are shallow, terraces cannot be used. Stripcropping is difficult in some places because of outcrops of rock.

Suggested management practice and cropping systems are—

Contour stripcropping: 1 year each of a row crop and a small grain followed by 3 years of hay.

If contour stripcropping is not used, the areas are best kept in small grains and hay.

Capability unit IVe–7

In this unit are moderately deep, strongly sloping sandy loams that overlie loose sand or bedrock. All of these soils have a sandy surface layer. The soils are droughty and are subject to erosion. They require practices to conserve moisture and to prevent runoff water from washing over them. The following soils are in this unit:

Dakota sandy loam, 6 to 12 percent slopes, moderately eroded.
Hixton sandy loam, 6 to 12 percent slopes.
Hixton sandy loam, 6 to 12 percent slopes, moderately eroded.
Meridian sandy loam, 6 to 12 percent slopes.
Meridian sandy loam, 6 to 12 percent slopes, moderately eroded.

These soils are suited to corn, soybeans, small grains, and hay. They are also suited to trees and to use as wildlife areas.

Terracing, contour stripcropping, and use of grassed waterways will help to protect the soils from erosion. Controlling weeds and adding organic matter frequently will help to conserve moisture and control erosion. In some places diversions are needed on the upper parts of slopes to divert runoff and prevent water from washing over these soils.

Suggested management practices and cropping systems are—

Contour stripcropping: 1 year each of a row crop and a small grain followed by 3 years of hay.
Contour stripcropping and wheel-track planting or terracing: 1 year each of a row crop and a small grain followed by 2 years of hay.

If no special management practices are used, keep the soils in small grains and hay.

Capability unit IVs–3

In this unit are deep loamy fine sands that are nearly level to sloping. The soils are dominantly droughty. If they are cultivated, the hazard of erosion is severe. The following soils are in this unit:

Gotham loamy fine sand, 0 to 2 percent slopes.
Gotham loamy fine sand, 2 to 6 percent slopes.
Gotham loamy fine sand, 2 to 8 percent slopes, eroded.
Plainfield loamy fine sand, 0 to 2 percent slopes.
Plainfield loamy fine sand, 2 to 6 percent slopes.
Plainfield loamy fine sand, mottled substratum variant.
Sparta loamy fine sand, 0 to 2 percent slopes.
Sparta loamy fine sand, 0 to 2 percent slopes, eroded.
Sparta loamy fine sand, 2 to 6 percent slopes.
Sparta loamy fine sand, 2 to 6 percent slopes, eroded.
Sparta loamy fine sand, moderately well drained variant.

These soils can be used to grow corn, soybeans, small grains, and hay. They can also be used for pasture and are suited to trees and to use as wildlife areas.

Planting shelterbelts, wind stripcropping, and keeping a cover crop on the areas will help to protect the soils from erosion. In addition, turning under all crop residues will maintain the content of organic matter and will help to keep the soils from blowing. Pastured areas require adequate amounts of fertilizer and protection from overgrazing if good stands of grasses and legumes are to be maintained.

Suggested management practices and cropping systems are—

Contour stripcropping or wind stripcropping: 1 year each of a row crop and a small grain and then 2 years of hay.

If contour stripcropping or wind stripcropping is not used, a suitable cropping system is—

1 year of a small grain followed by 2 years of hay.

Capability unit IVs–4

Only one soil—Dubuque stony silt loam, 2 to 6 percent slopes, moderately eroded—is in this unit. This well-drained, sloping soil is moderately deep over bedrock. It has moderate susceptibility to erosion and contains stones that interfere with cultivation. The soil is moderately low in moisture-holding capacity, and it requires practices to conserve moisture.

This soil is better suited to small grains and hay than to crops that require tillage. It is also suited to trees and to use as wildlife areas. If the soil is used for row crops, it should be stripcropped. Supply enough plant nutrients during each rotation to maintain a high level of fertility.

Suggested management practices and cropping systems are—

Contour stripcropping: 1 year each of a row crop and a small grain and then 3 years of hay.

If no special management practices are used, the cropping system should consist of a small grain and hay.

Capability unit Vw–7

Peat and Muck, shallow, make up this unit. The soils consist of thin deposits of organic material that overlie loose sand. They are on bottoms along streams and are nearly level. The water table is at or near the surface, and the areas are subject to flooding. Generally, it is not feasible economically to protect the areas from flooding or to provide drainage needed for crops.

These soils generally are not suitable for cultivation. They probably are best suited to permanent pasture, to trees, or to use as wildlife areas.

In some places pastures on these soils can be improved by fertilizing and renovating them. Apply lime and fertilizer according to the needs indicated by soil tests.

Areas of these soils can be improved by establishing plantings that will provide food and cover for wildlife. In some places level ditches can be used to improve the areas for muskrats and ducks.

Capability unit Vw-15

Only one soil—Loamy alluvial land, poorly drained—is in this unit. This soil is made up of mixed, alluvial deposits on bottoms along streams. The water table is high in this soil, and there is a severe hazard of flooding.

It generally is not feasible to protect this soil from overflow or to provide drainage needed for tilled crops. As a result, the soil is not suited to cultivation and is best used for permanent pasture, for trees, or for wildlife areas.

If protection from flooding can be provided, pastured areas of this soil can be improved by fertilizing and renovating them. The areas can be improved for wildlife by establishing plantings that will provide food and cover. In some areas dikes can be used to control the level of the water and thus improve the areas for waterfowl and fur-bearing animals.

Capability unit VIe-1

This unit consists of deep, well-drained, silty soils that are strongly sloping to steep. The soils have moderate moisture-holding capacity. Some of them are already severely eroded, and the hazard of erosion is severe. The following soils are in this unit:

Dodgeville soils, deep, 12 to 20 percent slopes, severely eroded.
Dubuque soils, deep, 12 to 20 percent slopes, severely eroded.
Dubuque silt loam, deep, 20 to 30 percent slopes.
Dubuque silt loam, deep, 20 to 30 percent slopes, moderately eroded.
Fayette silt loam, uplands, 12 to 20 percent slopes, severely eroded.
Fayette silt loam, uplands, 20 to 30 percent slopes, moderately eroded.
Fayette silt loam, valleys, 12 to 20 percent slopes, severely eroded.
Fayette silt loam, valleys, 20 to 30 percent slopes.

These soils are suited to small grains, grasses, and legumes. They are also suited to pasture, and all but the Dodgeville soils are well suited to trees. The soils also can be used as wildlife areas.

Row crops should not be grown, but, if the soils are used for row crops, the areas need to be stripcropped. If small grains, grasses, and legumes are grown, the level of fertility should be kept high and the soils should be protected from erosion. In places, diversions will be needed to keep runoff water off the areas. Areas where runoff concentrates should be kept in grassed waterways.

If these soils are used for pasture, the areas should be stocked properly and grazing rotated. The pastures will also need to be renovated. In most places renovation is feasible.

If contour stripcropping is used, a suggested cropping system is—

1 year of a small grain and then 3 years of hay.

If contour stripcropping is not used, renovate every 3 or 4 years and plant a mixture of grasses and legumes, or keep in permanent bluegrass pasture.

Capability unit VIe-2

In this unit are well-drained, strongly sloping to steep soils that are moderately deep over bedrock. The soils are subject to severe erosion, are already severely eroded, are somewhat droughty, or are limited by a combination of these factors. The following soils are in this unit:

Dodgeville silt loam, 20 to 30 percent slopes, moderately eroded.
Dodgeville soils, 12 to 20 percent slopes, severely eroded.
Dubuque silt loam, 20 to 30 percent slopes.
Dubuque silt loam, 20 to 30 percent slopes, moderately eroded.
Dubuque soils, 12 to 20 percent slopes, severely eroded.
Gale silt loam, 12 to 20 percent slopes, severely eroded.
Gale silt loam, 20 to 30 percent slopes.
Gale silt loam, 20 to 30 percent slopes, moderately eroded.

Row crops should not be grown on the soils in this unit. The soils are suited to permanent pasture, trees, and wildlife areas, or to a combination of these uses. The Dodgeville soils, however, are less suited to trees than the other soils in this unit. The soils of this unit are also suited to small grains and hay if practices are applied to protect them from erosion.

The supply of plant nutrients and content of organic matter should be kept high in these soils if small grains and hay are grown. Stripcropping, establishing grassed waterways, using diversions, and topdressing with barnyard manure will help to protect the soils from erosion. Pastured areas generally can be renovated.

If contour stripcropping is used, a suggested cropping system is—

1 year of a small grain followed by 3 years of hay.

If contour stripcropping is not used, keep the areas in permanent bluegrass pasture, or renovate every 3 or 4 years and plant a mixture of grasses and legumes.

Capability unit VIe-3

This unit is made up of thin, sloping to strongly sloping soils over limestone or sandstone bedrock. The soils are on uplands and are moderately low in moisture-supplying capacity. The hazard of erosion is severe. If the soils are cultivated, practices are required to protect them from erosion. The following soils are in this unit:

Dodgeville silt loam, shallow, 12 to 20 percent slopes.
Dodgeville silt loam, shallow, 12 to 20 percent slopes, moderately eroded.
Northfield loam, 12 to 20 percent slopes.
Northfield loam, 12 to 20 percent slopes, moderately eroded.
Northfield sandy loam, 12 to 20 percent slopes.
Northfield sandy loam, 12 to 20 percent slopes, moderately eroded.
Sogn and Dodgeville silt loams, shallow, 6 to 12 percent slopes.
Sogn and Dodgeville silt loams, shallow, 6 to 12 percent slopes, moderately eroded.

Row crops should not be grown on these soils. Because of the limited amount of moisture, only a few kinds of trees will grow on them, and, therefore, the areas are unsuitable for growing trees commercially. The soils are probably best suited to pasture or to use as wildlife areas.

Stripcropping, establishing grassed waterways, and keeping the content of organic matter and supply of plant nutrients high will help to protect the soils from erosion. Because the soils are shallow over bedrock, it is difficult to construct diversions that will protect them from damaging runoff. Renovating the pastured areas, however, is generally feasible.

If contour stripcropping is used, a small grain and hay can be grown in rotation. If contour stripcropping is not used, keep the soils in permanent bluegrass pasture or renovate them every 3 or 4 years and seed to a mixture

of grasses and legumes. Also, apply lime and fertilizer according to the kinds and amounts indicated by soil tests.

Capability unit VIe–7

In this unit are moderately deep, strongly sloping soils that overlie loose sand or bedrock. The soils have moderately low moisture-holding capacity; consequently, they are somewhat droughty. If they are cultivated, erosion is likely to be severe. The following soils are in this unit:

Hixton sandy loam, 12 to 20 percent slopes.
Hixton sandy loam, 12 to 20 percent slopes, moderately eroded.
Terrace escarpments, loamy.

These soils are suited to pasture, to trees, and to use as wildlife areas. Small grains and hay can be grown in rotation if contour stripcropping is used, but the content of organic matter and the supply of plant nutrients should be kept high.

Stripcropping and use of grassed waterways will help control erosion on these soils. Diversions or other devices are needed to spread water and to prevent runoff from the slopes above from concentrating.

Except for the steeply sloping areas of Terrace escarpments, loamy, areas of these soils are well suited to pasture renovation. If the areas are used for permanent bluegrass pasture or are renovated periodically, the fertility level should be kept high. A mixture of grasses and legumes should be seeded in renovated pastures. Also, apply lime and fertilizer in the kinds and amounts indicated by soil tests.

Capability unit VIs–6

This unit consists of sloping to steep, stony soils on uplands. The soils are droughty, stony, or subject to severe erosion, or have a combination of these limiting factors. The following soils are in this unit:

Dubuque stony silt loam, 6 to 12 percent slopes, moderately eroded.
Dubuque stony silt loam, 12 to 20 percent slopes.
Dubuque stony silt loam, 12 to 20 percent slopes, moderately eroded.
Fayette stony silt loam, valleys, 6 to 12 percent slopes.
Fayette stony silt loam, valleys, 12 to 20 percent slopes.
Fayette stony silt loam, valleys, 12 to 20 percent slopes, moderately eroded.
Fayette stony silt loam, valleys, 20 to 30 percent slopes.
Gale stony silt loam, 6 to 12 percent slopes.
Gale stony silt loam, 6 to 12 percent slopes, moderately eroded.
Gale stony silt loam, 12 to 20 percent slopes.
Gale stony silt loam, 12 to 20 percent slopes, moderately eroded.
Northfield stony loam, 6 to 20 percent slopes.
Northfield stony loam, 12 to 20 percent slopes, moderately eroded.
Stony alluvial land.

These soils are suited to trees and to use as wildlife areas, but some of the soils could be cleared and used for pasture. If feasible to do so, areas that are pastured should be renovated. Then, seed a mixture of grasses and legumes, and apply lime and fertilizer in the kinds and amounts indicated by soil tests. In addition, rotate grazing on pastured areas and protect the soils from overgrazing. Also, for soils that are used for permanent bluegrass pasture, keep the level of fertility high.

Capability unit VIIe–2

This unit consists of well-drained, steep, moderately deep soils that overlie bedrock. The soils are on uplands. The hazard of erosion is very severe. The following soils are in this unit:

Dubuque silt loam, 30 to 45 percent slopes.
Dubuque silt loam, 30 to 45 percent slopes, moderately eroded.
Dubuque soils, 20 to 30 percent slopes, severely eroded.

These soils are not suited to cultivated crops and are mainly in trees. If cleared, they have only a limited use for pasture. Because of the steep slopes, the pastures cannot be improved. Areas that are pastured require protection from overgrazing so that the sod will not be damaged.

The wooded areas need to be protected from damage by fire and livestock. Cutting the trees selectively encourages growth of the more desirable kinds of trees. Open areas should be planted to suitable kinds of trees. Establishing plantings to provide food and cover for wildlife will induce desirable kinds of wild animals and birds to stay in the areas.

Capability unit VIIe–3

This unit consists of strongly sloping to steep, thin soils that overlie bedrock. The soils are excessively drained. They are droughty, and the hazard of erosion is very severe. The following soils are in this unit:

Northfield loam, 20 to 30 percent slopes.
Northfield loam, 20 to 30 percent slopes, moderately eroded.
Northfield sandy loam, 20 to 30 percent slopes.
Northfield sandy loam, 20 to 30 percent slopes, moderately eroded.
Sogn and Dodgeville silt loams, shallow, 12 to 20 percent slopes.
Sogn and Dodgeville silt loams, shallow, 12 to 20 percent slopes, moderately eroded.
Sogn and Dodgeville silt loams, shallow, 20 to 30 percent slopes.
Sogn and Dodgeville silt loams, shallow, 20 to 30 percent slopes, moderately eroded.

These soils are not suitable for cultivated crops and should be kept under a protective cover of grass or trees. If cleared, they can be used for pasture. Areas that are pastured need careful management, including protection from overgrazing, to prevent the sod from being damaged.

The soils in this unit are probably best suited to trees and wildlife. If used for these purposes, they should be managed the same as the soils in capability unit VIIe–2.

Capability unit VIIe–7

In this unit are moderately deep, sloping to steep soils that overlie loose sand or bedrock. The soils are excessively drained. They are very droughty and are susceptible to very severe erosion. The following soils are in this unit:

Hesch sandy loam, 20 to 30 percent slopes, moderately eroded.
Hixton sandy loam, 12 to 20 percent slopes, severely eroded.
Hixton sandy loam, 20 to 30 percent slopes.
Hixton sandy loam, 20 to 30 percent slopes, moderately eroded.
Hixton sandy loam, 30 to 45 percent slopes.
Terrace escarpments, sandy.

These soils generally are not suited to pasture and are best kept in trees. Open areas should be planted to pines.

Capability unit VIIs–3

This unit consists of deep, loose sands that are subject to severe wind erosion. The soils are very droughty. The following soils are in this unit:

Boone fine sand, 6 to 12 percent slopes, eroded.
Boone fine sand, 12 to 30 percent slopes, eroded.
Plainfield fine sand, 0 to 6 percent slopes, eroded.
Plainfield and Sparta fine sands and Dune land.
Riverwash.

These soils are best suited to trees. They can also be used to provide food and cover for wildlife. A protective cover should be kept on the soils to prevent them from being exposed to wind erosion. Open areas should be planted to pines as rapidly as feasible.

Capability unit VIIs–6

In this unit are steep, stony soils that are shallow over bedrock. The soils are droughty, subject to severe erosion, or both. The following soils are in this unit:

Dubuque stony silt loam, 20 to 30 percent slopes.
Dubuque stony silt loam, 20 to 30 percent slopes, moderately eroded.
Gale stony silt loam, 20 to 30 percent slopes.
Gale stony silt loam, 20 to 30 percent slopes, moderately eroded.
Mine pits and dumps.
Northfield stony loam, 20 to 30 percent slopes.
Northfield stony loam, 20 to 30 percent slopes, moderately eroded.
Steep stony and rocky land.

These soils have a limited use for pasture and are probably best kept in trees. If they are used for pasture, care is required to prevent overgrazing and damage to the sod.

Capability unit VIIIw–15

Only one soil—Marsh—is in this unit. This soil consists of marshy areas on bottoms along streams. The areas are flooded most of the year. They are covered by cattails, bulrushes, and other plants that grow in shallow water.

Marsh is not suitable for pasture or trees, but it is suitable for wildlife habitats and for use as recreational areas. Providing ditches to control the level of the water will help to improve the areas for ducks, muskrats, and other wildlife. In dry seasons when vegetation burns readily, the areas need protection from fire.

Consult the State Conservation Department or the local representative of the Soil Conservation Service for information about how to develop the areas for wildlife and recreation.

Estimated Yields

The estimated average acre yields of the principal field and forage crops obtained on each soil in Iowa County are given in table 2. The estimates were based on interviews with farmers; on results obtained by the staff of the agricultural experiment station on test plots located within the county; and on observations made by soil surveyors, work unit conservationists, and other agricultural workers who are familiar with the soils.[3]

[3] KLINGELHOETS, A. J. PRODUCTIVITY RATINGS FOR SOILS OF CRAWFORD, GRANT, AND RICHLAND COUNTIES, WISCONSIN. 1948. [Unpublished thesis, Univ. of Wis.]

TABLE 2.—*Estimated average acre yields of principal crops under two levels of management*

[Dashes indicate soil is not suitable for the crop or that the crop ordinarily is not grown]

Soil units	Corn (grain)		Corn (silage)		Oats		Clover-timothy hay		Alfalfa-bromegrass hay		Permanent pasture	
	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)
	Bu.	*Bu.*	*Tons*	*Tons*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Cow-acre-days*[1]	*Cow-acre-days*[1]
Arenzville silt loam	60	85	10.5	12.0	52	65	2.0	2.5	3.2	3.8	110	145
Bertrand silt loam, 0 to 2 percent slopes	60	90	10.5	12.0	55	70	2.0	2.5	3.0	3.5	95	130
Bertrand silt loam, 2 to 6 percent slopes	60	90	10.5	12.0	52	70	2.0	2.5	3.0	3.5	95	130
Bertrand silt loam, 2 to 6 percent slopes, moderately eroded	55	90	10.5	12.0	50	70	1.8	2.4	2.8	3.3	85	125
Bertrand silt loam, 6 to 12 percent slopes, moderately eroded	50	85	10.0	12.0	45	65	1.8	2.4	2.7	3.2	85	125
Boaz silt loam [2]	40	85	8.0	12.0	40	65	1.8	2.5	------	3.5	90	145
Boone fine sand, 6 to 12 percent slopes, eroded	-----	-----	------	------	-----	-----	------	------	------	------	20	40
Boone fine sand, 12 to 30 percent slopes, eroded	-----	-----	------	------	-----	-----	------	------	------	------	20	35
Chaseburg silt loam, 0 to 2 percent slopes	65	90	11.0	12.0	55	75	2.1	2.6	3.1	3.7	110	145
Chaseburg silt loam, 2 to 6 percent slopes	63	87	11.0	12.0	55	75	2.0	2.5	3.0	3.7	105	140
Chaseburg silt loam, 6 to 12 percent slopes	60	85	10.5	12.0	50	70	1.8	2.4	3.0	3.5	95	135
Chaseburg fine sandy loam, 0 to 2 percent slopes	60	90	10.5	12.0	50	75	2.0	2.5	3.0	3.5	95	140
Chaseburg fine sandy loam, 2 to 6 percent slopes	50	85	10.0	12.0	48	70	1.8	2.4	3.0	3.5	90	135
Chaseburg fine sandy loam, 6 to 12 percent slopes	50	85	10.0	12.0	45	70	1.7	2.3	2.8	3.4	90	135
Curran silt loam, 0 to 3 percent slopes [2]	50	75	10.0	11.5	50	65	1.8	2.4	------	3.0	90	125
Dakota sandy loam, 0 to 2 percent slopes	55	75	10.5	11.5	45	65	1.8	2.2	2.2	3.0	80	115
Dakota sandy loam, 2 to 6 percent slopes	55	75	10.5	11.5	45	65	1.8	2.2	2.2	3.0	80	115
Dakota sandy loam, 2 to 6 percent slopes, moderately eroded	50	70	10.0	11.0	40	60	1.5	2.0	2.1	2.8	75	110

See footnotes at end of table.

TABLE 2.—*Estimated average acre yields of principal crops under two levels of management*—Continued

Soil units	Corn (grain)		Corn (silage)		Oats		Clover-timothy hay		Alfalfa-bromegrass hay		Permanent pasture	
	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)
	Bu.	*Bu.*	*Tons*	*Tons*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Dakota sandy loam, 6 to 12 percent slopes, moderately eroded	45	65	9.0	11.0	40	60	1.5	2.0	2.0	2.8	75	110
Dakota loam, 0 to 2 percent slopes	60	85	10.5	12.0	50	70	2.0	2.4	2.5	3.2	85	120
Dakota loam, 2 to 6 percent slopes	60	85	10.5	12.0	50	70	2.0	2.4	2.5	3.2	85	120
Derinda stony silt loam, 2 to 6 percent slopes	50	85	10.0	12.0	45	70	1.8	2.4	2.5	3.2	90	130
Derinda stony silt loam, 6 to 12 percent slopes	45	83	9.0	11.5	45	70	1.7	2.4	2.0	3.0	90	130
Dillon loamy fine sand [2]	----	55	----	10.0	----	45	----	2.0	----	2.5	60	90
Dodgeville silt loam, 2 to 6 percent slopes	55	80	10.5	11.5	50	65	1.8	2.2	2.6	3.2	85	120
Dodgeville silt loam, 2 to 6 percent slopes, moderately eroded	50	78	10.0	11.5	48	65	1.7	2.2	2.4	3.1	80	115
Dodgeville silt loam, 6 to 12 percent slopes	55	80	10.5	11.5	48	62	1.8	2.2	2.5	3.2	85	120
Dodgeville silt loam, 6 to 12 percent slopes, moderately eroded	50	75	10.0	11.5	45	60	1.6	2.2	2.3	3.0	80	110
Dodgeville silt loam, 12 to 20 percent slopes	----	----	----	----	48	60	1.7	2.2	2.4	3.0	80	115
Dodgeville silt loam, 12 to 20 percent slopes, moderately eroded	----	----	----	----	45	58	1.6	2.1	2.2	2.9	75	110
Dodgeville silt loam, 20 to 30 percent slopes, moderately eroded	----	----	----	----	40	58	1.4	2.0	2.0	2.7	70	105
Dodgeville silt loam, deep, 0 to 2 percent slopes	60	95	10.5	12.0	50	68	2.0	2.5	3.0	3.5	100	130
Dodgeville silt loam, deep, 2 to 6 percent slopes	60	95	10.5	12.0	50	68	2.0	2.5	2.8	3.5	100	130
Dodgeville silt loam, deep, 2 to 6 percent slopes, moderately eroded	58	90	10.5	12.0	48	65	1.9	2.4	2.6	3.4	95	125
Dodgeville silt loam, deep, 6 to 12 percent slopes, moderately eroded	53	85	10.5	12.0	50	65	1.8	2.3	2.8	3.3	90	125
Dodgeville silt loam, deep, 12 to 20 percent slopes	55	85	10.5	12.0	50	65	1.9	2.4	2.5	3.0	95	130
Dodgeville silt loam, deep, 12 to 20 percent slopes, moderately eroded	50	80	10.0	11.5	48	65	1.8	2.3	2.4	3.0	90	125
Dodgeville silt loam, shallow, 4 to 12 percent slopes	42	65	8.0	11.0	40	58	1.4	1.9	2.0	2.5	65	85
Dodgeville silt loam, shallow, 2 to 6 percent slopes, moderately eroded	40	60	8.0	10.5	35	55	1.3	1.8	1.8	2.3	60	80
Dodgeville silt loam, shallow, 6 to 12 percent slopes, moderately eroded	38	60	7.5	10.5	32	55	1.2	1.8	1.8	2.3	60	80
Dodgeville silt loam, shallow, 12 to 20 percent slopes	----	----	----	----	35	55	1.3	1.8	1.7	2.2	55	75
Dodgeville silt loam, shallow, 12 to 20 percent slopes, moderately eroded	----	----	----	----	30	50	1.0	1.6	1.5	2.0	50	70
Dodgeville soils, 2 to 6 percent slopes, severely eroded	45	75	9.0	11.5	45	60	1.5	2.0	2.2	3.0	70	110
Dodgeville soils, 6 to 12 percent slopes, severely eroded	42	75	8.0	11.5	40	58	1.4	2.0	2.1	3.0	70	110
Dodgeville soils, 12 to 20 percent slopes, severely eroded	----	----	----	----	38	55	1.4	1.9	2.0	2.8	65	105
Dodgeville soils, deep, 2 to 6 percent slopes, severely eroded	55	85	10.5	12.0	45	65	1.8	2.4	2.5	3.2	90	120
Dodgeville soils, deep, 6 to 12 percent slopes, severely eroded	47	75	9.5	11.5	45	63	1.6	2.2	2.3	3.0	80	120
Dodgeville soils, deep, 12 to 20 percent slopes, severely eroded	----	----	----	----	40	60	1.5	2.0	2.0	2.8	70	115
Downs silt loam, 2 to 6 percent slopes	60	95	10.5	12.5	55	75	2.0	2.6	3.0	3.5	100	140
Downs silt loam, 2 to 6 percent slopes, moderately eroded	58	95	10.5	12.5	50	70	2.0	2.5	2.8	3.5	95	135
Downs silt loam, 6 to 12 percent slopes, moderately eroded	58	90	10.5	12.0	48	68	1.8	2.5	2.7	3.4	90	135
Dubuque silt loam, 2 to 6 percent slopes	50	75	10.0	11.5	40	60	1.5	2.0	2.4	3.0	75	115
Dubuque silt loam, 2 to 6 percent slopes, moderately eroded	45	73	9.0	11.0	38	58	1.4	1.9	2.2	2.8	70	110
Dubuque silt loam, 6 to 12 percent slopes	48	75	9.5	11.5	38	60	1.4	2.0	2.2	2.8	70	115
Dubuque silt loam, 6 to 12 percent slopes, moderately eroded	45	70	9.0	11.0	35	55	1.2	1.8	2.0	2.7	65	100
Dubuque silt loam, 12 to 20 percent slopes	----	----	----	----	38	58	1.3	1.8	2.0	2.6	65	95
Dubuque silt loam, 12 to 20 percent slopes, moderately eroded	----	----	----	----	35	55	1.2	1.6	1.8	2.5	60	85
Dubuque silt loam, 20 to 30 percent slopes	----	----	----	----	35	50	1.2	1.6	1.8	2.5	60	85
Dubuque silt loam, 20 to 30 percent slopes, moderately eroded	----	----	----	----	32	48	1.0	1.5	1.5	2.3	55	80
Dubuque silt loam, 30 to 45 percent slopes	----	----	----	----	----	----	----	----	----	----	55	----
Dubuque silt loam, 30 to 45 percent slopes, moderately eroded	----	----	----	----	----	----	----	----	----	----	45	----
Dubuque silt loam,deep, 2 to 6 percent slopes	60	90	10.5	12.0	50	65	1.8	2.5	2.8	3.4	90	135

See footnotes at end of table.

TABLE 2.—*Estimated average acre yields of principal crops under two levels of management*—Continued

Soil units	Corn (grain)		Corn (silage)		Oats		Clover-timothy hay		Alfalfa-bromegrass hay		Permanent pasture	
	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)
	Bu.	*Bu.*	*Tons*	*Tons*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Dubuque silt loam, deep, 2 to 6 percent slopes, moderately eroded	55	85	10. 5	12. 0	48	65	1. 7	2. 3	2. 6	3. 2	85	125
Dubuque silt loam, deep, 6 to 12 percent slopes	58	85	10. 5	12. 0	50	65	1. 8	2. 5	2. 6	3. 3	85	130
Dubuque silt loam, deep, 6 to 12 percent slopes, moderately eroded	55	80	10. 5	11. 5	45	63	1. 7	2. 3	2. 4	3. 2	80	125
Dubuque silt loam, deep, 12 to 20 percent slopes	50	80	10. 0	11. 5	45	65	1. 7	2. 4	2. 4	3. 2	80	125
Dubuque silt loam, deep, 12 to 20 percent slopes, moderately eroded	45	75	9. 0	11. 5	40	62	1. 6	2. 2	2. 2	3. 0	75	115
Dubuque silt loam, deep, 20 to 30 percent slopes	-----	-----	-----	-----	40	60	1. 6	2. 2	2. 3	3. 0	75	110
Dubuque silt loam, deep, 20 to 30 percent slopes, moderately eroded	-----	-----	-----	-----	35	58	1. 5	2. 1	2. 0	2. 7	65	105
Dubuque soils, 2 to 6 percent slopes, severely eroded	42	65	8. 0	11. 0	38	58	1. 2	1. 8	1. 8	2. 5	55	85
Dubuque soils, 6 to 12 percent slopes, severely eroded	40	60	8. 0	10. 5	35	55	1. 2	1. 7	1. 8	2. 5	55	80
Dubuque soils, 12 to 20 percent slopes, severely eroded	-----	-----	-----	-----	32	55	1. 0	1. 5	1. 7	2. 5	50	80
Dubuque soils, 20 to 30 percent slopes, severely eroded	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	45	75
Dubuque soils, deep, 6 to 12 percent slopes, severely eroded	48	75	9. 0	11. 5	40	60	1. 5	2. 1	2. 2	3. 0	75	120
Dubuque soils, deep, 12 to 20 percent slopes, severely eroded	-----	-----	-----	-----	38	58	1. 5	2. 0	2. 0	2. 8	70	110
Dubuque stony silt loam, 2 to 6 percent slopes, moderately eroded	45	60	9. 0	10. 5	38	58	1. 2	1. 8	2. 0	2. 6	60	100
Dubuque stony silt loam, 6 to 12 percent slopes, moderately eroded	-----	-----	-----	-----	38	55	1. 2	1. 8	1. 8	2. 5	60	95
Dubuque stony silt loam, 12 to 20 percent slopes	-----	-----	-----	-----	35	55	1. 2	1. 8	1. 8	2. 4	60	90
Dubuque stony silt loam, 12 to 20 percent slopes, moderately eroded	-----	-----	-----	-----	32	50	1. 0	1. 5	1. 6	2. 2	50	80
Dubuque stony silt loam, 20 to 30 percent slopes	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	50	80
Dubuque stony silt loam, 20 to 30 percent slopes, moderately eroded	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	45	75
Ettrick silt loam [2]	-----	85	-----	12. 0	-----	70	-----	2. 5	-----	3. 5	80	145
Fayette silt loam, uplands, 0 to 2 percent slopes	55	90	10. 5	12. 0	55	75	2. 0	2. 6	3. 0	3. 5	95	140
Fayette silt loam, uplands, 2 to 6 percent slopes	55	90	10. 5	12. 0	52	75	2. 0	2. 6	3. 0	3. 5	95	140
Fayette silt loam, uplands, 2 to 6 percent slopes, moderately eroded	52	85	10. 5	12. 0	50	70	1. 8	2. 5	2. 8	3. 3	85	130
Fayette silt loam, uplands, 6 to 12 percent slopes	52	85	10. 5	12. 0	50	72	2. 0	2. 5	3. 0	3. 5	90	135
Fayette silt loam, uplands, 6 to 12 percent slopes, moderately eroded	50	80	10. 0	11. 5	45	65	1. 8	2. 4	2. 6	3. 3	85	125
Fayette silt loam, uplands, 6 to 12 percent slopes, severely eroded	47	75	9. 5	11. 5	42	60	1. 6	2. 2	2. 4	3. 0	75	120
Fayette silt loam, uplands, 12 to 20 percent slopes	50	80	10. 0	11. 5	45	65	1. 8	2. 4	2. 5	3. 0	80	125
Fayette silt loam, uplands, 12 to 20 percent slopes, moderately eroded	45	75	9. 0	11. 5	40	60	1. 6	2. 3	2. 4	3. 0	75	120
Fayette silt loam, uplands, 12 to 20 percent slopes, severely eroded	-----	-----	-----	-----	38	55	1. 5	2. 0	2. 2	2. 8	70	110
Fayette silt loam, uplands, 20 to 30 percent slopes, moderately eroded	-----	-----	-----	-----	38	55	1. 5	2. 2	2. 2	2. 8	70	110
Fayette silt loam, valleys, 2 to 6 percent slopes	60	95	10. 5	12. 0	55	80	2. 2	2. 6	3. 2	3. 6	105	145
Fayette silt loam, valleys, 2 to 6 percent slopes, moderately eroded	55	90	10. 5	12. 0	52	75	2. 0	2. 6	3. 0	3. 5	95	140
Fayette silt loam, valleys, 6 to 12 percent slopes, moderately eroded	55	85	10. 5	12. 0	50	75	2. 0	2. 6	2. 8	3. 4	90	130
Fayette silt loam, valleys, 12 to 20 percent slopes, moderately eroded	48	75	9. 5	11. 5	45	65	1. 8	2. 4	2. 6	3. 2	85	130
Fayette silt loam, valleys, 12 to 20 percent slopes, severely eroded	-----	-----	-----	-----	40	65	1. 6	2. 3	2. 2	3. 0	75	125
Fayette silt loam, valleys, 20 to 30 percent slopes	-----	-----	-----	-----	40	65	1. 6	2. 2	2. 2	2. 8	70	115
Fayette stony silt loam, valleys, 6 to 12 percent slopes	-----	-----	-----	-----	45	70	1. 8	2. 5	2. 5	3. 2	85	125
Fayette stony silt loam, valleys, 12 to 20 percent slopes	-----	-----	-----	-----	40	62	1. 6	2. 4	2. 4	3. 2	80	120
Fayette stony silt loam, valleys, 12 to 20 percent slopes, moderately eroded	-----	-----	-----	-----	38	60	1. 6	2. 2	2. 4	3. 0	75	115
Fayette stony silt loam, valleys, 20 to 30 percent slopes	-----	-----	-----	-----	35	55	1. 4	2. 0	2. 0	2. 6	65	105
Gale silt loam, 2 to 6 percent slopes	55	80	10. 5	11. 5	50	70	1. 8	2. 4	2. 4	3. 0	75	120
Gale silt loam, 2 to 6 percent slopes, moderately eroded	52	78	10. 5	11. 5	48	65	1. 6	2. 2	2. 2	2. 8	70	110
Gale silt loam, 6 to 12 percent slopes	55	80	10. 5	11. 5	45	65	1. 5	2. 0	2. 0	2. 6	70	105

See footnotes at end of table.

TABLE 2.—*Estimated average acre yields of principal crops under two levels of management*—Continued

Soil units	Corn (grain)		Corn (silage)		Oats		Clover-timothy hay		Alfalfa-bromegrass hay		Permanent pasture	
	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)
	Bu.	*Bu.*	*Tons*	*Tons*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Gale silt loam, 6 to 12 percent slopes, moderately eroded	50	76	10.0	11.5	40	60	1.4	1.8	1.8	2.4	65	100
Gale silt loam, 6 to 12 percent slopes, severely eroded	40	60	8.0	10.5	35	55	1.3	1.7	1.8	2.2	60	95
Gale silt loam, 12 to 20 percent slopes	-----	-----	------	------	40	60	1.4	1.8	1.8	2.5	60	105
Gale silt loam, 12 to 20 percent slopes, moderately eroded	-----	-----	------	------	38	55	1.3	1.8	1.6	2.2	55	90
Gale silt loam, 12 to 20 percent slopes, severely eroded	-----	-----	------	------	35	50	1.0	1.5	1.6	2.0	50	80
Gale silt loam, 20 to 30 percent slopes	-----	-----	------	------	38	55	1.2	1.6	1.6	2.2	55	90
Gale silt loam, 20 to 30 percent slopes, moderately eroded	-----	-----	------	------	35	50	1.0	1.5	1.6	2.2	55	85
Gale stony silt loam, 6 to 12 percent slopes	-----	-----	------	------	40	60	1.4	2.0	1.8	2.5	65	105
Gale stony silt loam, 6 to 12 percent slopes, moderately eroded	-----	-----	------	------	38	55	1.2	1.8	1.6	2.3	60	95
Gale stony silt loam, 12 to 20 percent slopes	-----	-----	------	------	38	60	1.2	1.7	1.6	2.4	55	95
Gale stony silt loam, 12 to 20 percent slopes, moderately eroded	-----	-----	------	------	35	55	1.0	1.5	1.5	2.2	50	90
Gale stony silt loam, 20 to 30 percent slopes	-----	-----	------	------	-----	-----	------	------	------	------	50	90
Gale stony silt loam, 20 to 30 percent slopes, moderately eroded	-----	-----	------	------	-----	-----	------	------	------	------	45	85
Gotham loamy fine sand, 0 to 2 percent slopes	40	65	8.0	11.0	40	60	1.0	1.5	1.6	2.2	50	85
Gotham loamy fine sand, 2 to 6 percent slopes	40	60	8.0	10.5	40	60	1.0	1.4	1.6	2.2	50	85
Gotham loamy fine sand, 2 to 8 percent slopes, eroded	35	55	7.0	10.5	38	55	.8	1.2	1.5	2.0	45	80
Hesch loam, 2 to 6 percent slopes, moderately eroded	55	85	10.5	11.5	45	65	1.6	2.2	2.0	2.6	65	105
Hesch loam, 6 to 12 percent slopes, moderately eroded	50	80	10.0	11.5	40	58	1.4	1.8	1.8	2.4	60	95
Hesch loam, 12 to 20 percent slopes, moderately eroded	-----	-----	------	------	38	55	1.3	1.7	1.7	2.2	60	90
Hesch sandy loam, 20 to 30 percent slopes, moderately eroded	-----	-----	------	------	-----	-----	------	------	------	------	45	75
Hixton sandy loam, 2 to 6 percent slopes, moderately eroded	45	75	9.0	11.5	40	58	1.2	1.7	1.8	2.4	60	90
Hixton sandy loam, 6 to 12 percent slopes	42	70	8.5	11.0	35	58	1.0	1.6	1.8	2.4	60	90
Hixton sandy loam, 6 to 12 percent slopes, moderately eroded	40	65	8.0	11.0	32	55	.8	1.4	1.6	2.2	50	85
Hixton sandy loam, 12 to 20 percent slopes	-----	-----	------	------	32	58	.8	1.4	1.7	2.3	55	85
Hixton sandy loam, 12 to 20 percent slopes, moderately eroded	-----	-----	------	------	30	50	.8	1.2	1.4	1.8	45	80
Hixton sandy loam, 12 to 20 percent slopes, severely eroded	-----	-----	------	------	-----	-----	------	------	------	------	35	65
Hixton sandy loam, 20 to 30 percent slopes	-----	-----	------	------	-----	-----	------	------	------	------	40	70
Hixton sandy loam, 20 to 30 percent slopes, moderately eroded	-----	-----	------	------	-----	-----	------	------	------	------	35	65
Hixton sandy loam, 30 to 45 percent slopes	-----	-----	------	------	-----	-----	------	------	------	------	-----	-----
Huntsville silt loam	65	100	11.0	12.5	55	70	2.2	2.5	3.2	3.7	115	150
Jackson silt loam, 0 to 2 percent slopes	60	90	10.5	12.0	55	75	2.0	2.5	3.0	3.5	100	145
Jackson silt loam, 2 to 6 percent slopes	60	90	10.5	12.0	55	70	2.0	2.5	3.0	3.5	95	140
Judson silt loam, 0 to 2 percent slopes	65	100	11.0	12.5	55	70	2.2	2.6	3.2	3.7	115	150
Judson silt loam, 2 to 6 percent slopes	60	95	10.5	12.0	55	68	2.2	2.5	3.0	3.5	105	145
Judson silt loam, 6 to 12 percent slopes	58	95	10.5	12.0	50	65	2.0	2.4	3.0	3.5	100	140
Lawson silt loam [2]	-----	100	------	12.5	-----	70	1.8	2.5	------	3.5	95	150
Lindstrom silt loam, 2 to 6 percent slopes	62	95	11.0	12.0	55	75	2.2	2.6	3.2	3.7	110	145
Lindstrom silt loam, 2 to 6 percent slopes, moderately eroded	60	95	11.0	12.0	50	75	2.0	2.5	3.0	3.6	90	140
Lindstrom silt loam, 6 to 12 percent slopes	60	90	11.0	12.0	50	70	2.0	2.5	3.0	3.5	85	135
Lindstrom silt loam, 6 to 12 percent slopes, moderately eroded	55	85	10.5	12.0	45	65	1.8	2.4	2.8	3.4	90	130
Lindstrom silt loam, 12 to 20 percent slopes	55	80	10.5	11.5	45	65	1.8	2.4	2.8	3.4	85	125
Lindstrom silt loam, 12 to 20 percent slopes, moderately eroded	50	80	10.0	11.5	40	62	1.7	2.3	2.6	3.3	80	125
Loamy alluvial land	45	75	9.0	11.5	40	60	1.5	2.0	2.0	3.0	100	145
Loamy alluvial land, poorly drained [2]	-----	-----	------	------	-----	-----	------	------	------	------	50	80
Marsh	-----	-----	------	------	-----	-----	------	------	------	------	-----	-----
Meridian sandy loam, 0 to 2 percent slopes	45	75	9.0	11.5	45	65	1.2	1.8	2.0	2.5	60	95
Meridian sandy loam, 2 to 6 percent slopes	42	75	8.5	11.0	42	60	1.2	1.7	1.8	2.4	55	90
Meridian sandy loam, 2 to 6 percent slopes, moderately eroded	40	70	8.0	11.0	40	58	1.0	1.5	1.6	2.2	50	85
Meridian sandy loam, 6 to 12 percent slopes	40	65	8.0	11.0	40	60	1.0	1.6	1.7	2.3	50	90
Meridian sandy loam, 6 to 12 percent slopes, moderately eroded	35	60	7.0	11.0	35	55	.8	1.4	1.5	2.2	45	85

See footnotes at end of table.

TABLE 2.—*Estimated average acre yields of principal crops under two levels of management*—Continued

Soil units	Corn (grain)		Corn (silage)		Oats		Clover-timothy hay		Alfalfa-bromegrass hay		Permanent pasture	
	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)
	Bu.	*Bu.*	*Tons*	*Tons*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Meridian loam, somewhat poorly drained variant	40	80	8.0	11.5	40	65	1.4	2.0	------	3.0	80	125
Millsdale silty clay loam, shale variant [2]	-----	85	------	12.0	-----	70	------	2.5	------	3.0	75	130
Mine pits and dumps												
Muscatine silt loam	65	100	11.0	12.5	55	70	2.2	2.6	3.0	3.7	115	150
Northfield loam, 2 to 6 percent slopes, moderately eroded	40	65	8.0	11.0	40	60	1.4	1.8	2.0	2.5	60	90
Northfield loam, 6 to 12 percent slopes	42	65	8.0	11.0	42	60	1.4	1.8	2.0	2.5	60	95
Northfield loam, 6 to 12 percent slopes, moderately eroded	38	60	8.0	11.0	40	58	1.3	1.7	1.8	2.2	55	85
Northfield loam, 12 to 20 percent slopes	40	60	8.0	11.0	40	60	1.2	1.7	1.9	2.4	60	90
Northfield loam, 12 to 20 percent slopes, moderately eroded	35	55	7.0	10.5	35	55	1.0	1.5	1.6	2.0	50	80
Northfield loam, 20 to 30 percent slopes	-----	-----	------	------	-----	-----	------	------	------	------	55	80
Northfield loam, 20 to 30 percent slopes, moderately eroded	-----	-----	------	------	-----	-----	------	------	------	------	50	75
Northfield sandy loam, 6 to 12 percent slopes	38	60	8.0	11.0	40	55	1.2	1.6	1.8	2.4	50	80
Northfield sandy loam, 6 to 12 percent slopes, moderately eroded	35	55	7.0	10.5	35	50	1.0	1.5	1.5	2.2	45	75
Northfield sandy loam, 12 to 20 percent slopes	-----	-----	------	------	38	52	1.0	1.5	1.6	2.2	45	75
Northfield sandy loam, 12 to 20 percent slopes, moderately eroded	-----	-----	------	------	32	48	.8	1.3	1.4	2.0	40	70
Northfield sandy loam, 20 to 30 percent slopes	-----	-----	------	------	-----	-----	------	------	------	------	40	65
Northfield sandy loam, 20 to 30 percent slopes, moderately eroded	-----	-----	------	------	-----	-----	------	------	------	------	35	60
Northfield stony loam, 6 to 20 percent slopes	-----	-----	------	------	35	55	1.2	1.6	1.8	2.2	55	85
Northfield stony loam, 12 to 20 percent slopes, moderately eroded	-----	-----	------	------	32	50	1.0	1.4	1.5	1.8	45	75
Northfield stony loam, 20 to 30 percent slopes	-----	-----	------	------	-----	-----	------	------	------	------	50	75
Northfield stony loam, 20 to 30 percent slopes, moderately eroded	-----	-----	------	------	-----	-----	------	------	------	------	40	65
Norwalk silt loam, deep, 2 to 6 percent slopes, moderately eroded	55	85	10.5	12.0	55	75	2.0	2.5	3.0	3.5	95	140
Norwalk silt loam, deep, 6 to 12 percent slopes, moderately eroded	50	80	10.0	11.5	50	75	1.8	2.4	3.0	3.5	90	135
Orion silt loam [2]	45	85	9.0	12.0	42	65	2.0	2.5	------	3.5	95	145
Osseo silt loam, 0 to 2 percent slopes [2]	50	85	10.0	12.0	45	65	2.0	2.5	------	3.5	100	145
Osseo silt loam, 2 to 6 percent slopes	50	80	10.0	11.5	45	65	2.0	2.5	------	3.4	95	140
Peat and Muck, deep [2]	-----	90	------	12.0	-----	60	------	2.5	------	3.0	60	130
Peat and Muck, shallow	-----	-----	------	------	-----	-----	------	------	------	------	55	130
Plainfield fine sand, 0 to 6 percent slopes, eroded	-----	-----	------	------	-----	-----	------	------	------	------	20	40
Plainfield loamy fine sand, 0 to 2 percent slopes	25	40	5.0	8.0	30	50	------	------	1.0	1.6	30	50
Plainfield loamy fine sand, 2 to 6 percent slopes	20	35	5.0	7.0	28	50	------	------	1.0	1.5	28	50
Plainfield loamy fine sand, mottled substratum variant	30	45	7.0	9.0	30	45	1.0	1.5	1.6	2.2	50	90
Plainfield and Sparta fine sands and Dune land												
Richwood silt loam, 0 to 2 percent slopes	65	95	11.0	12.5	55	70	2.2	2.6	3.2	3.6	110	145
Richwood silt loam, 2 to 6 percent slopes	60	95	11.0	12.5	55	68	2.0	2.5	3.1	3.5	105	140
Richwood silt loam, 2 to 6 percent slopes, moderately eroded	55	95	10.5	12.5	50	65	1.8	2.5	3.0	3.5	100	140
Richwood silt loam, 6 to 12 percent slopes	55	90	10.5	12.0	50	68	1.8	2.5	2.8	3.4	90	135
Richwood silt loam, 6 to 12 percent slopes, moderately eroded	50	95	10.0	12.0	50	65	1.7	2.4	2.8	3.4	85	135
Riverwash											20	
Rowley silt loam [2]	50	100	10.0	12.5	45	70	1.8	2.6	------	3.8	95	150
Rozetta silt loam, 2 to 6 percent slopes, moderately eroded	55	85	10.5	12.0	50	70	1.8	2.5	2.8	3.5	95	135
Sogn and Dodgeville silt loams, shallow, 2 to 6 percent slopes	35	55	7.0	10.5	35	50	1.2	1.8	1.5	2.0	55	80
Sogn and Dodgeville silt loams, shallow, 2 to 6 percent slopes, moderately eroded	30	45	6.0	9.0	30	45	1.0	1.5	1.2	1.7	50	70
Sogn and Dodgeville silt loams, shallow, 6 to 12 percent slopes	-----	-----	------	------	32	48	1.2	1.7	1.4	1.8	55	75
Sogn and Dodgeville silt loams, shallow, 6 to 12 percent slopes, moderately eroded	-----	-----	------	------	28	40	.9	1.4	1.0	1.6	45	65
Sogn and Dodgeville silt loams, shallow, 12 to 20 percent slopes	-----	-----	------	------	-----	-----	------	------	------	------	50	70

See footnotes at end of table.

TABLE 2.—*Estimated average acre yields of principal crops under two levels of management*—Continued

Soil units	Corn (grain)		Corn (silage)		Oats		Clover-timothy hay		Alfalfa-bromegrass hay		Permanent pasture	
	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)
	Bu.	*Bu.*	*Tons*	*Tons*	*Bu.*	*Bu.*	*Tons*	*Tons*	*Tons*	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]
Sogn and Dodgeville silt loams, shallow, 12 to 20 percent slopes, moderately eroded											40	65
Sogn and Dodgeville silt loams, shallow, 20 to 30 percent slopes											45	70
Sogn and Dodgeville silt loams, shallow, 20 to 30 percent slopes, moderately eroded											38	60
Sparta loamy fine sand, 0 to 2 percent slopes	30	45	7.0	9.0	35	50			1.2	1.8	40	60
Sparta loamy fine sand, 0 to 2 percent slopes, eroded	25	40	5.0	8.0	30	45			1.0	1.6	35	50
Sparta loamy fine sand, 2 to 6 percent slopes	28	45	6.0	9.0	32	45			1.2	1.7	40	55
Sparta loamy fine sand, 2 to 6 percent slopes, eroded	25	40	5.0	8.0	28	40			1.0	1.5	30	50
Sparta loamy fine sand, moderately well drained variant	35	50	7.0	10.0	30	45	1.0	1.5	1.5	2.0	50	75
Steep stony and rocky land												
Stony alluvial land											70	
Stronghurst silt loam, 0 to 2 percent slopes [2]	48	85	9.5	12.0	50	75	2.0	2.5		3.5	100	140
Stronghurst silt loam, 2 to 6 percent slopes	50	85	10.0	12.0	45	70	1.8	2.5		3.5	95	140
Stronghurst silt loam, 2 to 6 percent slopes, moderately eroded	45	80	9.5	11.5	42	65	1.7	2.3		3.4	85	135
Tama silt loam, 0 to 2 percent slopes	65	95	11.0	12.5	55	70	2.2	2.6	3.2	3.6	110	145
Tama silt loam, 2 to 6 percent slopes	65	95	11.0	12.5	52	70	2.1	2.5	3.1	3.6	105	140
Tama silt loam, 2 to 6 percent slopes, moderately eroded	60	90	10.5	12.0	50	65	2.0	2.5	3.0	3.5	100	140
Tama silt loam, 6 to 12 percent slopes, moderately eroded	55	85	10.5	12.0	45	65	1.8	2.4	2.8	3.4	85	130
Tell silt loam, 0 to 2 percent slopes	55	80	10.5	11.5	50	70	1.8	2.4	2.4	3.0	75	125
Tell silt loam, 2 to 6 percent slopes	50	80	10.0	11.5	48	68	1.6	2.2	2.2	2.8	70	120
Tell silt loam, 2 to 6 percent slopes, moderately eroded	45	75	9.5	11.5	45	65	1.5	2.0	2.0	2.4	65	110
Tell silt loam, 6 to 12 percent slopes, moderately eroded	42	75	9.0	11.5	40	60	1.4	1.8	1.8	2.4	65	105
Terrace escarpments, sandy											35	55
Terrace escarpments, loamy							1.0	1.5	1.8	2.5	55	85
Toddville silt loam, 0 to 2 percent slopes [2]	65	100	11.0	12.5	55	70	2.2	2.6	3.0	3.6	110	150
Toddville silt loam, 2 to 6 percent slopes [2]	60	100	10.5	12.5	55	70	2.2	2.6	3.0	3.6	105	150
Wallkill silt loam [2]		90		12.0		65		2.5		3.0	65	145

[1] Cow-acre-days is a term used to express the carrying capacity of pasture. This value is obtained by multiplying the number of animal units carried per acre by the number of days the pasture is grazed during a single grazing season without injury to the sod.

[2] Soil requires adequate drainage to obtain maximum yields.

In columns A are average yields obtained under the management common in the county at the time the soil survey was made. This management includes the use of barnyard manure, starter fertilizer for corn, and little or no fertilizer for small grains or hay crops. It also includes planting hybrid seed corn at the rate of about 12,000 plants per acre. Under this management, a minimum amount of lime is applied for alfalfa. Hayfields are cut twice each year and are grazed in fall. No special practices are used in preparing the seedbed or in cultivating.

Yields in columns B are those to be expected if the management practices suggested in the subsection "Management by Capability Units" are used. These include applying lime and fertilizer in amounts indicated by soil tests. For corn, larger amounts of fertilizer are applied than are applied under common management, and fertilizer is used for small grains and hay. Suitable cropping systems are used, and seeding, spraying, and cultivating of crops are timely.

For the yields in columns B, hybrid seed corn is planted at the rate of 16,000 to 18,000 plants per acre. Varieties of small grains that have been tested are seeded. If alfalfa is to be grown, enough lime is applied to bring the pH of the soil to 6.5 or 7.0. Varieties of alfalfa are seeded that are resistant to wilt and to winterkill, and a topdressing of manure or of a commercial fertilizer high in potash is applied. The alfalfa crop is harvested to get three crops a year, and there is no grazing of the fields in fall.

Even higher yields than those given in table 2 are possible. On some soils it will pay to make heavy applications of nitrogen, phosphate, and potash, and possibly of minor elements, such as boron. Many farmers can produce more corn than 100 bushels per acre. In some places, especially on light-colored or sandy soils, split applications of nitrogen can be applied as a side dressing to corn or other cultivated crops in addition to plowing under heavy applications of a commercial fertilizer. Consult your county agent or a representative of the experiment station for specific suggestions on the kinds and quantities of fertilizer, lime, and mixtures of seed to use.

Woodland Uses of Soils

In Iowa County woodlands on farms occupy 103,859 acres, or 22.1 percent of the total land in farms. The woodlots provide timber for sale and for use on the farms. In addition, they help to prevent erosion and provide protection for wildlife. Much of the timber taken from the woodlots is used on the farms as rough lumber or for flooring, fenceposts, or firewood. A small amount is sold.

Trees generally grow well on the better agricultural soils, but they also grow well on soils that are too wet, stony, steep, or eroded for cultivated crops. Steep, stony, and sandy soils, for example, are often too droughty for crops that have a shallow root system. On these soils trees can often make excellent growth if the water table is within reach of their roots. Thus, a soil that is not suitable for field crops may be highly desirable for trees.

The dark-colored prairie soils are not so well suited to trees as the other soils in the county, and little timber is grown on them. Trees suitable for wood products do not grow well on the prairie soils, and the quality of the timber is likely to be poor.

The growth of trees is affected by heat and dry winds in summer. Generally, trees grow well on cool sites that have north- and east-facing slopes; trees on hot, south- and west-facing slopes, however, do not yield so much wood as those on the cooler sites, nor is the quality of the wood so good.

Table 3 gives estimated yields of timber for the soil types and miscellaneous land types of Iowa County. The figures given are for well-managed stands of hardwoods and pines that have good tree density. To get yields such as these from most of the timber stands in the county requires good management. Because of logging, grazing, and fires, most stands now have low tree density.

The board feet and cord figures given in table 3 are for usable timber produced and are not for total production per acre. The estimated figures are based on interviews with foresters, on observations of soil surveyors and woodland conservationists, and on results of tests made on woodland plots. The data are based on production estimates that were made by the Lake States Forest Experiment Station (*2*) and the Wisconsin Conservation Department (*9*) with interpolations for individual soil types.

Most of the woodlots in the county produce much less than they are capable of producing. About 84 percent of the acreage in woodlands is used for pasture. The value of these areas and of other wooded tracts could be increased by protecting them from trampling and from grazing by livestock. It can also be increased by preventing fires, removing cull trees and weed trees systematically, and thinning the trees so that more desirable ones can grow (fig. 8). Grazing damages a wooded area as much as overcutting or burning. The grazing animals cause excessive erosion by trampling the soil. Their browsing damages or kills the young trees and undergrowth. Furthermore, wooded areas, used for pasture, do not provide enough forage to be desirable as pasture. Experiments show that 1 acre of renovated pasture yields more than 11 times as much forage as 1 acre of wooded pasture (*1*).

***Figure 8.*—Stand of trees that have been cut selectively. This stand will provide excellent salable timber.**

The management of a wooded area depends on its present condition and on the kinds of trees to be grown. If the area has been grazed heavily, replanting may be necessary. In areas that have not been grazed or that have been grazed only lightly, the cull trees and weed trees should be removed. In thinning, the space left around each tree should be adequate so that the remaining trees will be well shaped. The trees removed in thinning can be used for posts, for fuel, or as pulpwood.

If a large number of trees must be removed, it is best to divide the area into plots or strips. One strip can then be cleared and replanted and the trees allowed to become established before the next strip is cleared. In selecting the kinds of trees to be planted, consult your farm forester or soil conservationist.

Engineering Properties of the Soils [4]

This section contains information that will help engineers to select sites for buildings for residential, industrial, and other purposes; to choose locations for highways; to determine the trafficability of soils; and to locate sand, gravel, and rock for use in construction. It will also help in planning dams, ponds, and other structures to control floods and conserve soil and water.

The soil map and accompanying report are too generalized for some engineering purposes, but they provide information that is valuable in planning detailed engineering field surveys and tests to determine the in-place condition of soils at proposed sites for construction. After testing the soil materials and observing their behavior in place and under varying conditions, the engineer can anticipate, to some extent, the properties of individual soils, wherever they are mapped. As a result, a minimum number of soil samples will be required to provide the information needed.

[4] A. W. KOWITZ, State conservation engineer, Soil Conservation Service, assisted in the preparation of this section.

TABLE 3.—*Estimated potential annual acre yields of usable timber produced from well-managed stands that have good tree density*

[Dashes indicate trees do not grow on a soil of this soil type or that the soil type is not suited to the species indicated]

Name	North- and east-facing sites [1]		South- and west-facing sites [2]	
	Hardwoods	Pines	Hardwoods	Pines
	Bd. ft.	*Bd. ft.*	*Bd. ft.*	*Bd. ft.*
Arenzville silt loam	275			
Bertrand silt loam	250			
Boaz silt loam	175			
Boone fine sand		150		[3]
Chaseburg silt loam	275			
Chaseburg fine sandy loam	275			
Curran silt loam	150			
Dakota sandy loam [4]	100	300		
Dakota loam	150	300		
Derinda stony silt loam	200		125	
Dillon loamy fine sand		200		
Dodgeville silt loam				
Dodgeville silt loam, deep				
Dodgeville silt loam, shallow				
Dodgeville soils				
Downs silt loam	200		125	
Dubuque silt loam	150		100	
Dubuque silt loam, deep	200		125	
Dubuque soils	125		75	
Dubuque stony silt loam	150		100	
Ettrick silt loam	100			
Fayette silt loam, uplands	225		150	
Fayette silt loam, valleys	275		175	
Fayette stony silt loam, valleys	250		150	
Gale silt loam	175	300	100	200
Gale stony silt loam	175	300	100	200
Gotham loamy fine sand [4]	100	250		
Hesch loam	150	300	100	200
Hesch sandy loam	125	300	[3]	200
Hixton sandy loam	150	300	[3]	200
Huntsville silt loam				
Jackson silt loam	200			
Judson silt loam	275			
Lawson silt loam				
Lindstrom silt loam	275		175	
Loamy alluvial land	200			
Loamy alluvial land, poorly drained	100			
Marsh				
Meridian sandy loam [4]	150	300		
Meridian loam, somewhat poorly drained variant	175	300		
Millsdale silty clay loam, shale variant				
Mine pits and dumps				
Muscatine silt loam				
Northfield loam	150	250	75	175
Northfield sandy loam	125	225	[3]	150
Northfield stony loam	150	250	75	175
Norwalk silt loam, deep	175		100	
Orion silt loam	200			
Osseo silt loam	225			
Peat and Muck, deep	150			
Peat and Muck, shallow	125			
Plainfield fine sand [4]		[5]		
Plainfield loamy fine sand [4]		[5]		
Plainfield loamy fine sand, mottled substratum variant		250		
Plainfield and Sparta fine sands and Dune land [4]		[5]		
Richwood silt loam				
Riverwash	[5]	[5]		
Rowley silt loam				
Rozetta silt loam	200		125	
Sogn and Dodgeville silt loams, shallow				
Sparta loamy fine sand [4]		[5]		
Sparta loamy fine sand, moderately well drained variant		250		
Stony alluvial land	250			
Steep stony and rocky land	150		75	
Stronghurst silt loam	175		100	
Tama silt loam				
Tell silt loam [4]	175			
Terrace escarpments, sandy		200		[3]
Terrace escarpments, loamy	175	300	75	[3]
Toddville silt loam				
Wallkill silt loam	200	300		

[1] Consists of narrow valleys, of nearly level valley flats, and of north- and east-facing slopes, where the trees are partly protected from heat and drying winds.

[2] Consists of exposed ridgetops and south- and west-facing slopes, where the soils are exposed to high temperatures and drying winds.

[3] On south- and west-facing slopes, pines on the Boone fine sands and on Terrace escarpments, sandy, yield 0.3 cord per acre. On Terrace escarpments, loamy, pines yield 0.5 per acre; on south- and west-facing slopes, hardwoods on the Hesch sandy loams, Hixton sandy loams, and Northfield sandy loams yield 0.2 cord per acre.

[4] If the water table is within 10 feet of the surface, larger yields than those indicated may be expected.

[5] Pines on the Plainfield fine sands and on Riverwash yield 0.4 cord per acre; on the Plainfield loamy fine sands and on the Sparta loamy fine sands, pines yield 0.5 cord per acre; and on the Plainfield and Sparta fine sands, pines yield 0.3 cord per acre. Hardwoods on Riverwash yield 0.3 cord per acre.

Some of the terms used by the soil scientist may not be familiar to the engineer; other terms, though familiar, have special meanings in soil science. The terms used in the three tables, and other special terms used in the report, are discussed in the section "Descriptions of Soils" or defined in the Glossary.

Soil test data

Engineers who work with foundations and embankments need to know about the soils. Information about soils that cover a large area is especially valuable in the construction of highways. This is obtained partly by observing soils in the field and by studying the interpretations made by soil scientists.

Table 4 describes the soils and the properties that are significant to engineering. Table 5 describes the erodibility hazard of each soil; the suitability of each as a source of topping material, of sand, or of fill material for earthen embankments; and the suitability of each as a pond site, for drainage, for irrigation, and for terraces

or diversions. The information about many of the soils is estimated because samples were taken from only eight soil series in the county (see table 6). The estimates were made by comparing the soil with a soil that had been tested.

Table 6 gives data showing moisture density relationships, results of mechanical analysis, and the liquid limit and plasticity index for several of the principal soils. Some of the soil samples described in table 6 were collected by the Soil Conservation Service and were tested by the Division of Physical Research, U.S. Bureau of Public Roads or the Wisconsin State Highway Commission. The rest were collected and tested by the Soil Conservation Service. For the samples tested by the Bureau of Public Roads or the Wisconsin State Highway Commission, the engineering soil classifications given in this table were based on data obtained by mechanical analysis and by tests to determine the liquid limits and plasticity index. Results of the mechanical analyses made by the Bureau of Public Roads were determined by using combined sieve and hydrometer methods. Percentages of clay obtained by the hydrometer method should not be used in naming the textural classes of soils.

The tests to show liquid limit and plastic limit measure the effect of water on the consistence of the soil material. As the moisture content of a soil material increases from a dry state, the material changes from a solid to a semi-solid or plastic state. As the moisture content is further increased, the material changes from a plastic to a liquid state. The plastic limit is the moisture content at which the soil material passes from a solid to a plastic state. The liquid limit is the moisture content at which the material passes from a plastic to a liquid state. The plasticity index is the numerical difference between the liquid limit and plastic limit. It indicates the range of moisture content within which a soil material is in a plastic condition.

Tests for liquid limit and plastic limit were not run on the samples obtained and tested by the Soil Conservation Service. The American Association of State Highway Officials (AASHO) and Unified Classification ratings for those samples obtained and tested by the Soil Conservation Service were also estimated. The estimates were based on the mechanical analyses tests performed and on comparisons with similar soils.

Many of the soils sampled and tested were from counties other than Iowa County. Although the soils are similar, it is recognized that the physical properties of soils of the same series may vary somewhat from one county to another. Therefore, much of the data in table 6 should be used only as a general guide.

Problems in engineering

Soils that erode easily or that are poorly drained pre-

TABLE 4.—*Brief descriptions of the soils and estimated*

Map symbol	Soil	Soil description	Depth to bedrock
Ar	Arenzville silt loam.	Moderately well drained to well drained, deep, silty soil formed in alluvium on the nearly level flood plains of streams; the surface soil is friable, granular silt; the underlying material is friable, massive silt with some thin lenses of sand.	More than 20 feet.
BeA	Bertrand silt loam, 0 to 2 percent slopes.	Well-drained, silty soils on stream terraces; the surface layer is friable, granular silt loam; the subsoil is firm, blocky silty clay loam underlain by friable, stratified silt and sand at a depth below 42 inches.	More than 20 feet.
BeB	Bertrand silt loam, 2 to 6 percent slopes.		
BeB2	Bertrand silt loam, 2 to 6 percent slopes, moderately eroded.		
BeC2	Bertrand silt loam, 6 to 12 percent slopes, moderately eroded.		
Bm	Boaz silt loam.	Somewhat poorly drained, silty soil formed in alluvium on the nearly level flood plains of streams; the surface layer is friable, granular silt loam and is underlain by friable to firm, heavy silt loam to silty clay loam.	More than 20 feet.
BoC2	Boone fine sand, 6 to 12 percent slopes, eroded.	Excessively drained, sandy soils over sandstone bedrock on uplands; the surface layer is very friable, single grain fine sand, and the subsoil is loose, single grain fine sand.	20 inches to 3 feet.
BoD2	Boone fine sand, 12 to 30 percent slopes, eroded.		
CaA	Chaseburg fine sandy loam, 0 to2 percent slopes.	Well drained to moderately well drained, silty alluvial soils in narrow valleys and on fans; the surface layer is friable, granular fine sandy loam or silt loam, the subsoil is friable, blocky silt loam, and the substratum is friable, massive silt loam; in places there are strata of fine sand in the profile; in most places stones occur on the surface.	4 feet or more.
CaB	Chaseburg fine sandy loam, 2 to 6 percent slopes.		
CaC	Chaseburg fine sandy loam, 6 to 12 percent slopes.		
ChA	Chaseburg silt loam, 0 to 2 percent slopes.		
ChB	Chaseburg silt loam, 2 to 6 percent slopes.		
ChC	Chaseburg silt loam, 6 to 12 percent slopes.		
CuA	Curran silt loam, 0 to 3 percent slopes.	Somewhat poorly drained, silty soil on nearly level stream terraces; the surface soil is friable, granular silt loam, the subsoil is firm, blocky silty clay loam, and the substratum is firm, massive silt; stratified sand and silt are at a depth below 40 inches.	More than 20 feet.

See footnotes at end of table.

sent special engineering problems. For example, the soils that have clean sand in the profile and a deep water table are easily eroded by wind when they are exposed in roadways.

In soils that are poorly drained, seepage along the backslope of cuts may cause slumping or sliding of the overlying material. A perched water table beneath a pavement may result in freezing and thawing in the saturated foundation material. This, in turn, may cause differential volume change and a reduction in bearing capacity. Before beginning the construction, therefore, it is important to know the location of poorly drained areas. The poorly drained areas should be inspected in greater detail than other areas to determine the need for interceptor drains and underdrains. The result of laying a paved highway over a somewhat poorly drained soil is shown in figure 9.

There are only a few small areas of poorly drained soils in the uplands. Extensive areas of poorly drained soils occur on the benches and bottoms along streams throughout the county. Adequate drainage must be provided for roads through poorly drained areas. Deposits of organic material should be removed and placed where they will not be detrimental for most types of construction.

Some of the lower parts of the bottom lands are flooded each year. In these areas embankments may be needed to protect the structures. By constructing drainage ditches before earthwork is begun, some of the sandy soils that have a high water table may be made more suitable as a source of borrow material, as well as for excavation for roads.

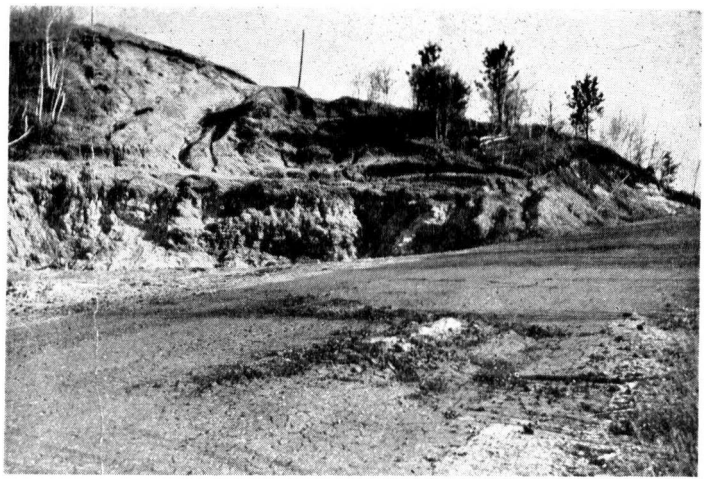

Figure 9.—**Paved highway laid over a somewhat poorly drained soil. Because of seepage, the soil gave poor support to the highway. As a result, breaks occurred. By Soil Survey Division, University of Wisconsin.**

properties significant to engineering

Geologic formation	Permeability of subsoil [1]	Infiltration rate [2]	Depth to water table [3]	Wet consistence		Reaction [4]
				Subsoil	Substratum	
			Feet			
([5])	([6])	Intermediate	5 to 10	Nonsticky and nonplastic.	Nonsticky and nonplastic.	Slightly acid to neutral.
([5])	Moderate	Intermediate	10 or more	Slightly sticky and slightly plastic.	Nonsticky and nonplastic.	Slightly acid to medium acid.
([5])	([6])	Intermediate	2 to 5	Slightly sticky and slightly plastic.	Nonsticky and nonplastic.	Slightly acid to neutral.
St. Peter and Cambrian sandstones.	([6])	High	More than 20	Nonsticky and nonplastic.	Nonsticky and nonplastic.	Medium acid to strongly acid.
Cambrian sandstone.	([6])	Intermediate	5 or more	Nonsticky and nonplastic.	Nonsticky and nonplastic.	Medium acid to neutral.
([5])	Moderately slow.	Intermediate	3 to 6	Slightly sticky and slightly plastic.	Slightly sticky and slightly plastic.	Slightly acid to strongly acid.

TABLE 4.—*Brief descriptions of the soils and estimated*

Map symbol	Soil	Soil description	Depth to bedrock
DaA	Dakota loam, 0 to 2 percent slopes.	Well-drained soils formed in medium-textured outwash, 24 to 40 inches thick, over sand; the soils are on nearly level to gently sloping stream terraces; the surface layer is friable, granular loam, and the subsoil is friable, blocky loam underlain by single grain, loose, stratified sand that contains a few pebbles.	More than 20 feet.
DaB	Dakota loam, 2 to 6 percent slopes.		
DbA	Dakota sandy loam, 0 to 2 percent slopes.	Well-drained soils formed in coarse-textured outwash, 24 to 40 inches thick, over sand; the soils are on stream terraces; the surface layer is very friable, granular sandy loam, and the subsoil is friable, blocky sandy loam to loam underlain by single grain, loose, stratified sand that contains some gravel.	More than 20 feet.
DbB	Dakota sandy loam, 2 to 6 percent slopes.		
DbB2	Dakota sandy loam, 2 to 6 percent slopes, moderately eroded.		
DbC2	Dakota sandy loam, 6 to 12 percent slopes, moderately eroded.		
DeB	Derinda stony silt loam, 2 to 6 percent slopes.	Moderately well drained, silty soil on sloping uplands; the surface layer is friable, granular silt loam, the subsoil is firm, angular blocky silty clay loam, and the substratum is angular blocky and grades to shale bedrock; many large chert boulders and cobbles are in these soils.	20 to 40 inches.
DeC	Derinda stony silt loam, 6 to 12 percent slopes.		
Df	Dillon loamy fine sand.	Poorly drained soil formed in sandy outwash; the soil is on nearly level stream terraces; the surface layer is friable, granular loamy fine sand and is high in organic matter; the substratum is weak, blocky fine sand and grades to single grain, loose fine sand with increasing depth.	More than 20 feet.
DgB	Dodgeville silt loam, 2 to 6 percent slopes.	Well-drained, silty soils over reddish clay that rests on limestone bedrock; the soils are on upland ridges; the surface layer is friable, granular silt loam, the subsoil is firm, blocky silty clay loam to silty clay, and the substratum is angular blocky clay; fragments of chert are in the subsoil and in the substratum.	2 to 4 feet
DgB2	Dodgeville silt loam, 2 to 6 percent slopes, moderately eroded.		
DgC	Dodgeville silt loam, 6 to 12 percent slopes.		
DgC2	Dodgeville silt loam, 6 to 12 percent slopes, moderately eroded.		
DgD	Dodgeville silt loam, 12 to 20 percent slopes.		
DgD2	Dodgeville silt loam, 12 to 20 percent slopes, moderately eroded.		
DgE2	Dodgeville silt loam, 20 to 30 percent slopes, moderately eroded.		
DhA	Dodgeville silt loam, deep, 0 to 2 percent slopes.	Well-drained, deep, silty soils over reddish clay that rests on limestone bedrock; the soils are on upland ridges; the surface layer is friable, granular silt loam, the subsoil is firm, blocky silty clay loam, and the substratum is angular blocky clay; fragments of chert are throughout the lower part of the subsoil and in the substratum.	3 to 6 feet
DhB	Dodgeville silt loam, deep, 2 to 6 percent slopes.		
DhB2	Dodgeville silt loam, deep, 2 to 6 percent slopes, moderately eroded.		
DhC2	Dodgeville silt loam, deep, 6 to 12 percent slopes, moderately eroded.		
DhD	Dodgeville silt loam, deep, 12 to 20 percent slopes.		
DhD2	Dodgeville silt loam, deep, 12 to 20 percent slopes, moderately eroded.		
DnB3	Dodgeville soils, deep, 2 to 6 percent slopes, severely eroded.		
DnC3	Dodgeville soils, deep, 6 to 12 percent slopes, severely eroded.		
DnD3	Dodgeville soils, deep, 12 to 20 percent slopes, severely eroded.		
DlB2	Dodgeville silt loam, shallow, 2 to 6 percent slopes, moderately eroded.	Well-drained, thin, silty soils over reddish clay that rests on limestone bedrock; the soils are on upland ridges; the surface layer is friable, granular, and silty; the subsoil is firm, angular blocky silty clay loam to silty clay and rests on limestone bedrock.	1 to 3 feet
DlC	Dodgeville silt loam, shallow, 4 to 12 percent slopes.		
DlC2	Dodgeville silt loam, shallow, 6 to 12 percent slopes, moderately eroded.		
DlD	Dodgeville silt loam, shallow, 12 to 20 percent slopes.		
DlD2	Dodgeville silt loam, shallow, 12 to 20 percent slopes, moderately eroded.		

See footnotes at end of table.

properties significant to engineering—Continued

Geologic formation	Permeability of subsoil [1]	Infiltration rate [2]	Depth to water table [3]	Wet consistence		Reaction [4]
				Subsoil	Substratum	
			Feet			
(5)	Moderate	Intermediate	5 or more	Slightly sticky and slightly plastic.	Nonsticky and nonplastic.	Slightly acid to neutral.
(5)	Moderately rapid.	High	5 or more	Nonsticky and nonplastic.	Nonsticky and nonplastic.	Slightly acid to neutral.
Maquoketa shale	Moderately slow.	Low	5 or more	Slightly sticky and slightly plastic.	Sticky and plastic	Strongly acid to neutral.
(5)	(6)	High	1 to 3	Nonsticky and nonplastic.	Nonsticky and nonplastic.	Slightly acid to strongly acid.
Galena and Lower Magnesian dolomites.	Moderately slow.	Intermediate	More than 20	Slightly sticky and slightly plastic.	Very sticky and very plastic.	Slightly acid to medium acid.
Galena and Lower Magnesian dolomites.	Moderate	Intermediate	More than 20	Slightly sticky and slightly plastic.	Very sticky and very plastic.	Slightly acid to medium acid.
Galena and Lower Magnesian dolomites.	Moderately slow.	Intermediate	More than 20	Sticky and plastic	Very sticky and very plastic.	Slightly acid to neutral.

TABLE 4.—*Brief descriptions of the soils and estimated*

Map symbol	Soil	Soil description	Depth to bedrock
DmB3	Dodgeville soils, 2 to 6 percent slopes, severely eroded.	Well-drained, thin soils formed in reddish clay that rests on limestone bedrock; the soils are on upland ridges; the surface layer is firm, granular silty clay loam, and the subsoil is firm, angular blocky silty clay that rests on a clay substratum.	1 to 3 feet
DmC3	Dodgeville soils, 6 to 12 percent slopes, severely eroded.		
DmD3	Dodgeville soils, 12 to 20 percent slopes, severely eroded.		
DoB	Downs silt loam, 2 to 6 percent slopes.	Well-drained, deep, silty soils on sloping upland ridges; the surface layer is friable, granular silt loam, the subsoil is firm, blocky silty clay loam, and the substratum is friable, massive silt loam.	4 feet or more
DoB2	Downs silt loam, 2 to 6 percent slopes, moderately eroded.		
DoC2	Downs silt loam, 6 to 12 percent slopes, moderately eroded.		
DsB	Dubuque silt loam, 2 to 6 percent slopes.	Well-drained soils formed in a thin layer of silt over reddish clay that rests on limestone bedrock; the soils are on upland ridges; the surface layer is friable, granular silt loam, the subsoil is firm, angular blocky silty clay loam, and the substratum is angular blocky clay; angular fragments of chert are common in the substratum.	2 to 5 feet
DsB2	Dubuque silt loam, 2 to 6 percent slopes, moderately eroded.		
DsC	Dubuque silt loam, 6 to 12 percent slopes.		
DsC2	Dubuque silt loam, 6 to 12 percent slopes, moderately eroded.		
DsD	Dubuque silt loam, 12 to 20 percent slopes.		
DsD2	Dubuque silt loam, 12 to 20 percent slopes, moderately eroded.		
DsE	Dubuque silt loam, 20 to 30 percent slopes.		
DsE2	Dubuque silt loam, 20 to 30 percent slopes, moderately eroded.		
DsF	Dubuque silt loam, 30 to 45 percent slopes.		
DsF2	Dubuque silt loam, 30 to 45 percent slopes, moderately eroded.		
DtB	Dubuque silt loam, deep, 2 to 6 percent slopes.	Well-drained soils formed in a moderately deep blanket of silt over reddish clay that rests on limestone bedrock; the soils are on upland ridges; the surface layer is friable, granular silt loam, the subsoil is firm, blocky silty clay loam, and the substratum is angular blocky, gritty clay that contains many fragments of chert.	3 to 6 feet
DtB2	Dubuque silt loam, deep, 2 to 6 percent slopes, moderately eroded.		
DtC	Dubuque silt loam, deep, 6 to 12 percent slopes.		
DtC2	Dubuque silt loam, deep, 6 to 12 percent slopes, moderately eroded.		
DtD	Dubuque silt loam, deep, 12 to 20 percent slopes.		
DtD2	Dubuque silt loam, deep, 12 to 20 percent slopes, moderately eroded.		
DtE	Dubuque silt loam, deep, 20 to 30 percent slopes.		
DtE2	Dubuque silt loam, deep, 20 to 30 percent slopes, moderately eroded.		
DvC3	Dubuque soils, deep, 6 to 12 percent slopes, severely eroded.		
DvD3	Dubuque soils, deep, 12 to 20 percent slopes, severely eroded.		
DuB3	Dubuque soils, 2 to 6 percent slopes, severely eroded.	Well-drained, thin soils formed in reddish clay over limestone bedrock; the soils are on upland ridges; the surface layer is firm, granular silty clay loam, the subsoil is angular blocky silty clay, and the substratum is angular blocky clay that contains many fragments of chert.	1 to 3 feet
DuC3	Dubuque soils, 6 to 12 percent slopes, severely eroded.		
DuD3	Dubuque soils, 12 to 20 percent slopes, severely eroded.		
DuE3	Dubuque soils, 20 to 30 percent slopes, severely eroded.		
DyB2	Dubuque stony silt loam, 2 to 6 percent slopes, moderately eroded.	Well-drained, stony soils formed in a thin mantle of silt over reddish clay that rests on limestone bedrock; the soils are on upland ridges; the surface layer is friable, granular stony silt loam, the subsoil is angular blocky, gritty silty clay, and the substratum is clay.	2 to 4 feet
DyC2	Dubuque stony silt loam, 6 to 12 percent slopes, moderately eroded.		
DyD	Dubuque stony silt loam, 12 to 20 percent slopes.		
DyD2	Dubuque stony silt loam, 12 to 20 percent slopes, moderately eroded.		
DyE	Dubuque stony silt loam, 20 to 30 percent slopes.		
DyE2	Dubuque stony silt loam, 20 to 30 percent slopes, moderately eroded.		
Et	Ettrick silt loam.	Poorly drained, deep, silty soil formed in alluvial material on nearly level, high stream bottoms that are subject to occasional overflow; the surface layer is friable, granular silt loam, the subsoil is firm, blocky silty clay loam, and the substratum is friable, massive, and silty.	More than 10 feet.

See footnotes at end of table.

properties significant to engineering—Continued

Geologic formation	Permeability of subsoil [1]	Infiltration rate [2]	Depth to water table [3]	Wet consistence		Reaction [4]
				Subsoil	Substratum	
			Feet			
Galena and Lower Magnesian dolomites.	Moderately slow.	Intermediate..	More than 20.	Sticky and plastic...	Very sticky and very plastic.	Slightly acid to medium acid.
Galena and Lower Magnesian dolomites.	Moderate.....	Intermediate..	More than 20.	Slightly sticky and slightly plastic.	Nonsticky and nonplastic.	Slightly acid to medium acid.
Galena and Lower Magnesian dolomites.	Moderately slow.	Intermediate..	More than 20.	Slightly sticky and slightly plastic.	Very sticky and very plastic.	Slightly acid to neutral.
Galena and Lower Magnesian dolomites.	Moderate.....	Intermediate..	More than 20.	Slightly sticky and slightly plastic.	Very sticky and very plastic.	Slightly acid to medium acid.
Galena and Lower Magnesian dolomites.	Moderately slow.	Intermediate..	More than 20.	Sticky and plastic...	Very sticky and very plastic.	Slightly acid to neutral.
Galena and Lower Magnesian dolomites.	Moderately slow.	Intermediate..	More than 20.	Sticky and plastic...	Very sticky and very plastic.	Medium acid to neutral.
[5].....	Moderate.....	Intermediate..	1 to 3.....	Slightly sticky and slightly plastic.	Slightly sticky and slightly plastic.	Slightly acid to neutral.

TABLE 4.—*Brief descriptions of the soils and estimated*

Map symbol	Soil	Soil description	Depth to bedrock
FaA	Fayette silt loam, uplands, 0 to 2 percent slopes.	Well-drained, deep, silty soils on upland ridges; the surface layer is friable, granular silt loam, the subsoil is firm, blocky silty clay loam, and the substratum is friable, massive silt loam.	4 feet or more.
FaB	Fayette silt loam, uplands, 2 to 6 percent slopes.		
FaB2	Fayette silt loam, uplands, 2 to 6 percent slopes, moderately eroded.		
FaC	Fayette silt loam, uplands, 6 to 12 percent slopes.		
FaC2	Fayette silt loam, uplands, 6 to 12 percent slopes, moderately eroded.		
FaC3	Fayette silt loam, uplands, 6 to 12 percent slopes, severely eroded.		
FaD	Fayette silt loam, uplands, 12 to 20 percent slopes.		
FaD2	Fayette silt loam, uplands, 12 to 20 percent slopes, moderately eroded.		
FaD3	Fayette silt loam, uplands, 12 to 20 percent slopes, severely eroded.		
FaE2	Fayette silt loam, uplands, 20 to 30 percent slopes, moderately eroded.		
FeB	Fayette silt loam, valleys, 2 to 6 percent slopes.	Well-drained, deep, silty soils on valley slopes of uplands; the surface layer is friable, granular silt loam, and the subsoil is firm, blocky, light silty clay loam; the substratum is friable, massive, and silty; in the stony soils there are many large limestone boulders and occasional outcrops of rock; thin strata of fine sandy loam occur in places on the surface or in the solum of these soils.	4 feet or more.
FeB2	Fayette silt loam, valleys, 2 to 6 percent slopes, moderately eroded.		
FeC2	Fayette silt loam, valleys, 6 to 12 percent slopes, moderately eroded.		
FeD2	Fayette silt loam, valleys, 12 to 20 percent slopes, moderately eroded.		
FeD3	Fayette silt loam, valleys, 12 to 20 percent slopes, severely eroded.		
FeE	Fayette silt loam, valleys, 20 to 30 percent slopes.		
FyC	Fayette stony silt loam, valleys, 6 to 12 percent slopes.		
FyD	Fayette stony silt loam, valleys, 12 to 20 percent slopes.		
FyD2	Fayette stony silt loam, valleys, 12 to 20 percent slopes, moderately eroded.		
FyE	Fayette stony silt loam, valleys, 20 to 30 percent slopes.		
GaB	Gale silt loam, 2 to 6 percent slopes.	Well-drained, moderately deep, silty soils on valley slopes of uplands; the surface layer is friable, granular silt loam; it is underlain by firm, blocky silty clay loam that grades to single grain, loose fine sand that rests on sandstone bedrock; boulders and outcrops of sandstone and limestone are scattered on the stony soils.	2 to 4 feet.
GaB2	Gale silt loam, 2 to 6 percent slopes, moderately eroded.		
GaC	Gale silt loam, 6 to 12 percent slopes.		
GaC2	Gale silt loam, 6 to 12 percent slopes, moderately eroded.		
GaC3	Gale silt loam, 6 to 12 percent slopes, severely eroded.		
GaD	Gale silt loam, 12 to 20 percent slopes.		
GaD2	Gale silt loam, 12 to 20 percent slopes, moderately eroded.		
GaD3	Gale silt loam, 12 to 20 percent slopes, severely eroded.		
GaE	Gale silt loam, 20 to 30 percent slopes.		
GaE2	Gale silt loam, 20 to 30 percent slopes, moderately eroded.		
GnC	Gale stony silt loam, 6 to 12 percent slopes.		
GnC2	Gale stony silt loam, 6 to 12 percent slopes, moderately eroded.		
GnD	Gale stony silt loam, 12 to 20 percent slopes.		
GnD2	Gale stony silt loam, 12 to 20 percent slopes, moderately eroded.		
GnE	Gale stony silt loam, 20 to 30 percent slopes.		
GnE2	Gale stony silt loam, 20 to 30 percent slopes, moderately eroded.		
GoA	Gotham loamy fine sand, 0 to 2 percent slopes.	Somewhat excessively drained, sandy soils developed on stream terraces; the surface layer is very friable, granular loamy fine sand, and the subsoil is friable, blocky sandy loam underlain by single grain, loose, fine sand at a depth greater than 2 feet.	More than 20 feet.
GoB	Gotham loamy fine sand, 2 to 6 percent slopes.		
GoB2	Gotham loamy fine sand, 2 to 8 percent slopes, eroded.		

See footnotes at end of table.

properties significant to engineering—Continued

Geologic formation	Permeability of subsoil [1]	Infiltration rate [2]	Depth to water table [3]	Wet consistence		Reaction [4]
				Subsoil	Substratum	
Galena and Lower Magnesian dolomites.	Moderate	Intermediate	*Feet* More than 20	Slightly sticky and slightly plastic.	Nonsticky and nonplastic.	Slightly acid to medium acid.
Cambrian sandstone.	Moderate	Intermediate	More than 20	Slightly sticky and slightly plastic.	Nonsticky and nonplastic.	Slightly acid to medium acid.
Cambrian sandstone.	Moderate	Intermediate	More than 20	Slightly sticky and slightly plastic.	Nonsticky and nonplastic.	Slightly acid to medium acid.
[5]	Moderately rapid.	High	10 or more	Nonsticky and nonplastic.	Nonsticky and nonplastic.	Medium acid to neutral.

TABLE 4.—*Brief descriptions of the soils and estimated*

Map symbol	Soil	Soil description	Depth to bedrock
HeB2	Hesch loam, 2 to 6 percent slopes, moderately eroded.	Well-drained soils formed in medium-textured materials that are 2 to 3 feet thick over sandstone; the soils are on valley slopes in uplands; the surface layer is friable, granular loam; the subsoil is friable, blocky fine sandy loam to sandy clay loam and overlies single grain, loose fine sand at a depth between 2 and 3 feet.	30 inches to 4 feet.
HeC2	Hesch loam, 6 to 12 percent slopes, moderately eroded.		
HeD2	Hesch loam, 12 to 20 percent slopes, moderately eroded.		
HsE2	Hesch sandy loam, 20 to 30 percent slopes, moderately eroded.	Somewhat excessively drained, sandy soils that are 2 to 3 feet thick over sandstone; the soils are on valley slopes in uplands; the surface layer is friable, granular sandy loam; the subsoil is blocky fine sandy loam underlain by single grain, loose sand that grades to bedrock with increasing depth.	30 inches to 4 feet.
HtB2	Hixton sandy loam, 2 to 6 percent slopes, moderately eroded.	Somewhat excessively drained, sandy soils that are 2 to 3 feet thick over sandstone; the soils are on valley slopes in uplands; the surface layer is very friable, granular sandy loam, the subsoil is firm, blocky loam, and the substratum is single grain, loose fine sand.	30 inches to 4 feet.
HtC	Hixton sandy loam, 6 to 12 percent slopes.		
HtC2	Hixton sandy loam, 6 to 12 percent slopes, moderately eroded.		
HtD	Hixton sandy loam, 12 to 20 percent slopes.		
HtD2	Hixton sandy loam, 12 to 20 percent slopes, moderately eroded.		
HtD3	Hixton sandy loam, 12 to 20 percent slopes, severely eroded.		
HtE	Hixton sandy loam, 20 to 30 percent slopes.		
HtE2	Hixton sandy loam, 20 to 30 percent slopes, moderately eroded.		
HtF	Hixton sandy loam, 30 to 45 percent slopes.		
Hu	Huntsville silt loam.	Moderately well drained to well drained, deep, silty, alluvial soil on the nearly level flood plains of streams; the surface layer is friable silt loam that is high in organic matter and is more than 42 inches thick.	More than 20 feet.
JaA	Jackson silt loam, 0 to 2 percent slopes.	Moderately well drained, deep, silty soils on nearly level to gently sloping stream terraces; the surface layer is friable, granular silt loam, and the subsoil is firm, blocky silty clay loam; the substratum is friable, massive, and silty; in places stratified fine sand and silt are at a depth below 42 inches.	More than 20 feet.
JaB	Jackson silt loam, 2 to 6 percent slopes.		
JuA	Judson silt loam, 0 to 2 percent slopes.	Moderately well drained to well drained, silty, alluvial soils in narrow valleys and on fans; the surface layer is friable, granular silt loam, and the subsoil is friable, blocky, heavy silt loam; the substratum is friable, massive, and silty; in places thin layers of fine sand occur in the profile.	4 feet or more.
JuB	Judson silt loam, 2 to 6 percent slopes.		
JuC	Judson silt loam, 6 to 12 percent slopes.		
La	Lawson silt loam.	Somewhat poorly drained, deep, silty alluvial soils on the nearly level flood plains of streams; the surface layer is friable, granular silt loam; it is 2 to 3 feet thick over the substratum of firm, massive silty clay loam.	More than 20 feet.
Lo	Loamy alluvial land.	Moderately well drained to well drained, mixed sandy and silty soil materials, more than 40 inches thick, on the nearly level flood plains of streams.	More than 20 feet.
Lp	Loamy alluvial land, poorly drained.	Poorly drained, mixed sandy and silty soil materials, more than 40 inches thick, on the nearly level flood plains of streams.	More than 20 feet.
LsB	Lindstrom silt loam, 2 to 6 percent slopes.	Well-drained, deep, silty soils on valley slopes of uplands; the surface layer is friable, granular silt loam, and the subsoil is firm, blocky, light silty clay loam; the substratum is friable, massive, and silty; in places thin layers of fine sand occur in the profile.	4 feet or more.
LsB2	Lindstrom silt loam, 2 to 6 percent slopes, moderately eroded.		
LsC	Lindstrom silt loam, 6 to 12 percent slopes.		
LsC2	Lindstrom silt loam, 6 to 12 percent slopes, moderately eroded.		
LsD	Lindstrom silt loam, 12 to 20 percent slopes.		
LsD2	Lindstrom silt loam, 12 to 20 percent slopes, moderately eroded.		

See footnotes at end of table.

properties significant to engineering—Continued

Geologic formation	Permeability of subsoil [1]	Infiltration rate [2]	Depth to water table [3]	Wet consistence		Reaction [4]
				Subsoil	Substratum	
			Feet			
Cambrian sandstone.	Moderate	Intermediate	More than 20	Slightly sticky and slightly plastic.	Nonsticky and nonplastic.	Medium acid to neutral.
Cambrian sandstone.	Moderately rapid.	High	More than 20	Nonsticky and nonplastic.	Nonsticky and nonplastic.	Slightly acid to medium acid.
Cambrian sandstone.	Moderately rapid.	High	More than 20	Slightly sticky and slightly plastic.	Nonsticky and nonplastic.	Slightly acid to strongly acid.
[5]	[6]	Intermediate	5 to 10	Nonsticky and nonplastic.	Nonsticky and nonplastic.	Neutral.
[5]	Moderate	Intermediate	5 to 10	[5]	[5]	Medium acid to strongly acid.
Cambrian sandstone.	[6]	Intermediate	5 or more	Nonsticky and nonplastic.	Nonsticky and nonplastic.	Neutral.
[5]	[6]	Intermediate	2 to 5	Nonsticky and nonplastic.	Slightly sticky and slightly plastic.	Slightly acid to neutral.
[5]	[6]	Intermediate	5 to 10	Nonsticky and nonplastic.	Nonsticky and nonplastic.	Slightly acid to neutral.
[5]	[6]	Intermediate	1 to 5	Nonsticky and nonplastic.	Nonsticky and nonplastic.	Slightly acid to neutral.
Cambrian sandstone.	Moderate	Intermediate	More than 20	Slightly sticky and slightly plastic.	Nonsticky and nonplastic.	Slightly acid to neutral.

TABLE 4.—*Brief descriptions of the soils and estimated*

Map symbol	Soil	Soil description	Depth to bedrock
Ma	Marsh.	Poorly drained, mixed organic and alluvial deposits along stream bottoms; flooded most of the year.	More than 20 feet.
Md	Meridian loam, somewhat poorly drained variant.	Somewhat poorly drained, medium-textured soils on nearly level stream terraces; the soils are 2 to 3 feet thick over stratified sand; the surface layer is friable, granular loam, and the subsoil is firm, blocky sandy clay loam that is underlain by single grain, loose sand.	More than 20 feet.
MeA	Meridian sandy loam, 0 to 2 percent slopes.	Somewhat excessively drained, sandy soils that are 2 to 3 feet thick over sand; the soils are on stream terraces; the surface layer is very friable, granular sandy loam, the subsoil is friable, blocky loam, and the substratum is single grain, loose, fine sand; in places thin layers of finer textured material are in the substratum.	More than 20 feet.
MeB	Meridian sandy loam, 2 to 6 percent slopes.		
MeB2	Meridian sandy loam, 2 to 6 percent slopes, moderately eroded.		
MeC	Meridian sandy loam, 6 to 12 percent slopes.		
MeC2	Meridian sandy loam, 6 to 12 percent slopes, moderately eroded.		
Mm	Millsdale silty clay loam, shale variant.	Poorly drained soil on gently sloping uplands; the surface layer is friable, granular silty clay loam, the subsoil is angular blocky silty clay, and the substratum is massive silty clay loam that grades to shale bedrock.	3 to 5 feet
Mp	Mine pits and dumps.	Man-made land and areas of soil that have been disturbed.	3 feet or less
Mu	Muscatine silt loam.	Moderately well drained, deep, silty soils on nearly level upland ridges; the surface layer is friable, granular silt loam, and the subsoil is firm, blocky silty clay loam; the substratum is friable, massive, and silty; a few areas are somewhat poorly drained.	4 feet or more
NfB2	Northfield loam, 2 to 6 percent slopes, moderately eroded.	Well-drained, medium-textured soils that are less than 2 feet thick over resistant sandstone bedrock; the soils are on uplands; the surface layer is friable, granular loam, and the subsoil is firm, blocky silty clay loam that rests on bedrock; the stony loams contain many fragments of sandstone.	1 to 2 feet
NfC	Northfield loam, 6 to 12 percent slopes.		
NfC2	Northfield loam, 6 to 12 percent slopes, moderately eroded.		
NfD	Northfield loam, 12 to 20 percent slopes.		
NfD2	Northfield loam, 12 to 20 percent slopes, moderately eroded.		
NfE	Northfield loam, 20 to 30 percent slopes.		
NfE2	Northfield loam, 20 to 30 percent slopes, moderately eroded.		
NsD	Northfield stony loam, 6 to 20 percent slopes.		
NsD2	Northfield stony loam, 12 to 20 percent slopes, moderately eroded.		
NsE	Northfield stony loam, 20 to 30 percent slopes.		
NsE2	Northfield stony loam, 20 to 30 percent slopes, moderately eroded.		
NoC	Northfield sandy loam, 6 to 12 percent slopes.	Well-drained, sandy soils that are less than 2 feet thick over resistant sandstone bedrock; the soils are on uplands; the surface layer is very friable, granular sandy loam, and the subsoil is friable, blocky loam underlain by sandstone that is cemented with iron.	1 to 2 feet
NoC2	Northfield sandy loam, 6 to 12 percent slopes, moderately eroded.		
NoD	Northfield sandy loam, 12 to 20 percent slopes.		
NoD2	Northfield sandy loam, 12 to 20 percent slopes, moderately eroded.		
NoE	Northfield sandy loam, 20 to 30 percent slopes.		
NoE2	Northfield sandy loam, 20 to 30 percent slopes, moderately eroded.		
NwB2	Norwalk silt loam, deep, 2 to 6 percent slopes, moderately eroded.	Moderately well drained, silty soils over reddish clay that rests on limestone bedrock; the soils are on upland ridges; the surface layer is friable, granular silt loam, the subsoil is firm, blocky silty clay loam, and the substratum is angular blocky clay; fragments of chert are common throughout the lower part of the profile in many places.	3 to 6 feet
NwC2	Norwalk silt loam, deep, 6 to 12 percent slopes, moderately eroded.		

See footnotes at end of table.

properties significant to engineering—Continued

Geologic formation	Permeability of subsoil [1]	Infiltration rate [2]	Depth to water table [3]	Wet consistence		Reaction [4]
				Subsoil	Substratum	
			Feet			
(5)	(5)	(5)	1 foot or less	(5)	(5)	(5).
(5)	Moderate	Intermediate	3 to 5	Slightly sticky and slightly plastic.	Nonsticky and nonplastic.	Slightly acid to strongly acid.
(5)	Moderate	Intermediate	More than 10	Slightly sticky and slightly plastic.	Nonsticky and nonplastic.	Medium acid to neutral.
Maquoketa shale	Slow	Low	1 to 3	Sticky and plastic	Sticky and plastic	Medium acid to mildly alkaline.
Lower Magnesian dolomite.	(5)	(5)	More than 20	(5)	(5)	(5).
Lower Magnesian dolomite.	Moderate	Intermediate	More than 20	Slightly sticky and slightly plastic.	Nonsticky and nonplastic.	Medium acid to neutral.
Cambrian sandstone.	Moderate	Intermediate	More than 20	Slightly sticky and slightly plastic.	(5)	Moderately acid to strongly acid.
Cambrian sandstone.	Moderate	Intermediate	More than 20	Slightly sticky and slightly plastic.	(5)	Slightly acid to medium acid.
Lower Magnesian dolomite.	Moderately slow.	Intermediate	More than 20	Slightly sticky and slightly plastic.	Very sticky and very plastic.	Slightly acid to strongly acid.

TABLE 4.—*Brief descriptions of the soils and estimated*

Map symbol	Soil	Soil description	Depth to bedrock
Or	Orion silt loam.	Somewhat poorly drained, deep, silty soil formed in alluvium on the nearly level flood plains of streams; the surface layer is friable, granular silt loam, and the subsoil is friable, blocky silt that is underlain by firm, massive, light silty clay loam.	More than 20 feet.
OsA	Osseo silt loam, 0 to 2 percent slopes.	Somewhat poorly drained, silty, alluvial soils in narrow valleys and on fans; the surface layer is friable, granular silt loam; it is underlain by firm, blocky, light silty clay loam that overlies a friable, massive, silty substratum.	4 feet or more.
OsB	Osseo silt loam, 2 to 6 percent slopes.		
Pd	Peat and Muck, deep.	Poorly drained, organic soils in depressions in the flood plains of streams.	More than 20 feet.
Pe	Peat and Muck, shallow.	Poorly drained, organic soils in depressions in the flood plains of streams; 18 to 42 inches thick over sand; in a few places the soils are underlain by loam.	More than 20 feet.
PfB2	Plainfield fine sand, 0 to 6 percent slopes, eroded.	Excessively drained, deep, sandy soil on nearly level to gently sloping stream terraces; the surface layer is very friable fine sand that grades to single grain, loose, stratified sand with increasing depth.	More than 20 feet.
PgA	Plainfield loamy fine sand, 0 to 2 percent slopes.	Excessively drained, deep, sandy soils on nearly level to gently sloping stream terraces; the surface layer is very friable, granular loamy fine sand that grades to single grain, loose, stratified sand with increasing depth.	More than 20 feet.
PgB	Plainfield loamy fine sand, 2 to 6 percent slopes.		
Pm	Plainfield loamy fine sand, mottled substratum variant.	Moderately well drained, deep, sandy soil on nearly level stream terraces; the surface layer is very friable, granular loamy fine sand that grades to single grain, loose, stratified sand that is medium in texture and contains a few pebbles.	More than 20 feet.
Ps	Plainfield and Sparta fine sands and Dune land.	Excessively drained, deep, sandy soil on undulating stream terraces.	More than 20 feet.
RcA	Richwood silt loam, 0 to 2 percent slopes.	Well-drained, deep, silty soils on stream terraces; the surface layer is friable, granular silt loam, the subsoil is firm, blocky, light silty clay loam, and there is stratified silt and fine sand at a depth below 42 inches.	More than 20 feet.
RcB	Richwood silt loam, 2 to 6 percent slopes.		
RcB2	Richwood silt loam, 2 to 6 percent slopes, moderately eroded.		
RcC	Richwood silt loam, 6 to 12 percent slopes.		
RcC2	Richwood silt loam, 6 to 12 percent slopes, moderately eroded.		
Re	Riverwash.	Excessively drained, mixed sandy and gravelly deposits on the nearly level flood plains of streams.	More than 20 feet.
Ro	Rowley silt loam.	Somewhat poorly drained, deep, silty soils on nearly level stream terraces; the surface layer is friable, granular silt loam, and the subsoil is firm, blocky silty clay loam; it is underlain by friable, stratified silt and fine sand at a depth below 42 inches.	More than 20 feet.
RzB2	Rozetta silt loam, 2 to 6 percent slopes, moderately eroded.	Moderately well drained, deep, silty soil on gently sloping upland ridges; the surface layer is friable, granular silt loam, and the subsoil is firm, blocky silty clay loam; the substratum is friable, massive, and silty.	4 feet or more.
SoB	Sogn and Dodgeville silt loams, shallow, 2 to 6 percent slopes.	Somewhat excessively drained, thin soils over limestone bedrock; the soils are on upland ridges; the surface layer is friable, granular silt loam, and there is little or no subsoil overlying the bedrock; outcrops of rock and fragments of limestone are common.	2 feet or less.
SoB2	Sogn and Dodgeville silt loams, shallow, 2 to 6 percent slopes, moderately eroded.		
SoC	Sogn and Dodgeville silt loams, shallow, 6 to 12 percent slopes.		
SoC2	Sogn and Dodgeville silt loams, shallow, 6 to 12 percent slopes, moderately eroded.		
SoD	Sogn and Dodgeville silt loams, shallow, 12 to 20 percent slopes.		

See footnotes at end of table.

properties significant to engineering—Continued

Geologic formation	Permeability of subsoil [1]	Infiltration rate [2]	Depth to water table [3]	Wet consistence		Reaction [4]
				Subsoil	Substratum	
			Feet			
(5)	(6)	Intermediate	3 to 5	Nonsticky and nonplastic.	Slightly sticky and slightly plastic.	Slightly acid to neutral.
Cambrian sandstone.	(6)	Intermediate	3 to 5	Slightly sticky and slightly plastic.	Nonsticky and nonplastic.	Medium acid to neutral.
(5)	(6)	High	1 foot or less	Nonsticky and nonplastic.	Nonsticky and nonplastic.	Slightly acid to neutral.
(5)	(6)	High	1 foot or less	Nonsticky and nonplastic.	Nonsticky and nonplastic.	Slightly acid to neutral.
(5)	(6)	High	5 or more	Nonsticky and nonplastic.	Nonsticky and nonplastic.	Slightly acid to strongly acid.
(5)	(6)	High	5 or more	Nonsticky and nonplastic.	Nonsticky and nonplastic.	Slightly acid to strongly acid.
(5)	(6)	High	3 to 6	Nonsticky and nonplastic.	Nonsticky and nonplastic.	Slightly acid to strongly acid.
(5)	(6)	High	10 or more	Nonsticky and nonplastic.	Nonsticky and nonplastic.	Slightly acid to strongly acid.
(5)	Moderate	Intermediate	10 or more	Slightly sticky and slightly plastic.	Nonsticky and nonplastic.	Medium acid to neutral.
(5)	(6)	High	1 to 5	Nonsticky and nonplastic.	Nonsticky and nonplastic.	(5).
(5)	Moderate	Intermediate	2 to 4	Slightly sticky and slightly plastic.	Nonsticky and nonplastic.	Slightly acid to strongly acid.
Lower Magnesian dolomite.	Moderate	Intermediate	More than 20	Slightly sticky and slightly plastic.	Nonsticky and nonplastic.	Medium acid to neutral.
Lower Magnesian dolomite.	Moderate	Intermediate	More than 20	(5)	(5)	Slightly acid to neutral.

TABLE 4.—*Brief descriptions of the soils and estimated*

Map symbol	Soil	Soil description	Depth to bedrock
SoD2	Sogn and Dodgeville silt loams, shallow, 12 to 20 percent slopes, moderately eroded.		
SoE	Sogn and Dodgeville silt loams, shallow, 20 to 30 percent slopes.		
SoE2	Sogn and Dodgeville silt loams, shallow, 20 to 30 percent slopes, moderately eroded.		
SpA	Sparta loamy fine sand, 0 to 2 percent slopes.	Excessively drained, deep, sandy soils on nearly level stream terraces; the surface layer is very friable loamy fine sand that grades to single grain, loose, stratified sand with increasing depth.	More than 20 feet.
SpA2	Sparta loamy fine sand, 0 to 2 percent slopes, eroded.		
SpB	Sparta loamy fine sand, 2 to 6 percent slopes.		
SpB2	Sparta loamy fine sand, 2 to 6 percent slopes, eroded.		
Sr	Sparta loamy fine sand, moderately well drained variant.	Moderately well drained, deep, sandy soil on nearly level stream terraces; the surface layer is very friable loamy fine sand that grades to single grain, loose, stratified fine sand at a depth below 2 feet.	More than 20 feet.
St	Stony alluvial land.	Well-drained, stony, alluvial deposits on nearly level fans.	4 feet or more.
Ss	Steep stony and rocky land.	Somewhat excessively drained, medium-textured, mixed soil materials on steep valley slopes; many rock outcrops and scattered boulders.	1 to 5 feet.
SuA	Stronghurst silt loam, 0 to 2 percent slopes.	Somewhat poorly drained, deep, silty soils on upland ridges; the surface layer is friable, granular silt loam, and the subsoil is firm, blocky silty clay loam; the substratum is friable, massive, and silty.	4 feet or more.
SuB	Stronghurst silt loam, 2 to 6 percent slopes.		
SuB2	Stronghurst silt loam, 2 to 6 percent slopes, moderately eroded.		
TaA	Tama silt loam, 0 to 2 percent slopes.	Well-drained, deep, silty soils on upland ridges; the surface layer is friable, granular silt loam, and the subsoil is firm, blocky silty clay loam; the substratum is friable, massive, and silty.	4 feet or more.
TaB	Tama silt loam, 2 to 6 percent slopes.		
TaB2	Tama silt loam, 2 to 6 percent slopes, moderately eroded.		
TaC2	Tama silt loam, 6 to 12 percent slopes, moderately eroded.		
TeA	Tell silt loam, 0 to 2 percent slopes.	Well-drained silty soils that are 2 to 3 feet thick over sandy outwash; the soils are on stream terraces; the surface layer is friable, granular silt loam, and the subsoil is firm, blocky silty clay loam that is underlain by stratified, loose sand.	More than 20 feet.
TeB	Tell silt loam, 2 to 6 percent slopes.		
TeB2	Tell silt loam, 2 to 6 percent slopes, moderately eroded.		
TeC2	Tell silt loam, 6 to 12 percent slopes, moderately eroded.		
Tr	Terrace escarpments, loamy.	Well-drained to somewhat excessively drained loams on strongly sloping to steep stream terraces.	More than 20 feet.
Ts	Terrace escarpments, sandy.	Excessively drained, sandy soils on terraces; slopes range from 12 to more than 30 percent.	More than 20 feet.
TvA	Toddville silt loam, 0 to 2 percent slopes.	Moderately well drained, deep, silty soils on nearly level to gently sloping stream terraces; the surface layer is friable, granular silt loam, and the subsoil is firm, blocky silty clay loam; the substratum is friable, massive, and silty; in places stratified fine sand and silt occur at a depth below 42 inches.	More than 20 feet.
TvB	Toddville silt loam, 2 to 6 percent slopes.		
Wa	Wallkill silt loam.	Somewhat poorly drained, silty soil formed in alluvial deposits that are 18 to 40 inches thick over deposits of organic peat and muck; the soil is on the nearly level flood plains of streams.	More than 20 feet.

[1] The relative classes of soil permeability given refer to estimated rates of movement of water, in inches per hour, through saturated undisturbed cores under a ½-inch head of water:

Very slow	Less than 0.05
Slow	0.05 to 0.20
Moderately slow	0.20 to 0.80
Moderate	0.80 to 2.50
Moderately rapid	2.50 to 5.00
Rapid	5.00 to 10.00

[2] The rate of infiltration (engineering application) describes the flow, or movement, of water through the soil surface into a nonsaturated soil. The terms used to describe the range of values of the infiltration capacity through the profile of bare soils after 1 hour of continuous rainfall are as follows:

High	0.50+ inch per hour.
Intermediate	0.10 to 0.50+ inch per hour.
Low	Less than 0.10 inch per hour.

(The above definition is according to R. E. HORTON, Amer. Soc. Civ. Engin. Handb. 1949.)

properties significant to engineering—Continued

Geologic formation	Permeability of subsoil [1]	Infiltration rate [2]	Depth to water table [3]	Wet consistence		Reaction [4]
				Subsoil	Substratum	
			Feet			
[5]	[6]	High	5 or more	Nonsticky and nonplastic.	Nonsticky and nonplastic.	Slightly acid to strongly acid.
[5]	[6]	High	3 to 6	Nonsticky and nonplastic.	Nonsticky and nonplastic.	Medium acid.
Cambrian sandstone.	[6]	Intermediate	5 or more	Nonsticky and nonplastic.	Nonsticky and nonplastic.	Medium acid to neutral.
Cambrian sandstone.	Moderate	Intermediate	More than 20	[5]	[5]	Slightly acid to strongly acid.
Lower Magnesian dolomite.	Moderate	Intermediate	3 to 5	Slightly sticky and slightly plastic.	Nonsticky and nonplastic.	Slightly acid to strongly acid.
Lower Magnesian dolomite.	Moderate	Intermediate	More than 20	Slightly sticky and slightly plastic.	Nonsticky and nonplastic.	Slightly acid to strongly acid.
[5]	Moderate	Intermediate	10 or more	Slightly sticky and slightly plastic.	Nonsticky and nonplastic.	Slightly acid to strongly acid.
[5]	Moderate	Intermediate	More than 20	[5]	Nonsticky and nonplastic.	Slightly acid to strongly acid.
[5]	[6]	High	More than 20	Nonsticky and nonplastic.	Nonsticky and nonplastic.	Slightly acid to strongly acid.
[5]	Moderate	Intermediate	5 to 10	Slightly sticky and slightly plastic.	Nonsticky and nonplastic.	Slightly acid to strongly acid.
[5]	[6]	Intermediate	2 to 3	Nonsticky and nonplastic.	Nonsticky and nonplastic.	Slightly acid to neutral.

[3] Refers to both seasonal and relatively stable high water tables. In some soils the water table is fairly constant at a given depth throughout the year; in others, the depth to the water table varies according to seasonal precipitation.

[4] Reaction refers to the acidity or alkalinity of the soil and is expressed in pH—the logarithm of the reciprocal of the H-ion concentration. The following are terms used to describe reaction:

	pH
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8

[5] Not determined or is variable.

[6] Not applicable.

TABLE 5.—*Estimated soil properties*

Soil name [1] and map symbol	Erodibility hazard [2]			Suitability as a source of—	
	Surface layer	Subsoil	Substratum	Topsoil [3]	Sand [4]
Arenzville silt loam (Ar)	Moderate	(9)	Moderate	Good	Not suitable
Bertrand silt loam (BeA, BeB, BeB2, BeC2)	Moderate	Moderate	Moderate	Good	Questionable
Boaz silt loam (Bm)	Moderate	(9)	Moderate	Good	Not suitable
Boone fine sand (BoC2, BoD2)	Severe	(9)	(9)	Poor	Questionable
Chaseburg fine sandy loam (CaA, CaB, CaC)	Moderate	(9)	Moderate	Fair	Not suitable
Chaseburg silt loam (ChA, ChB, ChC)	Moderate	(9)	Moderate	Good	Not suitable
Curran silt loam (CuA)	Moderate	Slight	Moderate	Good	Not suitable
Dakota loam (DaA, DaB)	Moderate	Slight	Severe	Good	Suitable
Dakota sandy loam (DbA, DbB, DbB2, DbC2)	Moderate	Moderate	Severe	Fair	Suitable
Derinda stony silt loam (DeB, DeC)	Moderate	Moderate	Slight	Good	Not suitable
Dillon loamy fine sand (Df)	Severe [10]	(9)	Severe [10]	Poor	Suitable
Dodgeville silt loam (DgB, DgB2, DgC, DgC2, DgD, DgD2, DgE2)	Moderate	Slight	Slight	Good	Not suitable
Dodgeville silt loam, deep (DhA, DhB, DhB2, DhC2, DhD, DhD2)	Moderate	Moderate	Slight	Good	Not suitable
Dodgeville silt loam, shallow (DlC, DlB2, DlC2, DlD, DlD2)	Moderate	Slight	(9)	Good	Not suitable
Dodgeville soils (DmB3, DmC3, DmD3)	Moderate	Slight	Slight	Fair	Not suitable
Dodgeville soils, deep (DnB3, DnC3, DnD3)	Severe	Moderate	(9)	Poor	Not suitable
Downs silt loam (DoB, DoB2, DoC2)	Moderate	Moderate	Moderate	Good	Not suitable
Dubuque silt loam (DsB, DsB2, DsC, DsC2, DsD, DsD2, DsE, DsE2, DsF, DsF2)	Moderate	Slight	Slight	Good	Not suitable
Dubuque silt loam, deep (DtB, DtB2, DtC, DtC2, DtD, DtD2, DtE, DtE2)	Moderate	Moderate	Slight	Good	Not suitable
Dubuque soils (DuB3, DuC3, DuD3, DuE3)	Moderate	Slight	Slight	Fair	Not suitable
Dubuque soils, deep (DvC3, DvD3)	Severe	Moderate	(9)	Poor	Not suitable
Dubuque stony silt loam (DyB2, DyC2, DyD, DyD2, DyE, DyE2)	Moderate	Slight	Slight	Fair	Not suitable
Ettrick silt loam (Et)	Moderate	Moderate	Moderate	Good	Not suitable
Fayette silt loam, uplands (FaA, FaB, FaB2, FaC, FaC2, FaC3, FaD, FaD2, FaD3, FaE2)	Moderate	Moderate	Moderate	Good	Not suitable
Fayette silt loam, valleys (FeB, FeB2, FeC2, FeD2, FeD3, FeE)	Moderate	Moderate	Moderate	Good	Not suitable
Fayette stony silt loam, valleys (FyC, FyD, FyD2, FyE)	Moderate	Moderate	Moderate	Good	Not suitable
Gale silt loam (GaB, GaB2, GaC, GaC2, GaC3, GaD, GaD2, GaD3, GaE, GaE2)	Moderate	Moderate	Severe	Good	Questionable
Gale stony silt loam (GnC, GnC2, GnD, GnD2, GnE, GnE2)	Moderate	Moderate	Severe	Fair	Questionable
Gotham loamy fine sand (GoA, GoB, GoB2)	Severe	Moderate	Severe	Poor	Suitable
Hesch loam (HeB2, HeC2, HeD2)	Moderate	Moderate	Severe	Good	Questionable
Hesch sandy loam (HsE2)	Moderate	Moderate	Severe	Fair	Questionable
Hixton sandy loam (HtB2, HtC, HtC2, HtD, HtD2, HtD3, HtE, HtE2, HtF)	Severe	Moderate	Severe	Poor	Questionable
Huntsville silt loam (Hu)	Moderate	(9)	Moderate	Good	Not suitable
Jackson silt loam (JaA, JaB)	Moderate	Moderate	Moderate	Good	Not suitable
Judson silt loam (JuA, JuB, JuC)	Moderate	(9)	Moderate	Good	Not suitable
Lawson silt loam (La)	Moderate	(9)	Slight	Good	Not suitable
Loamy alluvial land (Lo)	Moderate	(9)	Severe	Good	Not suitable
Loamy alluvial land, poorly drained (Lp)	Moderate	(9)	Severe	Good	Not suitable
Lindstrom silt loam (LsB, LsB2, LsC, LsC2, LsD, LsD2)	Moderate	Moderate	Moderate	Good	Not suitable
Marsh (Ma)	(9)	(9)	(9)	(9)	(9)
Meridian loam, somewhat poorly drained variant (Md)	Moderate	Moderate	Severe [10]	Good	Suitable
Meridian sandy loam (MeA, MeB, MeB2, MeC, MeC2)	Severe	Moderate	Severe	Poor	Suitable
Millsdale silty clay loam (Mm)	Moderate	Slight	Slight	Good	Not suitable
Mine pits and dumps (Mp)	Slight	(9)	(9)	Poor	Not suitable
Muscatine silt loam (Mu)	Moderate	Moderate	Moderate	Good	Not suitable
Northfield loam (NfB2, NfC, NfC2, NfD, NfD2, NfE, NfE2)	Moderate	Moderate	(9)	Good	Not suitable
Northfield sandy loam (NoC, NoC2, NoD, NoD2, NoE, NoE2)	Severe	Moderate	(9)	Poor	Not suitable
Northfield stony loam (NsD, NsD2, NsE, NsE2)	Moderate	Moderate	(9)	Fair	Not suitable
Norwalk silt loam, deep (NwB2, NwC2)	Moderate	Slight	Slight	Good	Not suitable
Orion silt loam (Or)	Moderate	(9)	Moderate	Good	Not suitable
Osseo silt loam (OsA, OsB)	Moderate	(9)	Moderate	Good	Not suitable
Peat and Muck, deep (Pd)	Severe [10]	(9)	(9)	Poor	Not suitable
Peat and Muck, shallow (Pe)	Severe [10]	(9)	Moderate [10]	Poor	Questionable
Plainfield fine sand (PfB2)	Severe	(9)	Severe	Poor	Suitable
Plainfield loamy fine sand (PgA, PgB, Pm)	Severe	(9)	Severe	Poor	Suitable
Richwood silt loam (RcA, RcB, RcB2, RcC, RcC2)	Moderate	Moderate	Moderate	Good	Questionable
Riverwash (Re)	Moderate	(9)	(9)	Poor	Suitable
Rowley silt loam (Ro)	Moderate	Moderate	Moderate	Good	Questionable
Rozetta silt loam (RzB2)	Moderate	Moderate	Moderate	Good	Not suitable

See footnotes at end of table.

that affect engineering

Suitability as a source of—Continued			Suitability for—				Remarks
Fill material for earthen embankments [5]			Pond sites [6]	Drainage [7]	Irrigation [8]	Terraces or diversions	
Surface layer	Subsoil	Substratum					
Fair	(9)	Fair	Questionable		Good	Suitable	Subject to flooding.
Fair	Fair	Fair	Questionable	Surface	Good	Suitable	Subject to flooding.
Fair	(9)	Fair	Questionable	Surface	Good	Suitable	Subject to flooding.
Good	(9)	(9)	Not suitable		Poor	Not suitable	Very droughty.
Good	(9)	Fair	Questionable		Good	Suitable	Subject to flooding.
Fair	(9)	Fair	Questionable		Good	Suitable	Subject to flooding.
Fair	Fair	Fair	Questionable	Surface	Poor	Suitable	
Good	Good	Good	Not suitable		Good	Suitable	
Good	Good	Good	Not suitable		Fair	Suitable	Droughty.
Fair	Fair	Poor	Suitable	Surface	Fair	Suitable	Many rocks on the surface.
Good	(9)	Good	Not suitable	Subsurface	Poor	Not suitable	High water table.
Fair	Fair	Poor	Questionable		Good	Questionable	
Fair	Fair	Poor	Suitable		Good	Suitable	
Fair	Poor	(9)	Not suitable		Fair	Not suitable	Shallow to bedrock.
Fair	Poor	Poor	Questionable		Fair	Questionable	
Fair	Poor	(9)	Questionable		Fair	Questionable	
Fair	Fair	Fair	Suitable		Good	Suitable	
Fair	Fair	Poor	Questionable		Good	Questionable	
Fair	Fair	Poor	Suitable		Good	Suitable	
Fair	Poor	Poor	Questionable		Fair	Questionable	
Fair	Poor	(9)	Questionable		Fair	Questionable	
Fair	Poor	Poor	Questionable		Fair	Questionable	Many stones of chert.
Fair	Fair	Fair	Questionable	Subsurface	(11)	Suitable	Subject to flooding.
Fair	Fair	Fair	Suitable		Good	Suitable	
Fair	Fair	Fair	Suitable		Good	Suitable	
Fair	Fair	Fair	Suitable		Good	Suitable	Many large boulders.
Fair	Fair	Good	Not suitable		Good	Suitable	
Fair	Fair	Good	Not suitable		Good	Suitable	
Good	Good	Good	Not suitable		Fair	Not suitable	Droughty.
Good	Good	Good	Not suitable		Good	Suitable	
Good	Good	Good	Not suitable		Fair	Suitable	Droughty.
Good	Good	Good	Not suitable		Fair	Suitable	Droughty.
Fair	(9)	Fair	Questionable		Good	Suitable	Subject to flooding.
Fair	Fair	Fair	Questionable		Good	Suitable	
Fair	(9)	Fair	Questionable		Good	Suitable	Subject to flooding.
Fair	(9)	Fair	Questionable	Subsurface	(11)	Suitable	Subject to flooding.
Fair	(9)	Fair	Questionable	Surface	Good	Suitable	Subject to flooding.
Fair	(9)	Fair	Questionable	Surface	(11)	Suitable	Subject to flooding.
Fair	Fair	Fair	Suitable		Good	Suitable	Subject to flooding.
(9)	(9)	(9)	(9)	(9)	(9)	Not suitable	Very high water table.
Good	Good	Good	Not suitable	Subsurface	(11)	Suitable	High water table.
Good	Good	Good	Not suitable		Fair	Suitable	Droughty.
Fair	Poor	Poor	Suitable	Surface	(11)	Suitable	Poorly drained.
Good	(9)	(9)	Not suitable	(9)	(9)	Not suitable	Shallow to bedrock.
Fair	Fair	Fair	Suitable		Good	Suitable	
Good	Good	(9)	Not suitable		Good	Questionable	Shallow to bedrock.
Good	Good	(9)	Not suitable		Fair	Questionable	Shallow to bedrock.
Good	Good	(9)	Not suitable		Good	Questionable	Shallow to bedrock.
Fair	Fair	Poor	Questionable		Good	Suitable	
Fair	(9)	Poor	Questionable	Subsurface	(11)	Suitable	Subject to flooding.
Fair	(9)	Poor	Questionable	Subsurface	(11)	Suitable	Subject to flooding.
Not suitable	(9)	(9)	Not suitable	Subsurface	Fair	Not suitable	Subject to flooding.
Not suitable	(9)	Good	Not suitable	Subsurface	(11)	Not suitable	Subject to flooding.
Good	(9)	Good	Not suitable		Poor	Not suitable	Very droughty.
Good	(9)	Good	Not suitable		Poor	Not suitable	Droughty.
Fair	Fair	Fair	Questionable		Good	Suitable	
Good	(9)	(9)	Not suitable		Not suitable	Not suitable	Very droughty.
Fair	Fair	Fair	Questionable	Subsurface	Poor	Suitable	
Fair	Fair	Fair	Suitable		Good	Suitable	

TABLE 5.—*Estimated soil properties*

Soil name [1] and map symbol	Erodibility hazard [2]			Suitability as a source of—	
	Surface layer	Subsoil	Substratum	Topsoil [3]	Sand [4]
Sogn and Dodgeville silt loams, shallow (SoB, SoB2, SoC, SoC2, SoD, SoD2, SoE, SoE2)	Moderate	(9)	(9)	Good	Not suitable
Sparta loamy fine sand (SpA, SpA2, SpB, SpB2, Sr)	Severe	(9)	Severe	Poor	Suitable
Steep stony and rocky land (Ss)	Moderate	Moderate	Moderate	Variable	Not suitable
Stony alluvial land (St)	Moderate	(9)	Moderate	Fair	Not suitable
Stronghurst silt loam (SuA, SuB, SuB2)	Moderate	Moderate	Moderate	Good	Not suitable
Tama silt loam (TaA, TaB, TaB2, TaC2)	Moderate	Moderate	Moderate	Good	Not suitable
Tell silt loam (TeA, TeB, TeB2, TeC2)	Moderate	Moderate	Severe	Good	Suitable
Terrace escarpments, loamy (Tr)	Moderate	Moderate	Severe	Good	Suitable
Terrace escarpments, sandy (Ts)	Severe	(9)	Severe	Poor	Suitable
Toddville silt loam (TvA, TvB)	Moderate	Moderate	Moderate	Good	Questionable
Wallkill silt loam (Wa)	Moderate	(9)	Severe [10]	Good	Not suitable

[1] Consists of soil types and miscellaneous land units mapped in the county; when a mapping unit is made up of two or more soils, the characteristics of both soils should be considered.

[2] The susceptibility of the soil materials to erosion by wind or water after the cover of plants has been removed.

[3] Ratings are for use of the soil on embankments, on cut slopes, and in ditches to promote the growth of vegetation.

[4] Principally, the substratum, or material underlying the soil; does not indicate which deposits are suitable as a source of sand for use in concrete; includes particles that have diameters ranging from 0.05 to 2.0 millimeters.

[5] Rating is for use of the soil in embankments or for replacement of unsuitable material.

TABLE 6.—*Engineering test data of representative*

[Dashes indicate does not apply

Soil type and laboratory number	Depth	Moisture density		Mechanical analysis				
				Percent passing sieve				
		Maximum dry density	Optimum moisture content	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 60 (0.25 mm.)	No. 200 (0.074 mm.)
Arenzville silt loam: [3]	*Inches*	*Lb. per cu. ft.*	*Percent*					
S60 Wis 61-4-1	7-24	103. 6	18. 9			100		96
S60 Wis 61-4-2	30-36	89. 0	27. 6		100	98		96
S60 Wis 62-1-1	4-36	(4)	(4)		100	98		71
S60 Wis 62-1-2	40-60	(4)	(4)		100	96		49
S60 Wis 62-2-1	26-31	(4)	(4)			100		89
Bertrand silt loam: [5]								
Wis-2-46	0-7				100	97	96	91
Wis-2-49	20-40				100	99	99	96
Wis-2-50	40-54				100	99	98	96
Curran silt loam: [3]								
S59 Wis 33-4-2	21-30	106. 2	19. 6		100	99		98
S59 Wis 33-4-3	37-50	104. 5	17. 6		100	99		98
S59 Wis 33-5-2	19-30	(4)	(4)		100	99		98
S59 Wis 33-5-3	38-48	(4)	(4)			100		99
S59 Wis 33-6-2	18-30	(4)	(4)		100	99		98
S59 Wis 33-6-3	37-50	(4)	(4)		100	99		97
Dodgeville silt loam: [3]								
S33905	0-10	91	25			100		98
S33906	15-25	99	23	98	98	98		98
S33907	29-38	93	24	95	94	93		91
S33908	0-8	98	22			100		99
S33909	19-25	95	26	94	93	91		90
S33910	25-31	83	30	92	91	89		86
S33911	0-10	96	23			100		98
S33912	24-33	101	20	96	95	95		95
S33913	38-46	96	25	94	93	92		91

See footnotes at end of table.

that affect engineering—Continued

Suitability as a source of—Continued			Suitability for—				Remarks
Fill material for earthen embankments [5]			Pond sites [6]	Drainage [7]	Irrigation [8]	Terraces or diversions	
Surface layer	Subsoil	Substratum					
Fair	(9)	(9)	Not suitable		Poor	Not suitable	Shallow to bedrock.
Good	(9)	Good	Not suitable		Fair	Not suitable	All but Sr are droughty.
Fair	Fair	Fair	Questionable		Not suitable.	Not suitable	Stony.
Fair	(9)	Fair	Questionable		Not suitable.	Suitable	Very stony.
Fair	Fair	Fair	Suitable	Subsurface	Poor	Suitable	
Fair	Fair	Fair	Suitable		Good	Suitable	
Fair	Fair	Good	Not suitable		Good	Suitable	
Good	Good	Good	Not suitable		Fair	Not suitable	
Good	(9)	Good	Not suitable		Poor	Not suitable	Droughty.
Fair	Fair	Fair	Questionable		Good	Suitable	Questionable.
Fair	(9)	Not suitable.	Not suitable	Subsurface	Poor	Suitable	Subject to flooding.

[6] Refers to the suitability of soil material for construction of ponds for permanent storage of water; the compactability of the soils and the porosity of the underlying material were both considered in this rating; questionable soils should be checked in the field.

[7] Rating concerns suitability for surface and subsurface drainage if drainage is needed; dashes imply drainage is not needed.

[8] Refers to suitability of soils for irrigation, based chiefly on the moisture-holding capacity and rate of infiltration; does not consider the economic feasibility of providing water for irrigation.

[9] Does not apply; lacks a B horizon, is underlain by bedrock, or is extremely variable.

[10] When water table is lowered or soil is drained.

[11] Does not apply; soils are wet, exceedingly stony, or steep.

soil samples in Iowa County, Wis.

or information is not available]

Mechanical analysis—Continued				Liquid limit	Plasticity index	Classification	
Percent smaller than—						AASHO [1]	Unified [2]
0.05 mm.	0.02 mm.	0.005 mm.	0.002 mm.				
88		17	9	32	10	A-4(8)	CL.
89		17	10	47	12	A-7-5 (10)	CL.
65		12	8	26	6	A-4(7)	ML-CL.
43		9	6	34	11	A-6(3)	CL.
83		22	16	34	12	A-6(9)	CL.
90	50	18	12	(4)	(4)	A-4	ML-CL.
95	60	37	31	(4)	(4)	A-7-6	CL.
94	57	33	28	(4)	(4)	A-7-6	CL.
96		38	30	48	25	A-7-6(16)	
97		47	36	54	32	A-7-6(19)	
94		41	36	46	25	A-7-6(15)	
96		39	32	45	25	A-7-6(15)	
95		41	33	49	26	A-7-6(16)	
94		39	33	46	23	A-7-6(14)	
95		37	26	51	19	A-7-5(14)	ML.
95		45	36	45	19	A-7-6(13)	ML-CL.
90		61	53	61	30	A-7-5(20)	MH-CH.
96		38	30	44	18	A-7-6(12)	ML-CL.
88		52	46	60	29	A-7-5(20)	MH-CH.
85		70	66	80	37	A-7-5(20)	MH.
95		34	25	43	15	A-7-6(11)	ML-CL.
93		40	34	48	22	A-7-6(14)	ML-CL.
87		52	48	52	24	A-7-6(16)	MH-CH.

TABLE 6.—*Engineering test data of representative*

Soil type and laboratory number	Depth	Moisture density		Mechanical analysis				
		Maximum dry density	Optimum moisture content	Percent passing sieve				
				No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 60 (0.25 mm.)	No. 200 (0.074 mm.)
	Inches	*Lb. per cu. ft.*	*Percent*					
Downs silt loam:[5]								
Wis-2-37	0-9				100	99	99	99
Wis-2-39	14-25				100	99	99	99
Wis-2-40	25-38				100	99	99	99
Dubuque silt loam:[5]								
Wis-2-18	0-5				100	99	99	98
Wis-2-20	10-15				100	99	99	99
Wis-2-22	24-30				100	99	98	97
Dubuque silt loam, deep:[5]								
C97	0-7				100	99	99	98
C99	14-23				100	99	99	97
C101	30+				100	89	84	68
Ettrick silt loam:[3]								
S60 Wis 41-1-1	12-18	101.7	21.2			100		94
S60 Wis 41-1-2	26-42	112.7	15.8					100
S60 Wis 41-2-1	13-20	(4)	(4)			100		98
S60 Wis 41-2-2	20-60	(4)	(4)			100		98
S60 Wis 41-3-1	22-28	(4)	(4)		100	99		90
S60 Wis 41-3-2	28-60	(4)	(4)	93	93	83		13
Fayette silt loam:[3]								
S31386	0-11	103	17				100	99
S31387	26-33	105	19					100
S31388	48-60	107	18					100
S31389	0-7	96	21		100	99	98	96
S31390	24-35	108	18		100	99	98	96
S31391	45-50	113	15	100	99	96	91	84
Lindstrom silt loam:[5]								
3230235	0-16				100	96	90	78
3230237	25-40				100	96	91	85
3230238	40-60				100	97	96	89
Meridian sandy loam:[5]								
5574	0-8				100	80	58	30
5576	11-19				100	82	66	45
5578	28-34				100	73	48	9
Richwood silt loam:[3]								
5330	0-8				100	99	99	95
5334	23-30				100	99	99	97
5336	37-60				100	99	99	97
Sparta fine sand:[3]								
Wis-3-42	0-7				100	72	45	13
Wis-3-43	7-16				100	63	41	15
Wis-3-44	16-45				100	69	45	13
Tama silt loam:[3]								
S33914	0-10	91	25		100	99		96
S33915	28-35	103	20					100
S33916	40-46	107	18					100
S33917	0-11	92	25					100
S33918	22-30	103	22					100
S33919	45-50	107	19					100
S33920	0-9	85	28			100		98
S33921	18-27	104	19					100
S33922	46-60	109	18					100

[1] Based on Standard Specifications for Highway Materials and Methods of Sampling and Testing (pt. 1, ed. 7): The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes, AASHO Designation: M 145-49. The classification is estimated for all but the Arenzville, Curran, Dodgeville, Ettrick, Fayette, and Tama soils.

[2] Based on the Unified Soil Classification System, Tech. Memo. No. 3-357, v. 1, Waterways Experiment Station, Corps of Engineers, U.S. Army. March 1953. The classification is estimated for all but the Arenzville, Dodgeville, Ettrick, Fayette, and Tama soils.

soil samples in Iowa County, Wis.—Continued

Mechanical analysis—Continued				Liquid limit	Plasticity index	Classification	
Percent smaller than—							
0.05 mm.	0.02 mm.	0.005 mm.	0.002 mm.			AASHO [1]	Unified [2]
97	61	32	29	(4)	(4)	A–7–6	CL.
97	59	34	25	(4)	(4)	A–6	CL.
97	60	31	26	(4)	(4)	A–6	CL.
96	60	27	16	(4)	(4)	A–4	ML–CL.
98	74	51	39	(4)	(4)	A–7–6	CH.
96	89	71	55	(4)	(4)	A–7–5	CH.
94	63	20	13	(4)	(4)	A–4	ML–CL.
93	67	28	24	(4)	(4)	A–6	CL.
64	58	51	47	(4)	(4)	A–7–5	CH.
94	----------	44	35	55	32	A–7–6(19)	CH.
97	----------	32	26	41	20	A–7–6(12)	CL.
97	----------	26	21	41	16	A–7–6(10)	CL.
96	----------	29	24	34	14	A–6(10)	CL.
89	----------	52	39	52	23	A–7–6(15)	CH.
10	----------	4	3	(4)	(6)	A–2–4	SM.
90	58	20	14	29	5	A–4(8)	ML–CL.
97	64	36	30	44	20	A–7–6(13)	CL.
96	60	30	25	38	16	A–6(10)	CL.
94	58	22	15	36	7	A–4(8)	ML.
93	61	32	26	38	16	A–6(10)	CL.
81	52	27	24	34	14	A–6(10)	CL.
69	52	31	25	(4)	(4)	A–6	CL.
82	55	31	24	(4)	(4)	A–6	CL.
84	47	23	19	(4)	(4)	A–6	CL.
29	17	9	6	(6)	(6)	A–2–4	SM.
43	29	17	11	(7)	(7)	A–4	SM.
8	5	4	3	(6)	(6)	A–3	SP–SM.
93	50	22	16	(4)	(4)	A–4	ML–CL.
95	50	31	25	(4)	(4)	A–6	CL.
93	46	28	23	(4)	(4)	A–6	CL.
12	8	5	4	(6)	(6)	A–2–4	SM.
13	10	9	6	(6)	(6)	A–2–4	SM.
11	6	5	4	(6)	(6)	A–2–4	SM.
93	----------	27	18	45	14	A–7–5(11)	ML.
96	----------	37	31	45	20	A–7–6(13)	ML–CL.
97	----------	35	30	42	20	A–7–6(12)	CL.
97	----------	37	27	45	15	A–7–5(11)	ML.
97	----------	38	33	44	20	A–7–6(13)	CL.
98	----------	35	30	42	19	A–7–6(12)	CL.
96	----------	29	19	50	17	A–7–5(13)	ML.
97	----------	39	32	45	22	A–7–6(14)	CL.
97	----------	30	25	37	17	A–6(11)	CL.

[3] Tests performed by the U.S. Bureau of Public Roads in accordance with standard procedures of the American Association of State Highway Officials.

[4] Test data not available.

[5] Test data from U.S. Soil Conservation Service.

[6] Nonplastic.

[7] Slightly plastic.

Soil Series and Their Relationships

The soils of Iowa County have been classified in series on the basis of their color, consistence, drainage, and other characteristics. In the following section they have also been grouped according to their position on the landscape. This grouping will help the reader to better understand the relationship of the soils to one another. Three main groups of soils—soils of the uplands, soils of the terraces, and soils of the bottom lands—are discussed. Figures 10, 11, and 12 show representative landscapes in Iowa County and the major soils in each.

Soils of the Uplands

Soils of the uplands have formed on ridgetops and on valley slopes. They have formed primarily from silty material, or loess, that was deposited over reddish clay or over limestone, sandstone, or shale bedrock. The reddish clay weathered from limestone. In many places it contains numerous fragments of chert.

The Derinda, Dodgeville, Downs, Dubuque, Fayette uplands, Muscatine, Northfield, Norwalk, Rozetta, Sogn, Stronghurst, and Tama soils are all on ridgetops. Of these, the Dubuque, Fayette, Northfield, Norwalk, Rozetta, and Stronghurst soils all formed under a hardwood forest. Their parent material consisted of silty material underlain by limestone or by material weathered from limestone. The differences among these soils are related primarily to differences in drainage and to differences in the depth to and texture of the underlying material.

The Derinda soils and Millsdale silty clay loam, shale variant, unlike the other soils on uplands, formed in silt overlying shale bedrock. They formed under forest. The Downs soils, also formed in silt, are underlain by sandstone or limestone. The Downs soils are similar to the Fayette soils, but they formed under a mixture of forest and prairie. As a result, they have a darker surface layer and a browner subsoil than the Fayette soils. Although the Dodgeville, Muscatine, Sogn, and Tama soils, like most of the other soils on ridgetops, are underlain by limestone, they have a darker surface layer than most of the other soils on ridgetops because they formed under prairie.

The Boone, Chaseburg, Gale, Hesch, Hixton, Judson, Lindstrom, Osseo, and some of the Fayette soils are on valley slopes. The Fayette soils on valley slopes are similar to the Fayette soils on ridgetops. Their B horizon is less well developed, however, and in many places boulders are scattered throughout the profile. They are also similar to the Lindstrom soils, but the Lindstrom soils formed under prairie rather than forest. The Lindstrom soils have a darker colored surface layer and browner subsoil than the Fayette soils on valley slopes.

The Gale soils formed in silt that is underlain by sandstone at a depth of less than 3 feet. The Hesch and Hixton soils formed principally from materials weathered from sandstone but contain some finer textured material. The Hesch soils have a darker colored surface layer and browner subsoil than the Hixton soils because they formed under a mixture of prairie and forest vegetation, and the Hixton soils, under forest. The Boone soils also formed under forest, but their parent material was sand weathered from sandstone bedrock.

The Judson and Chaseburg soils formed in materials deposited by water and gravity. They occur at the foot of steep slopes and along small valley draws. The Judson soils formed under grass, and their surface layer is, therefore, darker than that of the Chaseburg soils, which formed under forest.

Soils of the Terraces

The soils on stream terraces formed in silty or sandy outwash. Locally, the areas are called benchlands or flats. The Bertrand, Curran, Jackson, Richwood, Rowley, and Toddville soils are on high terraces or on terraces of medium height. These soils all formed in a layer of silt, 42 inches or more thick. Of these soils, the Richwood, Rowley, and Toddville formed under prairie. They all have a very dark surface layer, but the Richwood soils are better drained than the Toddville and Rowley. The Richwood soils are also similar to the Bertrand soils, but the Bertrand soils formed under forest and, therefore, have a lighter colored surface layer than the Richwood.

The Jackson, Curran, and Tell soils are all similar to the Bertrand soils, but the Jackson and Curran soils have slower internal drainage. The Tell soils, like the Bertrand soils, have formed under forest, but they are underlain by a sandy substratum, which is at a depth of 24 to 36 inches.

The Dakota and Meridian soils are on terraces of medium height. The materials in which they formed are coarser textured than the parent materials of some of the other soils. The Dakota and Meridian soils have a surface layer of loam or sandy loam and a moderately developed B horizon. They are underlain by loose sand at a depth between 24 and 40 inches. The Dakota soils formed under prairie and are darker colored than the Meridian soils.

The Dillon, Sparta, and Plainfield soils are all on low stream terraces and formed in very sandy outwash. The Dillon and Sparta soils formed under prairie. They have a deep, dark-colored surface layer and no textural B horizon. The Plainfield soils are similar to the Sparta soils, but they formed under forest and have a lighter colored surface layer. The Gotham soils are on low terraces or on terraces of medium height. They also are similar to the Sparta soils, but they have more fine material in the solum.

Soils of the Bottom Lands

The soils of the bottom lands vary considerably. Along the smaller streams, the bottom lands are narrow and the soils are forming in mixed parent materials. Because the soils are variable, they have been mapped as miscellaneous land types.

Along the larger streams are soils forming in silty alluvium. Of these, the Arenzville and Orion soils have a light-colored surface layer and are generally underlain by an old, dark, buried soil. These soils are similar, but the Arenzville soils are better drained than the Orion. They are also similar to the Huntsville and Lawson soils,

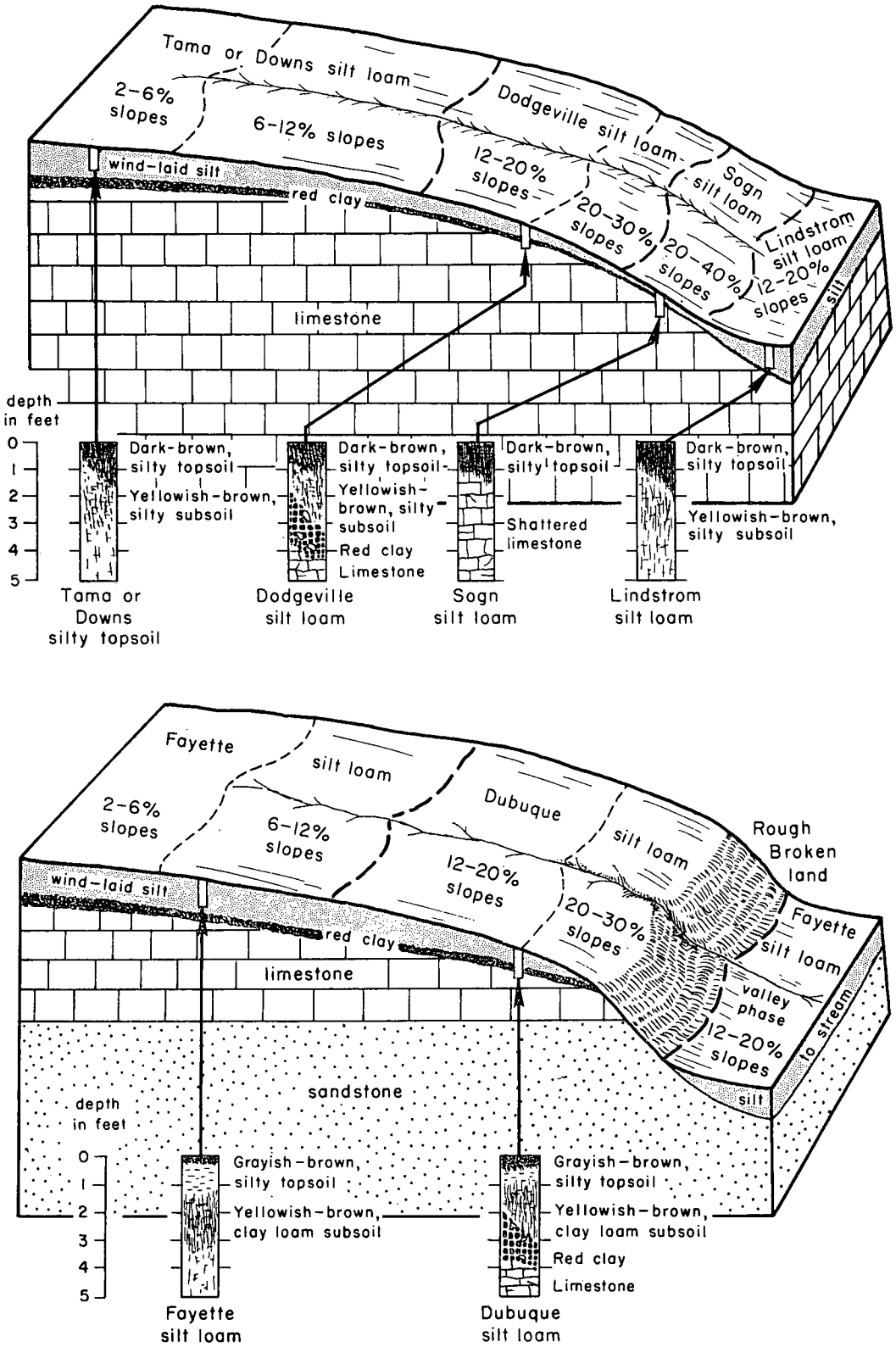

Figure 10.—**Two landscapes of upland soils showing the relationship of the major soils. The upper illustration shows soils formed under prairie, and the lower one, soils formed under forest. By Soil Survey Division, University of Wisconsin.**

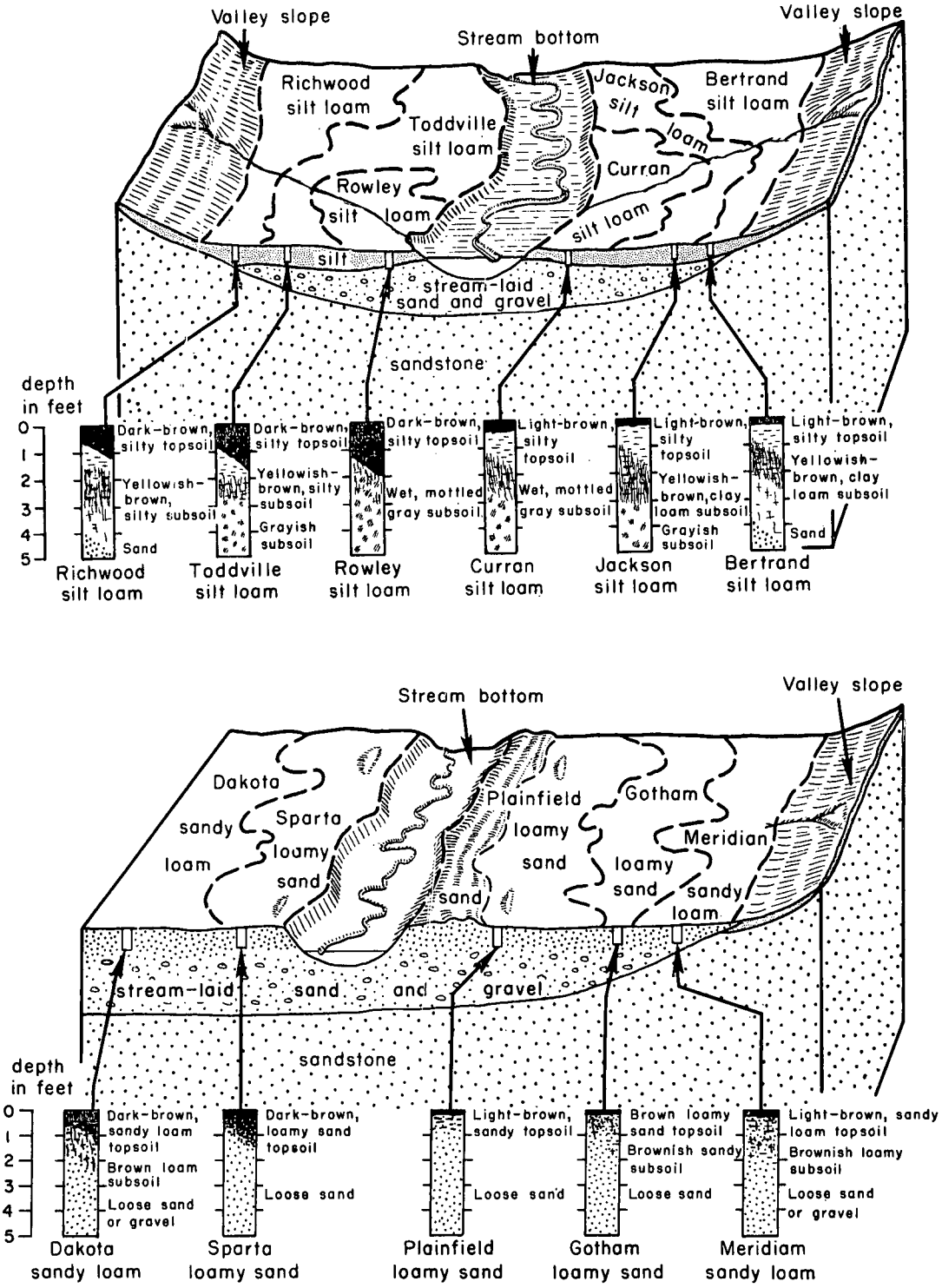

Figure 11.—Two landscapes of terrace soils showing the relationship of the major soils. The upper illustration shows silty soils, and the lower one, sandy soils. By Soil Survey Division, University of Wisconsin.

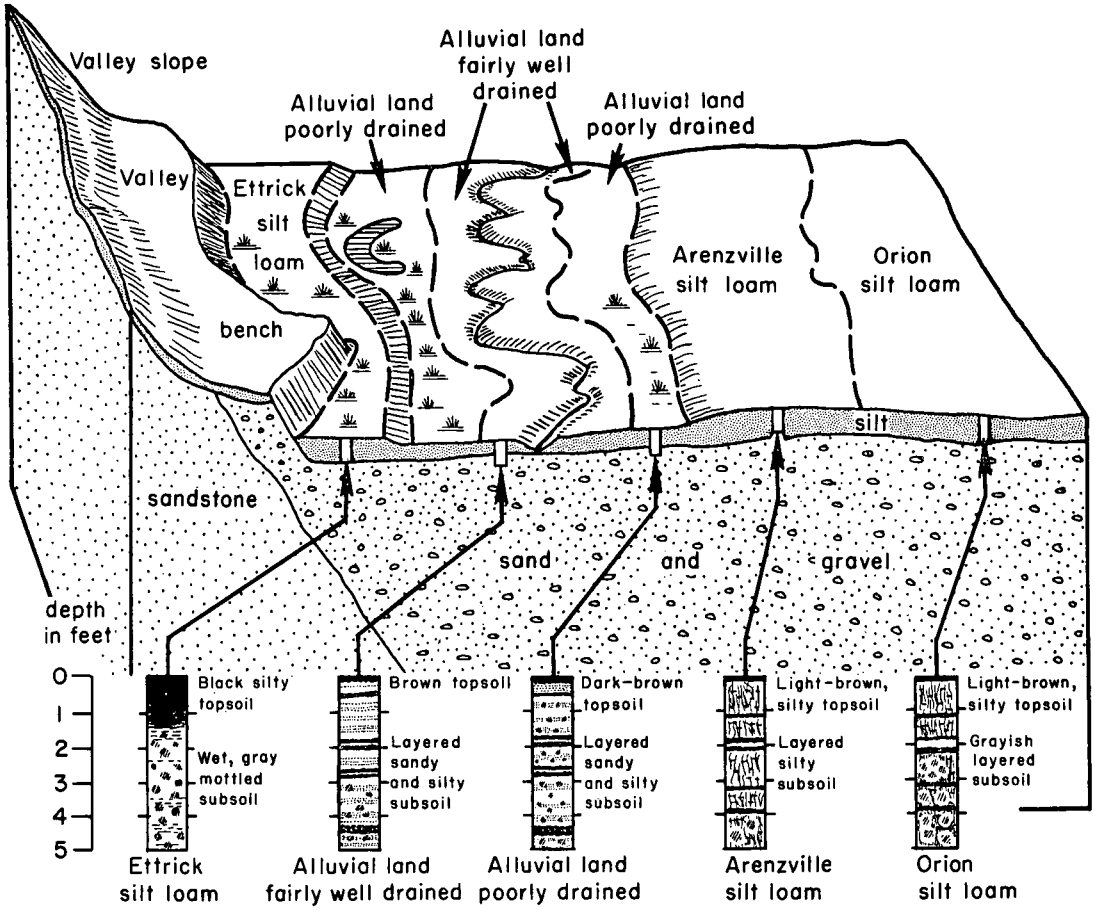

Figure 12.—**Landscape of the soils of the bottom lands showing the relationship of the major soils. By Soil Survey Division, University of Wisconsin.**

which are also along the larger streams. The Huntsville and Lawson soils, however, formed under prairie, and, therefore, have a darker colored surface layer than the Arenzville and Orion. The Boaz and Ettrick soils formed in somewhat older deposits than the other soils on bottom lands, and they have a finer textured subsoil.

Descriptions of Soils

This section provides detailed information about the soils. It describes each series, a typical profile of each soil type, and then each mapping unit, or soil, in the county. The soils are described approximately in alphabetical order. The descriptions of color and consistence are those of moist soil. Terms used to describe the soils are defined in the Glossary. A list of the soils mapped is given at the back of this report, along with the capability unit of each. The approximate acreage and proportionate extent of the soils are given in table 7.

In this section all the soils of one series that have the same kind of texture in the surface layer are grouped together and a profile that is typical of the group is described. A soil profile is a vertical section of a soil showing its various layers (fig. 13). By studying the profile, soil scientists learn much about the behavior of a soil. Following are some of the characteristics observed that are agriculturally important.

Color is normally related to the amount of organic matter in the soil. The darker the surface soil, as a rule, the more organic matter it contains. Streaks or spots of gray, yellow, and brown in the lower layers generally indicate poor drainage and poor aeration.

Texture, or the content of sand, silt, and clay in the soil, is determined by the way the soil feels when it is rubbed between the fingers. It is later checked by laboratory analysis. Texture determines how well the soil holds moisture, plant nutrients, and fertilizer and whether it is easy or difficult to cultivate.

Structure is the way the individual soil particles are arranged in larger grains and the amount of pore (open) space between grains. Structure indicates the ease or difficulty with which the soil is penetrated by plant roots, water, and air.

Consistence, or the tendency of the soil to crumble or to stick together, indicates whether the soil is easy or difficult to keep open and porous under cultivation.

Other characteristics observed in the course of the field study and considered in classifying the soil are the depth to bedrock or compact layers; the presence of gravel or stones that may interfere with cultivation; the steepness and pattern of slopes; the degree of erosion; the nature

TABLE 7.—*Approximate acreage and proportionate extent of the soils*

Soil	Area	Extent
	Acres	*Percent*
Arenzville silt loam	5,536	1.1
Bertrand silt loam, 0 to 2 percent slopes	1,800	.4
Bertrand silt loam, 2 to 6 percent slopes	750	.2
Bertrand silt loam, 2 to 6 percent slopes, moderately eroded	1,210	.2
Bertrand silt loam, 6 to 12 percent slopes, moderately eroded	350	.1
Boaz silt loam	1,930	.4
Boone fine sand, 6 to 12 percent slopes, eroded	200	(1)
Boone fine sand, 12 to 30 percent slopes, eroded	716	.1
Chaseburg silt loam, 0 to 2 percent slopes	1,950	.4
Chaseburg silt loam, 2 to 6 percent slopes	4,700	1.0
Chaseburg silt loam, 6 to 12 percent slopes	850	.2
Chaseburg fine sandy loam, 0 to 2 percent slopes	150	(1)
Chaseburg fine sandy loam, 2 to 6 percent slopes	700	.1
Chaseburg fine sandy loam, 6 to 12 percent slopes	100	(1)
Curran silt loam, 0 to 3 percent slopes	68	(1)
Dakota sandy loam, 0 to 2 percent slopes	1,538	.3
Dakota sandy loam, 2 to 6 percent slopes	52	(1)
Dakota sandy loam, 2 to 6 percent slopes, moderately eroded	80	(1)
Dakota sandy loam, 6 to 12 percent slopes, moderately eroded	48	(1)
Dakota loam, 0 to 2 percent slopes	497	.1
Dakota loam, 2 to 6 percent slopes	109	(1)
Derinda stony silt loam, 2 to 6 percent slopes	57	(1)
Derinda stony silt loam, 6 to 12 percent slopes	790	.2
Dillon loamy fine sand	451	.1
Dodgeville silt loam, 2 to 6 percent slopes	960	.2
Dodgeville silt loam, 2 to 6 percent slopes, moderately eroded	3,360	.7
Dodgeville silt loam, 6 to 12 percent slopes	900	.2
Dodgeville silt loam, 6 to 12 percent slopes, moderately eroded	16,993	3.5
Dodgeville silt loam, 12 to 20 percent slopes	1,650	.3
Dodgeville silt loam, 12 to 20 percent slopes, moderately eroded	12,734	2.6
Dodgeville silt loam, 20 to 30 percent slopes, moderately eroded	256	.1
Dodgeville silt loam, deep, 0 to 2 percent slopes	293	.1
Dodgeville silt loam, deep, 2 to 6 percent slopes	960	.2
Dodgeville silt loam, deep, 2 to 6 percent slopes, moderately eroded	15,460	3.2
Dodgeville silt loam, deep, 6 to 12 percent slopes, moderately eroded	16,440	3.4
Dodgeville silt loam, deep, 12 to 20 percent slopes	1,056	.2
Dodgeville silt loam, deep, 12 to 20 percent slopes, moderately eroded	4,100	.8
Dodgeville silt loam, shallow, 4 to 12 percent slopes	136	(1)
Dodgeville silt loam, shallow, 2 to 6 percent slopes, moderately eroded	261	.1
Dodgeville silt loam, shallow, 6 to 12 percent slopes, moderately eroded	880	.2
Dodgeville silt loam, shallow, 12 to 20 percent slopes	145	(1)
Dodgeville silt loam, shallow, 12 to 20 percent slopes, moderately eroded	1,922	.4
Dodgeville soils, 2 to 6 percent slopes, severely eroded	210	(1)
Dodgeville soils, 6 to 12 percent slopes, severely eroded	520	.1
Dodgeville soils, 12 to 20 percent slopes, severely eroded	96	(1)
Dodgeville soils, deep, 2 to 6 percent slopes, severely eroded	182	(1)
Dodgeville soils, deep, 6 to 12 percent slopes, severely eroded	290	0.1
Dodgeville soils, deep, 12 to 20 percent slopes, severely eroded	980	.2
Downs silt loam, 2 to 6 percent slopes	134	(1)
Downs silt loam, 2 to 6 percent slopes, moderately eroded	292	.1
Downs silt loam, 6 to 12 percent slopes, moderately eroded	124	(1)
Dubuque silt loam, 2 to 6 percent slopes	170	(1)
Dubuque silt loam, 2 to 6 percent slopes, moderately eroded	6,720	1.4
Dubuque silt loam, 6 to 12 percent slopes	1,200	.2
Dubuque silt loam, 6 to 12 percent slopes, moderately eroded	23,700	4.9
Dubuque silt loam, 12 to 20 percent slopes	8,350	1.7
Dubuque silt loam, 12 to 20 percent slopes, moderately eroded	38,352	7.9
Dubuque silt loam, 20 to 30 percent slopes	7,958	1.6
Dubuque silt loam, 20 to 30 percent slopes, moderately eroded	2,650	.5
Dubuque silt loam, 30 to 45 percent slopes	864	.2
Dubuque silt loam, 30 to 45 percent slopes, moderately eroded	960	.2
Dubuque silt loam, deep, 2 to 6 percent slopes	297	.1
Dubuque silt loam, deep, 2 to 6 percent slopes, moderately eroded	9,845	2.0
Dubuque silt loam, deep, 6 to 12 percent slopes	90	(1)
Dubuque silt loam, deep, 6 to 12 percent slopes, moderately eroded	26,780	5.5
Dubuque silt loam, deep, 12 to 20 percent slopes	3,350	.7
Dubuque silt loam, deep, 12 to 20 percent slopes, moderately eroded	14,050	2.9
Dubuque silt loam, deep, 20 to 30 percent slopes	1,296	.3
Dubuque silt loam, deep, 20 to 30 percent slopes, moderately eroded	1,904	.4
Dubuque soils, 2 to 6 percent slopes, severely eroded	120	(1)
Dubuque soils, 6 to 12 percent slopes, severely eroded	3,420	.7
Dubuque soils, 12 to 20 percent slopes, severely eroded	3,704	.8
Dubuque soils, 20 to 30 percent slopes, severely eroded	607	.1
Dubuque soils, deep, 6 to 12 percent slopes, severely eroded	550	.1
Dubuque soils, deep, 12 to 20 percent slopes, severely eroded	1,980	.4
Dubuque stony silt loam, 2 to 6 percent slopes, moderately eroded	240	(1)
Dubuque stony silt loam, 6 to 12 percent slopes, moderately eroded	150	(1)
Dubuque stony silt loam, 12 to 20 percent slopes	1,806	.4
Dubuque stony silt loam, 12 to 20 percent slopes, moderately eroded	1,960	.4
Dubuque stony silt loam, 20 to 30 percent slopes	4,420	.9
Dubuque stony silt loam, 20 to 30 percent slopes, moderately eroded	4,350	.9
Ettrick silt loam	4,215	.9
Fayette silt loam, uplands, 0 to 2 percent slopes	118	(1)

See footnotes at end of table.

TABLE 7.—*Approximate acreage and proportionate extent of the soils*—Continued

Soil	Area	Extent
	Acres	*Percent*
Fayette silt loam, uplands, 2 to 6 percent slopes	352	0. 1
Fayette silt loam, uplands, 2 to 6 percent slopes, moderately eroded	580	. 1
Fayette silt loam, uplands, 6 to 12 percent slopes	138	(1)
Fayette silt loam, uplands, 6 to 12 percent slopes, moderately eroded	480	. 1
Fayette silt loam, uplands, 6 to 12 percent slopes, severely eroded	90	(1)
Fayette silt loam, uplands, 12 to 20 percent slopes	155	(1)
Fayette silt loam, uplands, 12 to 20 percent slopes, moderately eroded	945	. 2
Fayette silt loam, uplands, 12 to 20 percent slopes, severely eroded	140	(1)
Fayette silt loam, uplands, 20 to 30 percent slopes, moderately eroded	73	(1)
Fayette silt loam, valleys, 2 to 6 percent slopes	220	(1)
Fayette silt loam, valleys, 2 to 6 percent slopes, moderately eroded	177	(1)
Fayette silt loam, valleys, 6 to 12 percent slopes, moderately eroded	355	. 1
Fayette silt loam, valleys, 12 to 20 percent slopes, moderately eroded	2, 011	. 4
Fayette silt loam, valleys, 12 to 20 percent slopes, severely eroded	87	(1)
Fayette silt loam, valleys, 20 to 30 percent slopes	1, 365	. 3
Fayette stony silt loam, valleys, 6 to 12 percent slopes	181	(1)
Fayette stony silt loam, valleys, 12 to 20 percent slopes	404	. 1
Fayette stony silt loam, valleys, 12 to 20 percent slopes, moderately eroded	170	(1)
Fayette stony silt loam, valleys, 20 to 30 percent slopes	226	(1)
Gale silt loam, 2 to 6 percent slopes	288	. 1
Gale silt loam, 2 to 6 percent slopes, moderately eroded	528	. 1
Gale silt loam, 6 to 12 percent slopes	576	. 1
Gale silt loam, 6 to 12 percent slopes, moderately eroded	2, 544	. 5
Gale silt loam, 6 to 12 percent slopes, severely eroded	192	(1)
Gale silt loam, 12 to 20 percent slopes	336	. 1
Gale silt loam, 12 to 20 percent slopes, moderately eroded	3, 804	. 8
Gale silt loam, 12 to 20 percent slopes, severely eroded	480	. 1
Gale silt loam, 20 to 30 percent slopes	920	. 2
Gale silt loam, 20 to 30 percent slopes, moderately eroded	528	. 1
Gale stony silt loam, 6 to 12 percent slopes	112	(1)
Gale stony silt loam, 6 to 12 percent slopes, moderately eroded	80	(1)
Gale stony silt loam, 12 to 20 percent slopes	650	. 1
Gale stony silt loam, 12 to 20 percent slopes, moderately eroded	5, 250	1. 1
Gale stony silt loam, 20 to 30 percent slopes	2, 833	. 6
Gale stony silt loam, 20 to 30 percent slopes, moderately eroded	1, 202	. 2
Gotham loamy fine sand, 0 to 2 percent slopes	1, 201	. 2
Gotham loamy fine sand, 2 to 6 percent slopes	182	(1)
Gotham loamy fine sand, 2 to 8 percent slopes, eroded	264	. 1
Hesch loam, 2 to 6 percent slopes, moderately eroded	55	(1)
Hesch loam, 6 to 12 percent slopes, moderately eroded	142	(1)
Hesch loam, 12 to 20 percent slopes, moderately eroded	412	0. 1
Hesch sandy loam, 20 to 30 percent slopes, moderately eroded	92	(1)
Hixton sandy loam, 2 to 6 percent slopes, moderately eroded	81	(1)
Hixton sandy loam, 6 to 12 percent slopes	45	(1)
Hixton sandy loam, 6 to 12 percent slopes, moderately eroded	255	. 1
Hixton sandy loam, 12 to 20 percent slopes	210	(1)
Hixton sandy loam, 12 to 20 percent slopes, moderately eroded	1, 810	. 4
Hixton sandy loam, 12 to 20 percent slopes, severely eroded	285	. 1
Hixton sandy loam, 20 to 30 percent slopes	120	(1)
Hixton sandy loam, 20 to 30 percent slopes, moderately eroded	435	. 1
Hixton sandy loam, 30 to 45 percent slopes	472	. 1
Huntsville silt loam	4, 631	1. 0
Jackson silt loam, 0 to 2 percent slopes	649	. 1
Jackson silt loam, 2 to 6 percent slopes	178	(1)
Judson silt loam, 0 to 2 percent slopes	1, 750	. 4
Judson silt loam, 2 to 6 percent slopes	1, 888	. 4
Judson silt loam, 6 to 12 percent slopes	120	(1)
Lawson silt loam	6, 217	1. 3
Lindstrom silt loam, 2 to 6 percent slopes	55	(1)
Lindstrom silt loam, 2 to 6 percent slopes, moderately eroded	85	(1)
Lindstrom silt loam, 6 to 12 percent slopes	192	(1)
Lindstrom silt loam, 6 to 12 percent slopes, moderately eroded	325	. 1
Lindstrom silt loam, 12 to 20 percent slopes	120	(1)
Lindstrom silt loam, 12 to 20 percent slopes, moderately eroded	965	. 2
Loamy alluvial land	2, 280	. 5
Loamy alluvial land, poorly drained	5, 450	1. 1
Marsh	135	(1)
Meridian sandy loam, 0 to 2 percent slopes	1, 840	. 4
Meridian sandy loam, 2 to 6 percent slopes	258	. 1
Meridian sandy loam, 2 to 6 percent slopes, moderately eroded	750	. 2
Meridian sandy loam, 6 to 12 percent slopes	45	(1)
Meridian sandy loam, 6 to 12 percent slopes, moderately eroded	84	(1)
Meridian loam, somewhat poorly drained variant	118	(1)
Millsdale silty clay loam, shale variant	60	(1)
Mine pits and dumps	435	. 1
Muscatine silt loam	187	(1)
Northfield loam, 2 to 6 percent slopes, moderately eroded	47	(1)
Northfield loam, 6 to 12 percent slopes	70	(1)
Northfield loam, 6 to 12 percent slopes, moderately eroded	403	. 1
Northfield loam, 12 to 20 percent slopes	187	(1)
Northfield loam, 12 to 20 percent slopes, moderately eroded	1, 408	. 3
Northfield loam, 20 to 30 percent slopes	177	(1)
Northfield loam, 20 to 30 percent slopes, moderately eroded	330	. 1
Northfield sandy loam, 6 to 12 percent slopes	61	(1)
Northfield sandy loam, 6 to 12 percent slopes, moderately eroded	213	(1)
Northfield sandy loam, 12 to 20 percent slopes	177	(1)
Northfield sandy loam, 12 to 20 percent slopes, moderately eroded	983	. 2
Northfield sandy loam, 20 to 30 percent slopes	241	(1)
Northfield sandy loam, 20 to 30 percent slopes, moderately eroded	268	. 1
Northfield stony loam, 6 to 20 percent slopes	369	. 1

See footnotes at end of table.

TABLE 7.—*Approximate acreage and proportionate extent of the soils*—Continued

Soil	Area	Extent
	Acres	*Percent*
Northfield stony loam, 12 to 20 percent slopes, moderately eroded	738	0. 2
Northfield stony loam, 20 to 30 percent slopes	2, 116	. 4
Northfield stony loam, 20 to 30 percent slopes, moderately eroded	2, 445	. 5
Norwalk silt loam, deep, 2 to 6 percent slopes, moderately eroded	1, 807	. 4
Norwalk silt loam, deep, 6 to 12 percent slopes, moderately eroded	603	. 1
Orion silt loam	9, 784	2. 0
Osseo silt loam, 0 to 2 percent slopes	97	(1)
Osseo silt loam, 2 to 6 percent slopes	255	. 1
Peat and Muck, deep	3, 992	. 8
Peat and Muck, shallow	424	. 1
Plainfield fine sand, 0 to 6 percent slopes, eroded	686	. 1
Plainfield loamy fine sand, 0 to 2 percent slopes	226	(1)
Plainfield loamy fine sand, 2 to 6 percent slopes	514	. 1
Plainfield loamy fine sand, mottled substratum variant	75	(1)
Plainfield and Sparta fine sands and Dune land	2, 100	. 4
Richwood silt loam, 0 to 2 percent slopes	1, 129	. 2
Richwood silt loam, 2 to 6 percent slopes	106	(1)
Richwood silt loam, 2 to 6 percent slopes, moderately eroded	281	. 1
Richwood silt loam, 6 to 12 percent slopes	36	(1)
Richwood silt loam, 6 to 12 percent slopes, moderately eroded	152	(1)
Riverwash	350	. 1
Rowley silt loam	34	(1)
Rozetta silt loam, 2 to 6 percent slopes, moderately eroded	221	(1)
Sogn and Dodgeville silt loams, shallow, 2 to 6 percent slopes	1, 039	. 2
Sogn and Dodgeville silt loams, shallow, 2 to 6 percent slopes, moderately eroded	1, 248	. 3
Sogn and Dodgeville silt loams, shallow, 6 to 12 percent slopes	1, 247	. 3
Sogn and Dodgeville silt loams, shallow, 6 to 12 percent slopes, moderately eroded	2, 928	. 6
Sogn and Dodgeville silt loams, shallow, 12 to 20 percent slopes	3, 600	0. 7
Sogn and Dodgeville silt loams, shallow, 12 to 20 percent slopes, moderately eroded	9, 336	1. 9
Sogn and Dodgeville silt loams, shallow, 20 to 30 percent slopes	1, 392	. 3
Sogn and Dodgeville silt loams, shallow, 20 to 30 percent slopes, moderately eroded	1, 840	. 4
Sparta loamy fine sand, 0 to 2 percent slopes	5, 034	1. 0
Sparta loamy fine sand, 0 to 2 percent slopes, eroded	355	. 1
Sparta loamy fine sand, 2 to 6 percent slopes	185	(1)
Sparta loamy fine sand, 2 to 6 percent slopes, eroded	360	. 1
Sparta loamy fine sand, moderately well drained variant	535	. 1
Steep stony and rocky land	55, 857	11. 5
Stony alluvial land	1, 150	. 2
Stronghurst silt loam, 0 to 2 percent slopes	60	(1)
Stronghurst silt loam, 2 to 6 percent slopes	240	(1)
Stronghurst silt loam, 2 to 6 percent slopes, moderately eroded	170	(1)
Tama silt loam, 0 to 2 percent slopes	2, 914	. 6
Tama silt loam, 2 to 6 percent slopes	3, 080	. 6
Tama silt loam, 2 to 6 percent slopes, moderately eroded	12, 494	2. 6
Tama silt loam, 6 to 12 percent slopes, moderately eroded	388	. 1
Tell silt loam, 0 to 2 percent slopes	1, 056	. 2
Tell silt loam, 2 to 6 percent slopes	212	(1)
Tell silt loam, 2 to 6 percent slopes, moderately eroded	282	. 1
Tell silt loam, 6 to 12 percent slopes, moderately eroded	178	(1)
Terrace escarpments, sandy	458	. 1
Terrace escarpments, loamy	166	(1)
Toddville silt loam, 0 to 2 percent slopes	307	. 1
Toddville silt loam, 2 to 6 percent slopes	240	(1)
Wallkill silt loam	92	(1)
Total	487, 040	[2] 98. 9

[1] Less than 0.1 percent.
[2] Soils that have an acreage of less than 0.1 percent make up the remainder of the total land area.

of the underlying parent material from which the soil has formed; the surface and internal drainage; and the reaction (acidity or alkalinity) of the soil as measured by chemical tests.

To help you find the soils on the map, a map symbol is given in parentheses after each soil name. The capability unit listed after the description of each soil will help you to determine the suitable use and management for each soil.

Arenzville Series

The Arenzville series is made up of light-colored, nearly level soils on flood plains. The soils are well drained to moderately well drained. They occur along the larger streams, where they have formed in silty materials. The materials were washed into streams that flowed from the loess-covered uplands and were then redeposited on the floors of valleys by overflow from the streams. In most places these soils have a darker, buried soil at a depth between 18 and 42 inches in their profile (fig. 14).

The Arenzville soils are high in moisture-holding capacity and in natural fertility. They are neutral throughout the profile.

Occasional flooding and the cutting of streambanks limit the use of these soils for crops. Floodwaters frequently cover the areas for short periods in spring, but the soils are otherwise well suited to corn, small grains, hay, and pasture. If the crops are not damaged by floods, yields are good. The crops respond well if a complete fertilizer is applied, but they make even higher yields if supplemental nitrogen is added. There is only one mapping unit of this series, Arenzville silt loam, in Iowa County.

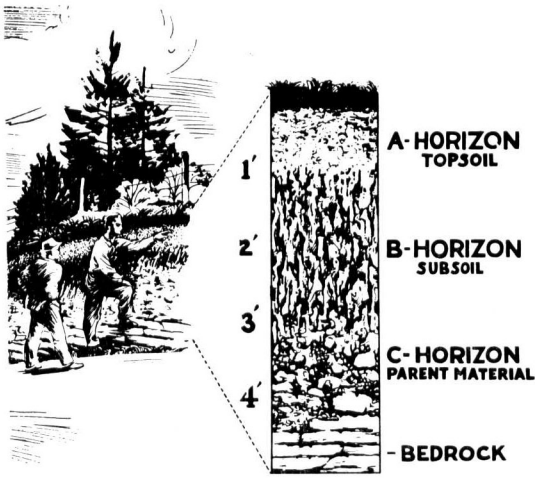

Figure 13.—Diagram of a soil profile. By Soil Survey Division, University of Wisconsin.

ARENZVILLE SILT LOAMS

The following describes a typical profile of an Arenzville silt loam:

A_1 0 to 9 inches, dark-gray to dark grayish-brown silt loam; moderate, medium, granular structure; friable; grass roots plentiful; neutral.

C_1 9 to 20 inches, grayish-brown to dark grayish-brown silt loam; weakly stratified; has thin layers of very fine sand; friable; plant roots plentiful; neutral.

C_2 20 to 34 inches, light grayish-brown to brown, stratified silt with thin layers of fine sand; friable; plant roots plentiful to a depth of 24 inches, and a few plant roots below that depth; neutral.

A_b 34 inches +, very dark brown to very dark gray silt loam; weak, medium, granular structure; friable; a few plant roots; neutral.

The texture of the surface layer is dominantly silt loam, but in a few small areas it is fine sandy loam.

Arenzville silt loam (Ar).—The profile of this soil is similar to the profile described as typical of the Arenzville silt loams. Capability unit IIw–11.

Bertrand Series

The Bertrand series consists of light-colored, deep, silty soils that are well drained. The soils are nearly level to sloping and are on high terraces along streams (fig. 15). The areas are fairly small, but they occur throughout the county. The soils formed in yellowish-brown silt that was 42 or more inches thick over stratified silt and fine sand. Slopes range from 0 to 12 percent, but in most areas the soils have slopes of less than 6 percent. The natural vegetation consisted of trees.

The surface layer of these soils is grayish-brown, friable silt loam. The subsoil, a yellowish-brown, permeable silty clay loam, overlies a yellowish-brown, friable, silty substratum.

These soils are moderate in permeability, and their moisture-holding capacity is high. They are moderately high in natural fertility and are medium acid to neutral. The hazard of erosion is slight to severe.

These soils are used mainly for cultivated crops, and they are well suited to all of the crops commonly grown in the county. If they are well managed, moderate to high yields are obtained. Crops on these soils respond well if a complete fertilizer is applied.

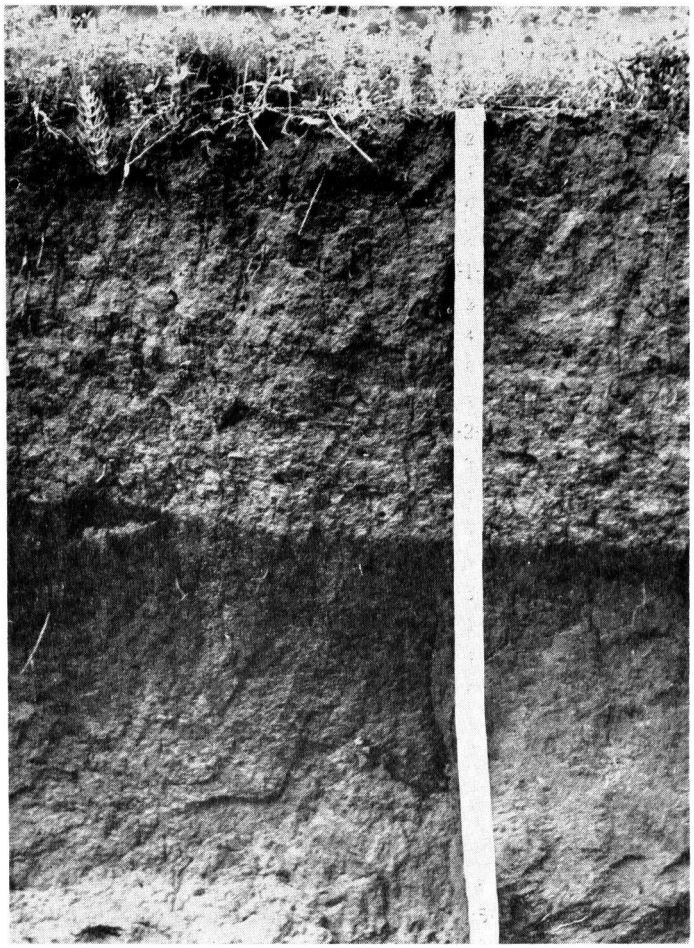

Figure 14.—Profile of an Arenzville silt loam showing the lighter colored alluvial material that overlies a darker, buried soil; depth shown is more than 5 feet.

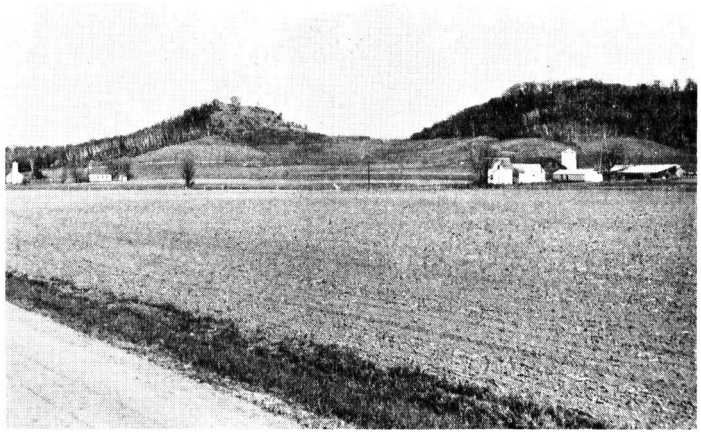

Figure 15.—Bertrand silt loam and Jackson silt loam on the nearly level stream benches in the foreground; soils of the valleys and uplands are in the background.

BERTRAND SILT LOAMS

The following describes a profile of a Bertrand silt loam observed in a cultivated field that has been limed:

A_p 0 to 9 inches, dark grayish-brown silt loam; weak, medium, subangular blocky structure that breaks to moderate, medium granules; friable; plant roots plentiful; neutral.

A_2 9 to 12 inches, brown to pale-brown silt loam; moderate, medium, platy structure; friable; plant roots plentiful; slightly acid.

B_1 12 to 16 inches, dark-brown silt loam; moderate, fine, subangular blocky structure; friable; plant roots plentiful; slightly acid.

B_2 16 to 29 inches, dark-brown to dark yellowish-brown silty clay loam; moderate, medium, subangular blocky structure; firm; the surfaces of many of the structural peds have thin, gray coatings and clay skins; plant roots plentiful; medium acid.

B_3 29 to 38 inches, yellowish-brown, heavy silt loam; weak, medium, subangular blocky structure; friable; a few thin, gray coatings on the surfaces of the structural peds; plant roots plentiful; medium acid.

C 38 inches +, yellowish-brown to light yellowish-brown silt loam; massive; friable; medium acid. In most places stratified fine sand and silt are at a depth below 42 inches.

Bertrand silt loam, 0 to 2 percent slopes (BeA).—This soil has lost less than one-third of its original surface layer through erosion, and there is a slight hazard of further erosion. Capability unit I–1.

Bertrand silt loam, 2 to 6 percent slopes (BeB).—The risk of water erosion on this soil is moderate. Capability unit IIe–1.

Bertrand silt loam, 2 to 6 percent slopes, moderately eroded (BeB2).—This soil has lost from one-third to two-thirds of the original surface layer through erosion. As a result, the present surface layer is lighter colored than the original one, and it is only 6 to 9 inches thick. Capability unit IIe–1.

Bertrand silt loam, 6 to 12 percent slopes, moderately eroded (BeC2).—The hazard of water erosion is severe on this soil. From one-third to two-thirds of the original surface layer has been lost through erosion. As a result, the present surface layer is lighter colored than the original one, and it ranges in thickness from 5 to 7 inches. In a few small areas the soil is severely eroded. Capability unit IIIe–1.

Boaz Series

The Boaz series consists of nearly level, somewhat poorly drained soils on bottom lands. The soils are on the higher parts of flood plains adjacent to streams. They formed in silty sediments that were washed into streams that flowed from the loess-covered uplands. The sediments were then redeposited in the valley bottoms by overflow from the streams.

The Boaz soils are high in moisture-holding capacity and in natural fertility. They are nearly neutral throughout the profile.

These soils are suited to crops and pasture. To obtain high yields, however, the areas need to be drained and protected from flooding. There is only one mapping unit of this series, Boaz silt loam, in Iowa County.

BOAZ SILT LOAMS

The following describes a typical profile of a Boaz silt loam in a pastured area:

A_{11} 0 to 10 inches, very dark gray silt loam; moderate, medium, granular structure; friable; plant roots plentiful; neutral.

A_{12} 10 to 16 inches, very dark grayish-brown to very dark gray silt loam; weak, thin, platy structure; friable; plant roots plentiful; a few, distinct, fine spots and streaks of dark yellowish brown; slightly acid.

C_1 16 to 20 inches, dark-gray to dark grayish-brown silt loam; weak, medium, subangular blocky structure that breaks to weak, thick plates; friable; a few sedge roots; many, distinct, medium spots and streaks of dark yellowish brown; slightly acid.

C_{2g} 20 to 39 inches, grayish-brown to gray, light silty clay loam; weak to moderate, medium, subangular blocky structure; firm; a few sedge roots; many, distinct, medium spots and streaks of yellowish brown and red; slightly acid.

C_{3g} 39 inches +, gray silt loam; massive; friable; slightly acid.

In a few places there are thin layers of fine sand in the profile. In other places the soils overlie deposits of bluish-gray silty clay.

Boaz silt loam (Bm).—This soil is used mainly for pasture. Its profile is similar to the profile described as typical of the Boaz silt loams. Capability unit IIw–1.

Boone Series

The Boone series is made up of light-colored, sandy soils on uplands. The soils are excessively drained. They formed in place in materials weathered from sandstone. Trees made up the vegetation.

These soils have very rapid permeability and are very low in moisture-holding capacity. Their natural fertility is low, and they are medium acid to strongly acid.

The Boone soils are not suited to crops. They are droughty and are probably best suited to limited grazing or to trees. If the cover of vegetation is removed, the soils are likely to be seriously eroded. Most of the areas are in pasture or have been left in trees. A few small areas were once cultivated but are now being returned to pasture or trees.

BOONE FINE SANDS

The following describes a profile of a Boone fine sand observed in a pastured area:

A_1 0 to 4 inches, grayish-brown fine sand; single grain; loose; plant roots plentiful; strongly acid.

C_1 4 to 8 inches, pale-brown fine sand; single grain; loose; a few roots; strongly acid.

C_2 8 to 24 inches, brownish-yellow fine sand; single grain; loose; a few fragments of sandstone are scattered throughout this horizon; a few plant roots; medium acid.

C_3 24 inches +, pale-yellow to light-gray sandstone that is partly weathered; weakly cemented and massive in place; medium acid.

The thickness of loose sand over the unweathered sandstone bedrock ranges from less than 20 inches to more than 3 feet.

Boone fine sand, 6 to 12 percent slopes, eroded (BoC2).—The surface layer of this soil is slightly thinner and lighter colored than that in the profile described as typical of the Boone fine sands. From one-third to two-

thirds of the original surface layer has been lost through erosion. Capability unit VIIs–3.

Boone fine sand, 12 to 30 percent slopes, eroded (BoD2).—This soil has been heavily grazed, or it has been cultivated in places. As a result, erosion has occurred and the surface layer is thinner and lighter colored than that in the profile described as typical of the Boone fine sands. A few small areas are severely eroded. In these areas the original surface layer is generally missing. Capability units VIIs–3.

Chaseburg Series

The Chaseburg series is made up of light-colored, moderately well drained to well drained soils that are medium textured. The soils occur at the heads of small draws, along small intermittent streams, and along the foot slopes of steep hills. They formed in local silty and sandy materials, 40 or more inches thick, that were washed from the uplands. Most of the areas are small, and they are widely distributed throughout the county. Slopes range from 0 to 12 percent, but in most areas the soils have slopes of less than 6 percent.

The surface layer of these soils is dark grayish-brown silt loam or fine sandy loam. The subsoil is weakly defined. Its color is brown, and it is underlain by a substratum of brown, friable silt loam. Stones and boulders commonly occur throughout the profile. Layers or lenses of sand are common in the solum.

The Chaseburg soils are moderate in permeability, and their moisture-supplying capacity is high. They have moderate natural fertility and are medium acid to neutral.

The dominant Chaseburg soils are silt loams. In places, however, sandier materials occur in the surface layer and the soils have been mapped as fine sandy loams.

If slopes are favorable, the Chaseburg soils are well suited to all of the crops commonly grown in the county. Moderate to high yields are generally obtained if the soils are well managed. Because the areas are small, the soils are commonly used like the adjoining soils.

Chaseburg Silt Loams

The following describes a typical profile of a Chaseburg silt loam in a wooded pasture:

- A_1 0 to 12 inches, dark grayish-brown silt loam; moderate, medium, granular structure; friable; contains numerous roots and earthworm casts; neutral.
- C_1 12 to 32 inches, grayish-brown to brown, heavy silt loam; weak, medium, subangular blocky structure; friable; a few, fine, distinct spots of gray and yellowish brown in the lower part; plant roots plentiful; slightly acid.
- C_2 32 inches +, brown to grayish-brown silt loam; weak, coarse, subangular blocky structure that is massive with increasing depth; friable; a few, faint spots of yellowish brown; medium acid.

Chaseburg silt loam, 0 to 2 percent slopes (ChA).—The profile of this soil is similar to the profile described as typical of the Chaseburg silt loams. Capability unit IIw–11.

Chaseburg silt loam, 2 to 6 percent slopes (ChB).—This soil is moderately eroded in a few small spots. In the eroded areas the surface layer is thinner than that in the profile described as typical of the Chaseburg silt loams. Capability unit IIw–11.

Chaseburg silt loam, 6 to 12 percent slopes (ChC).—The surface layer of this soil is generally lighter colored and thinner than that in the profile described as typical of the Chaseburg silt loams. In a few small areas, the soil is moderately eroded, and generally less than 6 inches of the original surface layer remains. Capability unit IIIe–1.

Chaseburg Fine Sandy Loams

The Chaseburg fine sandy loams vary considerably in profile characteristics. The following describes a profile in a wooded pasture:

- A_1 0 to 10 inches, dark grayish-brown to brown fine sandy loam; weak, medium, granular structure; friable; plant roots abundant; medium acid.
- C_1 10 to 33 inches, brown to light yellowish-brown, gritty silt loam; weak, medium, subangular blocky structure; friable; has thin layers of fine sandy loam; tree roots plentiful; medium acid.
- C_2 33 inches +, brown silt loam; friable; medium acid.

Chaseburg fine sandy loam, 0 to 2 percent slopes (CaA).—The profile of this soil is similar to that described as typical of the Chaseburg fine sandy loams. Capability unit IIw–11.

Chaseburg fine sandy loam, 2 to 6 percent slopes (CaB).—This soil is similar to the Chaseburg fine sandy loam described, but it has stronger slopes. Capability unit IIw–11.

Chaseburg fine sandy loam, 6 to 12 percent slopes (CaC).—This soil has a slightly thinner surface layer than the Chaseburg fine sandy loam described, and it generally has more sand throughout the profile. A few small areas are moderately eroded. Capability unit IIIe–1.

Curran Series

The Curran series is made up of light-colored, deep, silty soils on stream benches, or terraces. The soils are somewhat poorly drained. They are near the Bertrand and Jackson soils but are in lower lying areas. The Curran soils formed under forest in silty deposits that were laid down by streams.

Typically, the surface layer of the Curran soils is grayish-brown silt loam. The subsoil, a brown silty clay loam, is highly mottled. The substratum is a light-colored silty clay loam.

Drainage is slow through the profile of these soils, and the moisture-holding capacity is high. The soils are moderately high in natural fertility and are slightly acid to strongly acid. Erosion is not a hazard.

These soils require supplemental drainage. Alfalfa, in particular, is hard to establish on them unless adequate drainage is provided. If the soils are drained and are well managed otherwise, yields of corn, oats, and hay are high. Corn and small grains respond well if a nitrogen fertilizer is added, especially if the fertilizer is applied early in spring. In most places lime is needed for high yields of legumes. There is only one mapping unit of this series, Curran silt loam, in Iowa County.

CURRAN SILT LOAMS

The following describes a profile of a Curran silt loam observed in a bluegrass pasture:

A_p 0 to 8 inches, dark grayish-brown silt loam; moderate, fine, granular structure; friable; plant roots plentiful; slightly acid.

A_2 8 to 15 inches, grayish-brown silt loam; moderate, very thin, platy structure; friable; plant roots plentiful; many, distinct, fine spots of dark gray and yellowish brown; medium acid.

B_1 15 to 19 inches, grayish-brown to yellowish-brown, heavy silt loam; moderate, medium, subangular blocky structure; friable; many, medium, distinct spots of yellowish brown and light brownish gray occur in this horizon and in the solum below; plant roots plentiful; strongly acid.

B_2 19 to 32 inches, grayish-brown to dark-brown silty clay loam; moderate, medium, subangular blocky structure; firm when moist, slightly plastic when wet, and slightly hard when dry; plant roots plentiful; strongly acid.

C 32 to 42 inches, light brownish-gray, light silty clay loam; massive; firm when moist, and slightly plastic when wet; a few old sedge roots; strongly acid.

Curran silt loam, 0 to 3 percent slopes (CuA).—This soil occurs in small areas throughout the county, and it occupies only a small acreage. The profile is like the profile described as typical of the Curran silt loams. Capability unit IIw–2.

Dakota Series

The Dakota series is made up of dark-colored soils on terraces along streams. The soils are well drained. They have formed under prairie in outwash of loam or sandy loam and occur near soils of the Sparta series. The areas are mainly along the Wisconsin River near Arena and Avoca, but a few small areas are along other major streams in the county. In most places the soils are nearly level, but some slopes are as much as 12 percent.

The surface layer of the Dakota soils is very dark brown to black sandy loam or loam. The subsoil, a dark-brown sandy loam to loam, is underlain by a sandy substratum, which is at a depth between 24 and 38 inches.

These soils have moderate to moderately rapid permeability, and their moisture-supplying capacity is moderately low. They are moderate in natural fertility and are slightly acid to neutral. The hazard of erosion is moderate in sloping areas.

The Dakota soils are well suited to all of the crops commonly grown in the county and are used mostly for cultivated crops. Yields are generally good under good management, but in dry periods yields are sometimes limited by lack of moisture. Applying practices to conserve moisture will help to maintain high yields. The sloping areas require protection to control erosion.

Crops on these soils respond well if lime and a complete fertilizer are added. The lime and fertilizer should be applied according to the needs indicated by soil tests. A nitrogen fertilizer is needed for corn and nonleguminous hay crops, but it is generally not needed for small grains.

The dominant Dakota soils in the county are sandy loams, but some loams have been mapped.

DAKOTA SANDY LOAMS

The following describes a profile of a Dakota sandy loam observed in a bluegrass pasture:

A_p 0 to 8 inches, black to very dark brown sandy loam; weak, fine, granular structure; very friable when moist; plant roots plentiful; neutral.

A_3 8 to 12 inches, very dark brown sandy loam; weak, fine, granular structure; very friable when moist; plant roots plentiful; slightly acid.

B_1 12 to 15 inches, dark-brown sandy loam; weak to moderate, medium, subangular blocky structure; very friable when moist; a few plant roots; slightly acid.

B_2 15 to 30 inches, very dark brown loam; slightly compact in place but has moderate, medium, subangular blocky structure when disturbed; friable; a few plant roots; slightly acid.

C 30 inches +, strong-brown fine and medium sand; single grain; loose; medium acid.

Thin lenses, or layers, of reddish-brown fine sandy loam or sandy clay loam occur in places in the C horizon. In some places there are a few well-rounded pebbles and cobbles of glacial age in the profile. Depth to the sandy substratum ranges from 24 to 40 inches.

Dakota sandy loam, 0 to 2 percent slopes (DbA).—This soil generally occurs between areas of Sparta soils and the silty terraces along rivers near the uplands. The profile is like the profile described as typical of the Dakota sandy loams. Capability unit IIIs–2.

Dakota sandy loam, 2 to 6 percent slopes (DbB).—The profile of this soil is similar to the profile described as typical of the Dakota sandy loams, but it has a slightly thinner surface layer. This soil also has stronger slopes than the soil described. Capability unit IIIs–2.

Dakota sandy loam, 2 to 6 percent slopes, moderately eroded (DbB2).—This soil has lost from one-third to two-thirds of its original surface layer through erosion. As a result, the present surface layer is very dark grayish brown and is 6 to 9 inches thick. Capability unit IIIs–2.

Dakota sandy loam, 6 to 12 percent slopes, moderately eroded (DbC2).—This soil has lost from one-third to two-thirds of its original surface layer. The present surface layer is dark brown and is 6 to 9 inches thick. A few small areas are slightly or severely eroded. In the severely eroded areas, the surface layer is lighter colored and thinner than in the moderately eroded areas. Capability unit IVe–7.

DAKOTA LOAMS

The following describes a typical profile of a Dakota loam in a cornfield:

A_p 0 to 9 inches, black loam; moderate, medium, granular structure; friable; plant roots plentiful; slightly acid.

A_{12} 9 to 18 inches, black loam; weak, thick, platy structure that breaks to weak, medium granules; friable; plant roots plentiful; slightly acid.

A_3 18 to 22 inches, very dark brown to grayish-brown loam; weak, medium, subangular blocky structure; friable; plant roots plentiful; slightly acid.

B_2 22 to 30 inches, very dark grayish-brown to dark-brown loam; moderate, medium, subangular blocky structure; friable; plant roots plentiful; slightly acid.

B_3 30 to 37 inches, dark-brown sandy loam; weak, medium, subangular blocky structure; friable; plant roots plentiful; neutral.

C 37 inches +, strong-brown medium sand; single grain; loose; slightly acid.

In many places in the substratum there are thin layers of finer textured materials and scattered pebbles of glacial age. The thickness of the solum above the sandy substratum ranges from 24 to 40 inches.

Dakota loam, 0 to 2 percent slopes (DaA).—The profile of this soil is like the profile described as typical of the Dakota loams. Capability unit IIs–1.

Dakota loam, 2 to 6 percent slopes (DaB).—The surface layer of this soil is 8 to 12 inches thick, but it is thinner than that in the profile described as typical of the Dakota loams. This soil is likely to be eroded by water. Care is required to protect it from erosion. Capability unit IIe–2.

Derinda Series

The Derinda series is made up of light-colored, silty and stony soils on uplands. The soils are moderately well drained. The upper part of the profile formed in loess, and the lower part, in materials weathered from Maquoketa shale. The shale is neutral to alkaline in reaction and is very slowly permeable to water. The original vegetation consisted mainly of hardwoods.

The surface layer of these soils is dark-gray silt loam. The upper part of the subsoil is brown silty clay loam that grades to olive-brown silty clay underlain by bedrock of shale.

These soils have moderately slow permeability. Seepage areas are common, especially on the lower slopes. Excess water cannot penetrate the shale bedrock, and it, therefore, seeps out in low spots. In these seepage areas, drainage is somewhat poor. The soils are moderately high in moisture-holding capacity and have moderate natural fertility. They are strongly acid to mildly alkaline. The hazard of erosion is moderate to severe.

These soils occupy only a small acreage in the county and are mostly covered by trees. If the stones are removed, the soils are fairly easy to cultivate and manage. They are suited to all of the crops commonly grown in the county. Crops grown on them respond well if manure and a complete fertilizer are added.

Derinda Stony Silt Loams

The following describes a typical profile of a Derinda stony silt loam in a field that has been limed and used for small grains:

- A_p 0 to 7 inches, very dark gray silt loam; moderate, medium, granular structure; friable; plant roots plentiful; neutral.
- A_2 7 to 11 inches, brown silt loam; moderate, thin, platy structure; friable; plant roots plentiful; light brownish-gray coatings on peds; neutral.
- B_1 11 to 15 inches, brown to dark-brown silt loam; weak, very thick, platy structure that breaks to weak, medium, subangular blocks; friable; plant roots plentiful; light-gray coatings on peds; strongly acid.
- B_2 15 to 26 inches, dark-brown silty clay loam; moderate, fine, angular blocky structure; slightly hard when dry, slightly plastic when wet, and firm when moist; light-gray coatings and clay skins on peds; few, distinct, fine spots of yellowish brown; roots plentiful to a depth of 24 inches, but few below that depth; strongly acid.
- C 26 to 34 inches, light olive-brown silty clay; moderate to strong, medium, angular blocky structure; hard when dry and plastic when wet; clay skins and dark grayish-brown stains of organic matter on the peds; many, distinct, fine spots of yellowish brown and grayish brown; a few roots; slightly acid.
- D 34 inches +, light olive-brown shale; massive in place but breaks to strong, thick plates; mildly alkaline.

Derinda stony silt loam, 2 to 6 percent slopes (DeB).—The profile of this soil is similar to the profile described as typical of the Derinda stony silt loams. Capability unit IIe–6.

Derinda stony silt loam, 6 to 12 percent slopes (DeC).—The surface layer of this soil is lighter colored and thinner than that in the profile described as typical of the Derinda stony silt loams. Mapped with this soil is a small acreage in which the slopes are more than 12 percent. Capability unit IIIe–6.

Dillon Series

The Dillon series consists of dark-colored, sandy soils on low stream terraces along the Wisconsin River. The soils are poorly drained. They formed in depressions in sandy deposits laid down by water. Grasses and sedges were the original vegetation.

These soils are rapidly permeable, but they have a high water table and high moisture-supplying capacity. They are wet during most of the year unless they are drained. Natural fertility is moderately low, and the soils are medium acid to strongly acid.

The Dillon soils are used mainly for pasture. They require supplemental drainage to make them suitable for crops. If they are drained, however, wind erosion is a serious hazard. Crops on these soils respond well if manure and a commercial fertilizer are added. Yields are moderately low. There is only one mapping unit of this series, Dillon loamy fine sand, in Iowa County.

Dillon Loamy Fine Sands

The following describes a typical profile of a Dillon loamy fine sand in a pastured area:

- A_1 0 to 11 inches, black loamy fine sand; weak, fine, granular structure; very friable; roots of willows and sedges plentiful; medium acid.
- A_{3g} 11 to 14 inches, very dark gray to dark grayish-brown loamy fine sand; weak, medium, subangular blocky structure; very friable; roots of willows and sedges plentiful; medium acid.
- C_{1g} 14 to 26 inches, light, brownish-gray fine sand; weak, coarse, subangular blocks that break to single grains; a few roots of sedges and willows to a depth of 18 inches; a few, distinct, medium spots of yellowish brown; strongly acid.
- C_{2g} 26 inches +, grayish-brown fine sand; single grain; loose; strongly acid; the water table was at a depth of 3 feet when this soil was examined late in summer.

The texture of the surface layer is dominantly loamy fine sand, but in several small areas it is sandy loam.

Dillon loamy fine sand (Df).—The profile of this soil is similar to the profile described as typical of the Dillon loamy fine sands. Capability unit IIIw–5.

Dodgeville Series

The Dodgeville series consists of dark-colored soils that are well drained. The soils occur on upland ridges

Figure 16.—**Profile of a Dodgeville silt loam, deep, showing the granular surface layer, the blocky subsoil, and the limestone bedrock, which is just below the end of the shovel.**

above the slopes of stream valleys. They are near the Tama and Downs soils. The Dodgeville soils formed in a blanket of windblown silt, or loess, that overlies reddish clay weathered from limestone. Below the clay is limestone bedrock. The original vegetation was grass.

In most places the surface layer of these soils is black to very dark gray silt loam. The subsoil, a brown silty clay loam, generally overlies a reddish-brown, clayey substratum. The thickness of the clayey substratum varies considerably within short distances. In most places it is between 8 and 42 inches thick, but in some places this layer is absent. The soils have slopes ranging from 0 to 30 percent.

The dominant Dodgeville soils formed in silt that is 10 to 20 inches thick, but most of the subsoil formed in clayey material weathered from limestone. In the shallow Dodgeville soils, the thickness of the silt ranges from 6 to 10 inches. The profile of the shallow Dodgeville soils is thinner than that described as typical of the Dodgeville silt loams, and depth to limestone bedrock is generally about 2 feet. In the deep Dodgeville soils, on the other hand, the thickness of the silt ranges from 20 to 36 inches (fig. 16). The profile of the deep Dodgeville soils, therefore, is thicker than that described as typical of the Dodgeville silt loams.

Dodgeville soils are moderate in permeability and are moderate to high in moisture-holding capacity. They are moderately high in natural fertility and are slightly acid to medium acid.

If their slopes are not too steep, these soils are fairly easy to cultivate and manage. The soils are well suited to all of the crops commonly grown in the county. Crops grown on them respond well if manure and a complete fertilizer are added.

Dodgeville Silt Loams

The following describes a typical profile of a Dodgeville silt loam in a cultivated field:

- A_p 0 to 8 inches, black to very dark brown silt loam; moderate, medium, subangular blocks that break to moderate, medium granules; friable; contains many earthworm casts; plant roots abundant; a few fragments of chert; medium acid.
- A_3 8 to 12 inches, dark grayish-brown to very dark grayish-brown silt loam; weak, medium, subangular blocky structure that breaks to moderate, medium granules; friable when moist; much earthworm activity; plant roots abundant; medium acid.
- B_1 12 to 15 inches, dark-brown, light silty clay loam; moderate, medium, subangular blocky structure; firm; plant roots plentiful; a few clay skins on peds; medium acid.
- B_2 15 to 30 inches, reddish-brown, heavy silty clay loam that grades to silty clay; moderate, medium, subangular blocky structure in the upper part and angular blocky structure at a depth below 2 feet; hard when dry, plastic when wet; many thick clay skins, and some very dark grayish-brown stains from organic matter on peds; a few plant roots at a depth below 2 feet; medium acid.
- C 30 inches +, dark-brown clay that has weathered from limestone; moderate, medium, angular blocky structure; plastic when wet, hard when dry; limestone bedrock is at a depth of more than 3 feet; slightly acid.

In places there are many angular fragments of chert in the clayey material weathered from limestone.

Dodgeville silt loam, 2 to 6 percent slopes (DgB).—The profile of this soil is like the profile described as typical of the Dodgeville silt loams. Capability unit IIe–2.

Dodgeville silt loam, 2 to 6 percent slopes, moderately eroded (DgB2).—This soil has lost from one-third to two-thirds of its original surface layer through erosion. The present surface layer is lighter colored and thinner than that in the profile described as typical of the Dodgeville silt loams. It is dark brown to dark grayish brown and is 6 to 8 inches thick. Capability unit IIe–2.

Dodgeville silt loam, 6 to 12 percent slopes (DgC).—The surface layer of this soil is slightly thinner than that in the profile described as typical of the Dodgeville silt loams. Capability unit IIIe–2.

Dodgeville silt loam, 6 to 12 percent slopes, moderately eroded (DgC2).—Most of the original surface layer of this soil has been lost through erosion. The present surface layer is lighter colored and thinner than the original one. It ranges from brown to dark grayish brown in color and is less than 8 inches thick. Capability unit IIIe–2.

Dodgeville silt loam, 12 to 20 percent slopes (DgD).—The surface layer of this soil is slightly thinner than that in the profile described as typical of the Dodgeville silt loams. The subsoil is also slightly thinner. Capability unit IVe–2.

Dodgeville silt loam, 12 to 20 percent slopes, moderately eroded (DgD2).—From one-third to two-thirds of the original surface layer of this soil has been removed through erosion. The present surface layer is brown and is less than 8 inches thick. The subsoil is slightly thinner than that in the profile described as typical. Capability unit IVe–2.

Dodgeville silt loam, 20 to 30 percent slopes, moderately eroded (DgE2).—This soil has lost from one-third to two-thirds of its original surface layer through erosion. The present surface layer is generally less than 6 inches thick. Because part of the subsoil has been mixed with the surface layer, the present surface layer has a brown color. The subsoil is thinner than that in the profile described as typical of the Dodgeville silt loams. Bedrock is generally at a depth of less than 3 feet. Capability unit VIe–2.

DODGEVILLE SILT LOAMS, DEEP

The following describes a typical profile of a Dodgeville silt loam, deep, in a cultivated field:

A_p 0 to 8 inches, black silt loam; moderate, medium, granular structure; friable; plant roots and earthworm casts abundant; medium acid.

A_3 8 to 12 inches, very dark grayish-brown silt loam; weak, coarse, subangular blocks that break to moderate, medium granules; friable; plant roots plentiful; much earthworm activity; medium acid.

B_1 12 to 18 inches, dark yellowish-brown, light silty clay loam; moderate, medium, subangular blocky structure; firm when moist; plant roots plentiful; much earthworm activity; a few clay skins on peds; medium acid.

B_2 18 to 32 inches, reddish-brown silty clay loam that grades to silty clay at a depth below 28 inches; moderate to strong, medium, subangular blocky structure; firm when moist, slightly hard when dry, and slightly plastic when wet; prominent clay skins on peds; a few fragments of chert at a depth below 28 inches; roots plentiful to a depth of 28 inches, but few below that depth; medium acid.

C 32 inches +, reddish-brown clay; strong, medium, angular blocky structure; hard when dry, plastic when wet; a few plant roots and many fragments of chert scattered throughout; slightly acid. Limestone bedrock is at a depth of 44 inches.

Dodgeville silt loam, deep, 0 to 2 percent slopes (DhA).—This soil occupies large areas on the broader ridgetops in the western part of the county. The profile is like the profile described as typical of the deep Dodgeville silt loams. Capability unit I–1.

Dodgeville silt loam, deep, 2 to 6 percent slopes (DhB).—The profile of this soil is similar to the profile described as typical of the deep Dodgeville silt loams. Capability unit IIe–1.

Dodgeville silt loam, deep, 2 to 6 percent slopes, moderately eroded (DhB2).—The surface layer of this soil is lighter colored and thinner than that in the profile described as typical of the deep Dodgeville silt loams. From one-third to two-thirds of the original surface layer has been lost through erosion. The present surface layer is 6 to 8 inches thick and is dark grayish brown to brown. Capability unit IIe–1.

Dodgeville silt loam, deep, 6 to 12 percent slopes, moderately eroded (DhC2).—From one-third to two-thirds of the original surface layer of this soil has been lost through erosion. The present surface layer is grayish brown to brown and is generally less than 7 inches thick. Depth to limestone bedrock in this soil is slightly less than in the profile described as typical of the deep Dodgeville silt loams. Capability unit IIIe–1.

Dodgeville silt loam, deep, 12 to 20 percent slopes (DhD).—The surface layer of this soil is thinner than that in the profile described as typical of the deep Dodgeville silt loams. Depth to bedrock is also slightly less. Capability unit IVe–1.

Dodgeville silt loam, deep, 12 to 20 percent slopes, moderately eroded (DhD2).—This soil has lost from one-third to two-thirds of its original surface layer through erosion. Plowing has mixed part of the subsoil with the remaining surface layer and has given the present surface layer a dark-brown color. In some places dark yellowish-brown material from the subsoil has been turned up when the soil was plowed. Depth to bedrock is less in this soil than in the profile described as typical of the deep Dodgeville silt loams. Capability unit IVe–1.

DODGEVILLE SILT LOAMS, SHALLOW

The following describes a profile of a Dodgeville silt loam, shallow, in an alfalfa-field that has been limed:

A_p 0 to 7 inches, very dark brown to very dark grayish-brown silt loam; weak, medium, subangular blocky structure that breaks to moderate, medium granules; friable; plant roots plentiful; neutral.

B_1 7 to 9 inches, brown to dark-brown silt loam; weak, thick plates that break to moderate, fine, subangular blocks; friable; plant roots plentiful; neutral.

B_2 9 to 19 inches, dark yellowish-brown silty clay loam in uppermost part but grades to dark-brown silty clay in lower part; moderate to strong, fine, angular blocky structure; hard when dry, firm when moist, and plastic when wet; prominent clay skins and some very dark grayish-brown stains of organic matter on the surfaces of peds; roots plentiful; slightly acid.

D 19 inches +, grayish-brown, shattered limestone bedrock that has a few roots spreading downward in the vertical cracks.

In some places fragments of chert and an occasional limestone cobble are on the surface or scattered through the profile.

Dodgeville silt loam, shallow, 4 to 12 percent slopes (DlC).—This soil is on narrow ridgetops adjacent to areas of Steep stony and rocky land. The profile is like that described as typical of the shallow Dodgeville silt loams. Capability unit IVe–3.

Dodgeville silt loam, shallow, 2 to 6 percent slopes, moderately eroded (DlB2).—This soil has a lighter colored, thinner surface layer than that in the profile described as typical of the shallow Dodgeville silt loams. Also, it is generally shallower over bedrock. From one-third to two-thirds of the original surface layer has been lost through erosion. Plowing has mixed material from the uppermost part of the subsoil with the remaining surface soil. As a result, the present surface layer is browner and less friable than the original one. Capability unit IIIe–3.

Dodgeville silt loam, shallow, 6 to 12 percent slopes, moderately eroded (DlC2).—The surface layer of this soil is heavier and less friable than that in the profile described as typical of the shallow Dodgeville silt loams. Also, depth to bedrock, in many places, is less than 16 inches. From one-third to two-thirds of the original surface layer has been lost through erosion. In about half of the acreage that has been plowed, the surface

layer is brown. In the rest the yellowish-brown subsoil is exposed. Capability unit IVe–3.

Dodgeville silt loam, shallow, 12 to 20 percent slopes (DlD).—This soil has thinner horizons than those in the profile described as typical of the shallow Dodgeville silt loams, and the entire profile is thinner. Generally, depth to bedrock is only 15 to 20 inches. Capability unit VIe–3.

Dodgeville silt loam, shallow, 12 to 20 percent slopes, moderately eroded (DlD2).—This soil has lost most of its original surface layer and part of its subsoil through erosion. As a result, the present surface layer is brown to yellowish brown and is thinner and less friable than that in the profile described as typical of the shallow Dodgeville silt loams. Depth to bedrock is also less. Capability unit VIe–3.

DODGEVILLE SOILS

The severely eroded Dodgeville soils have not been named according to texture. Severe erosion has removed all or part of their original silty surface layer. As a result, the present surface layer in places is silt loam; in other places, silty clay loam; and in still other places, clay loam, silty clay, or a mixture of these textures.

Dodgeville soils, 2 to 6 percent slopes, severely eroded (DmB3).—Generally, the surface layer of these soils is reddish-brown silty clay loam that is about 8 inches thick. It is slightly hard when dry and slightly plastic when wet. The subsoil extends to a depth of 22 inches. It is a reddish-brown, heavy silty clay loam that grades to silty clay at a depth below 12 inches. The subsoil is hard when dry and plastic when wet. The dark-brown, clayey substratum overlies shattered limestone bedrock at a depth of 30 inches or more.

The texture of the surface layer varies considerably, but in most places the surface layer consists of silt loam or silty clay loam, intermingled with soil materials of other textures. In some places numerous fragments of chert are scattered on the surface and throughout the profile. Depth to bedrock ranges from 15 inches to 3 feet. Capability unit IIIe–2.

Dodgeville soils, 6 to 12 percent slopes, severely eroded (DmC3).—The solum of these soils is generally slightly thinner over bedrock than that of Dodgeville soils, 2 to 6 percent slopes, severely eroded. Capability unit IVe–2.

Dodgeville soils, 12 to 20 percent slopes, severely eroded (DmD3).—The solum of these soils is much thinner than that of Dodgeville soils, 2 to 6 percent slopes, severely eroded. Depth to bedrock is less than 2 feet in many places. Capability unit VIe–2.

Dodgeville soils, deep, 2 to 6 percent slopes, severely eroded (DnB3).—These soils have a lighter colored, thinner surface layer than that in the profile described as typical of the deep Dodgeville silt loams. Also, depth to bedrock is less. More than two-thirds of the original surface layer has been lost through erosion. In about one-third of the acreage, plowing has mixed finer textured material from the upper part of the subsoil with the remaining surface soil. As a result, the present surface layer is dark yellowish brown. Capability unit IIIe–1.

Dodgeville soils, deep, 6 to 12 percent slopes, severely eroded (DnC3).—In these soils more than two-thirds of the original surface layer has been lost through erosion. The present surface layer is slightly finer textured and thinner than that in the profile described as typical of the deep Dodgeville silt loams. Also, bedrock is at a shallower depth. In more than half of the acreage, plowing has mixed finer textured material from the subsoil with the remaining surface soil. As a result, the present surface layer is brown and many areas of dark yellowish-brown subsoil are exposed. Capability unit IVe–1.

Dodgeville soils, deep, 12 to 20 percent slopes, severely eroded (DnD3).—In these soils more than two-thirds of the original surface layer has been lost through erosion. The present surface layer is dark yellowish brown and is less friable than that in the profile described as typical of the deep Dodgeville silt loams. Also, these soils are shallower over bedrock. In about half of the acreage, plowing has mixed finer textured material from the subsoil with the remaining surface soil. Capability unit VIe–1.

Downs Series

The Downs series consists of deep, silty soils on rolling ridges in the uplands. These soils are well drained. They occur in small areas scattered throughout the western part of the county. These soils formed in a thick blanket of windblown silt, or loess. They have slopes ranging from 2 to 12 percent, but in most places slopes are less than 6 percent. The native vegetation was prairie grass and various kinds of trees in scattered patches of forest.

Typically, the Downs soils have a surface layer of dark-gray silt loam. The subsoil, a dark-brown, friable silty clay loam, overlies a friable, yellowish-brown, silty substratum. Sandstone or limestone bedrock or weathered products from the bedrock generally occur at a depth of more than 42 inches.

These soils are moderate in permeability, and their moisture-supplying capacity is moderately high. They are moderately high in natural fertility and are slightly acid to medium acid. The hazard of erosion ranges from slight on the gently sloping soils to severe on the more strongly sloping ones.

These soils are used mainly for cultivated crops and are suited to all of the crops commonly grown in the county. If a good supply of plant nutrients is maintained and the soils are well managed, yields are moderate to high.

DOWNS SILT LOAMS

The following describes a typical profile of a Downs silt loam:

A_p 0 to 8 inches, very dark grayish-brown silt loam; moderate, medium, granular structure; friable; plant roots abundant; many earthworm casts; slightly acid.

A_2 8 to 12 inches, brown to grayish-brown silt loam; moderate, medium, platy structure; friable; plant roots plentiful; grayish coatings on surfaces of plates; many earthworm holes; medium acid.

B_1 12 to 17 inches, dark-brown silt loam; weak, medium, subangular blocky structure; friable; plant roots plentiful; light brownish-gray coatings on the surfaces of peds; medium acid.

B_2 17 to 30 inches, dark yellowish-brown silty clay loam; moderate, medium, subangular blocky structure; firm; plant roots plentiful to a depth of 2 feet and a few below that depth; grayish coatings and clay skins on the surfaces of peds; medium acid.

B_3 30 to 38 inches, dark yellowish-brown, light silty clay loam; weak, medium, subangular blocky structure; firm; a few plant roots; grayish coatings and a few very dark grayish-brown stains of organic matter on peds; medium acid.

C 38 inches +, dark yellowish-brown silt loam; massive; friable; medium acid.

Downs silt loam, 2 to 6 percent slopes (DoB).—The profile of this soil is like the profile described as typical of the Downs silt loams. Capability unit IIe–1.

Downs silt loam, 2 to 6 percent slopes, moderately eroded (DoB2).—This soil has a lighter colored, thinner surface layer than that in the profile described as typical of the Downs silt loams. From one-third to two-thirds of the original surface layer has been lost through erosion. The present surface layer is brown to grayish brown and is 5 to 8 inches thick. Capability unit IIe–1.

Downs silt loam, 6 to 12 percent slopes, moderately eroded (DoC2).—The surface layer of this soil is slightly thinner than that in the profile described as typical of the Downs silt loams. From one-third to two-thirds of the original surface layer has been removed through erosion, and part of the subsoil has been mixed with the remaining surface soil. As a result, the color of the present surface layer is a mixture of grayish brown and dark brown.

In a few areas the soil is slightly or severely eroded. In the slightly eroded areas, the surface layer is thinner than that in the profile described as typical, and, in the severely eroded areas, it is much thinner and is less friable. In about half of the acreage where the soil is severely eroded, patches of dark-brown subsoil are exposed. Capability unit IIIe–1.

Dubuque Series

The Dubuque series consists of light-colored, silty soils on rolling upland ridges. The soils are well drained. They formed under forest in a blanket of silt that is 10 to 42 inches thick. The silt probably was blown onto the uplands in glacial times from the flood plains of the Mississippi River. The thickness of the silt varies, but it is generally thicker in the western part of the county and thinner toward the east. The thickness of the underlying clay weathered from the limestone bedrock also varies. Generally, the clay has fragments of chert throughout; in many places it has a cherty horizon in the upper part.

The surface layer of the Dubuque soils is typically a grayish brown. The subsoil, a brown silty clay loam, overlies the substratum of reddish, gritty clay.

The dominant Dubuque soils formed in silt that is only 10 to 20 inches thick; the subsoil formed mainly in clay weathered from limestone. In the deep Dubuque soils, the thickness of the silt ranges from 20 to 36 inches; consequently, the solum is thicker in these soils than in the dominant Dubuque soils. In the stony Dubuque soils, on the other hand, the profile is thinner, and there are greater numbers of cobbles and fragments of chert in the surface layer and throughout the solum. In some places boulders and outcrops of limestone are common.

All of the Dubuque soils have moderate permeability, and their moisture-supplying capacity ranges from moderately low to high. Natural fertility is moderate to moderately high. The soils are medium acid to neutral. The hazard of erosion is slight to very severe, depending on slope. The shallower soils are likely to be droughty during periods of low rainfall.

Most of the large, gently sloping areas of these soils are used for crops or pasture. The steeper areas are mainly in trees. If slopes are favorable, the soils are fairly easy to cultivate and manage. They are suited to all of the crops commonly grown in the county, but in most places legumes need lime to grow well. Crops on these soils respond well if manure and a complete fertilizer are added.

Dubuque Silt Loams

The following describes a typical profile of a Dubuque silt loam in a cultivated field that has been limed:

A_p 0 to 7 inches, dark grayish-brown silt loam; moderate, medium, granular structure; friable; plant roots plentiful; neutral.

B_1 7 to 11 inches, yellowish-brown, heavy silt loam; weak, medium, subangular blocky structure; friable; plant roots plentiful; a few light-gray coatings on peds; medium acid.

B_2 11 to 20 inches, brown silty clay loam; moderate, medium, subangular blocky structure in the uppermost part grading to heavy silty clay loam in the lower part; lower part has moderate, medium, angular blocky structure; uppermost 4 inches firm when moist, but lower part hard when dry and plastic when wet; light-gray coatings and clay skins and very dark brown stains of organic matter on peds; a few plant roots at a depth below 15 inches; neutral.

C 20 to 34 inches, reddish-brown clay; moderate to strong, medium, angular blocky structure; hard when dry, plastic when wet; a few plant roots; many angular pieces of chert; neutral.

D 34 inches +, whitish, hard, dolomitic limestone that is shattered in the uppermost part.

In many places fragments of chert are scattered on the surface and throughout the solum. Depth to bedrock ranges from 2 to 3 feet in most places, but in some places bedrock is at a greater depth.

Dubuque silt loam, 2 to 6 percent slopes (DsB).—The profile of this soil is like the profile described as typical of the Dubuque silt loams. Capability unit IIe–2.

Dubuque silt loam, 2 to 6 percent slopes, moderately eroded (DsB2).—This soil is slightly shallower than the profile described as typical of the Dubuque silt loams. More than one-third and as much as two-thirds of the original surface layer has been removed through erosion. As a result, the present surface layer is thinner than the original one, and in some places yellowish-brown material from the subsoil has been exposed by tillage. Capability unit IIe–2.

Dubuque silt loam, 6 to 12 percent slopes (DsC).—In this soil the horizons are thinner than those in the profile described as typical of the Dubuque silt loams. Also, this soil generally is shallower over bedrock. Capability unit IIIe–2.

Dubuque silt loam, 6 to 12 percent slopes, moderately eroded (DsC2).—Because of erosion, the surface layer of this soil is thinner and less friable than that in the profile described as typical of the Dubuque silt loams. Part of the subsoil has been mixed with the remaining surface soil by plowing. As a result, the present surface layer is browner than the original one. In about half of the acreage, the subsoil is exposed and the surface layer is

brown. Depth to bedrock generally ranges from 20 to 30 inches. Capability unit IIIe–2.

Dubuque silt loam, 12 to 20 percent slopes (DsD).—In this soil the horizons are thinner than those in the profile described as typical of the Dubuque silt loams. Depth to bedrock is correspondingly shallower. Capability unit IVe–2.

Dubuque silt loam, 12 to 20 percent slopes, moderately eroded (DsD2).—This is among the most extensive soils in the county. Its horizons are thinner than those in the profile described as typical of the Dubuque silt loams. Depth to bedrock is generally less than 28 inches. Plowing has mixed part of the subsoil with the remaining surface soil, and, as a result, the present surface layer is brown. In a few places the reddish-brown, finer textured subsoil is exposed. Capability unit IVe–2.

Dubuque silt loam, 20 to 30 percent slopes (DsE).—This soil has thinner horizons than those in the profile described as typical of the Dubuque silt loams, and it is shallower over bedrock. Depth to limestone generally is about 2 feet. Capability unit VIe–2.

Dubuque silt loam, 20 to 30 percent slopes, moderately eroded (DsE2).—This soil has lost nearly all of its original surface layer through erosion, and in most places the solum is less than 2 feet thick over bedrock. Because part of the subsoil has been mixed with the remaining surface layer, in most places the present surface layer has a brownish color. In small, scattered areas, however, the surface layer is reddish brown and is finer textured and less friable than that in the profile described as typical of the Dubuque silt loams. These small, finer textured areas are hard to manage. Capability unit VIe–2.

Dubuque silt loam, 30 to 45 percent slopes (DsF).—In this soil the horizons are thinner than those in the profile described as typical of the Dubuque silt loams, and the soil is correspondingly shallower over bedrock. Depth to bedrock varies, but it is generally less than 2 feet. Capability unit VIIe–2.

Dubuque silt loam, 30 to 45 percent slopes, moderately eroded (DsF2).—Because of its strong slopes, many areas of this soil have not been cultivated. Overgrazing, however, has caused erosion, and much of the original surface layer and part of the subsoil have been lost. As a result, the soil is shallow over bedrock and has shallow gullies. The gullies follow paths made by livestock as they grazed up and down the slopes. Capability unit VIIe–2.

Dubuque Silt Loams, Deep

Dubuque silt loam, deep, is on the broader ridgetops in the county, near soils of the Fayette series. The following describes a profile in a virgin area:

- A_1 0 to 4 inches, dark grayish-brown silt loam; moderate, medium, granular structure; friable; roots abundant; much earthworm activity; slightly acid.
- A_2 4 to 11 inches, pale-brown to light brownish-gray silt loam; moderate, thin, platy structure; friable; plant roots plentiful; a few light-gray coatings on peds; medium acid.
- B_1 11 to 16 inches, yellowish-brown, heavy silt loam; moderate, medium, subangular blocky structure; firm; plant roots plentiful; light-gray coatings on peds; medium acid.
- B_2 16 to 37 inches, dark yellowish-brown silty clay loam; moderate, medium, subangular blocky structure but grades to reddish-brown, gritty silty clay with increasing depth; moderate to strong, medium, angular blocky structure; slightly hard when dry, plastic when wet; a few plant roots at a depth below 2 feet; clay skins prominent, light-gray coatings and very dark brown stains of organic matter on the faces of peds; medium acid in the upper part, and slightly acid in the lower part.
- C 37 inches +, reddish-brown, gritty clay; moderate to strong, medium, angular blocky structure; hard when dry, plastic when wet; a few angular fragments of chert; grades to shattered limestone bedrock at a depth below 46 inches; medium acid.

Depth to bedrock ranges from 3 to 6 feet, depending somewhat on the thickness of the layer of silt. The amount of chert in the subsoil and substratum ranges from almost none in some places to large amounts in other places.

Dubuque silt loam, deep, 2 to 6 percent slopes (DtB).—The profile of this soil is like the profile described as typical of the deep Dubuque silt loams. Capability unit IIe–1.

Dubuque silt loam, deep, 2 to 6 percent slopes, moderately eroded (DtB2).—This soil has lost from one-third to two-thirds of its original surface layer through erosion. As a result, the present surface layer is slightly lighter colored and thinner than that in the profile described as typical of the deep Dubuque silt loams. Capability unit IIe–1.

Dubuque silt loam, deep, 6 to 12 percent slopes (DtC).—In this soil the surface layer is slightly thinner than that in the profile described as typical of the deep Dubuque silt loams. Capability unit IIIe–1.

Dubuque silt loam, deep, 6 to 12 percent slopes, moderately eroded (DtC2).—This soil has lost more than one-third and as much as two-thirds of its original surface layer through erosion. As a result, the present surface layer is brownish gray and is slightly less friable than that in the profile described as typical of the deep Dubuque silt loams. Also, this soil is slightly shallower over bedrock. In a few places plowing has turned up yellowish-brown material from the subsoil. Capability unit IIIe–1.

Dubuque silt loam, deep, 12 to 20 percent slopes (DtD).—In this soil the horizons are thinner than those in the profile described as typical of the deep Dubuque silt loams, and the entire profile is thinner. Capability unit IVe–1.

Dubuque silt loam, deep, 12 to 20 percent slopes, moderately eroded (DtD2).—This soil has somewhat thinner horizons than those in the profile described as typical of the deep Dubuque silt loams, and the entire profile is thinner. From one-third to two-thirds of the original surface layer has been removed through erosion. Plowing has mixed part of the subsoil with the remaining surface soil. As a result, the present surface layer has a pale-brown color. Capability unit IVe–1.

Dubuque silt loam, deep, 20 to 30 percent slopes (DtE).—In this soil the horizons are thinner than those in the profile described as typical of the deep Dubuque silt loams. Also, the surface layer is lighter colored, and depth to bedrock is generally less than 3 feet. Capability unit VIe–1.

Dubuque silt loam, deep, 20 to 30 percent slopes, moderately eroded (DtE2).—This soil has lost most of its original surface layer through erosion. Material from the upper part of the subsoil has been mixed with the re-

maining surface soil by plowing. The present surface layer is pale brown to yellowish brown and contains little organic matter. Consequently, good tilth is harder to maintain than in the soil described as typical of the deep Dubuque silt loams. This soil is also shallower over limestone bedrock. Depth to bedrock generally ranges from 2 to 3 feet. Capability unit VIe–1.

Dubuque Soils

The severely eroded Dubuque soils have not been named according to texture. Severe erosion has removed all or part of the original silty surface layer. As a result, the present surface layer consists of a mixture of soil materials of two or more soil textures.

Dubuque soils, 2 to 6 percent slopes, severely eroded (DuB3).—These soils were observed in an abandoned meadow. They have a surface layer of reddish-brown silty clay loam that is about 6 inches thick. The subsoil, a reddish-brown silty clay, is about 18 inches thick and contains a few angular fragments of chert. The substratum is reddish brown. It is clayey, contains many fragments of chert, and overlies shattered limestone bedrock, which is at a depth of 30 inches or more. The shattered bedrock extends to a depth of several feet.

The texture of the surface layer varies considerably but is dominantly silt loam or silty clay loam. In some places soils in which the texture of the surface layer differs from these are intermingled. Capability unit IIIe–2.

Dubuque soils, 6 to 12 percent slopes, severely eroded (DuC3).—These soils are similar to Dubuque soils, 2 to 6 percent slopes, severely eroded, but they have stronger slopes and are shallower over bedrock. Capability unit IVe–2.

Dubuque soils, 12 to 20 percent slopes, severely eroded (DuD3).—In these soils depth to bedrock is generally less than 30 inches. Capability unit VIe–2.

Dubuque soils, 20 to 30 percent slopes, severely eroded (DuE3).—In these soils depth to limestone bedrock is generally less than 2 feet. Capability unit VIIe–2.

Dubuque soils, deep, 6 to 12 percent slopes, severely eroded (DvC3).—Nearly all of the original surface layer of these soils has been lost through erosion. Plowing has mixed material from the subsoil with the remaining surface soil. As a result, the present surface layer is yellowish brown. These soils are less friable and are more difficult to manage than the soil described as typical of the deep Dubuque silt loams. Depth to bedrock is also less, or generally less than 4 feet. Capability unit IVe–1.

Dubuque soils, deep, 12 to 20 percent slopes, severely eroded (DvD3).—Nearly all of the original surface layer of these soils has been removed through erosion, and part of the subsoil has been lost. The present surface layer is yellowish brown. These soils are less friable and are more difficult to manage than the deep Dubuque silt loams described. Depth to limestone bedrock is generally less than 3 feet. Capability unit VIe–1.

Dubuque Stony Silt Loams

The Dubuque stony silt loams are generally on narrow ridgetops near the ends of the ridges. The following describes a profile of a Dubuque stony silt loam:

- A_p 0 to 8 inches, dark grayish-brown stony silt loam; moderate, medium, granular structure; friable; angular pebbles and cobbles of chert abundant; a few limestone cobbles; plant roots plentiful; medium acid.
- B_1 8 to 12 inches, yellowish-brown, gritty silt loam; weak, medium, subangular blocky structure; friable; plant roots plentiful; fragments of chert abundant; medium acid.
- B_2 12 to 18 inches, brown to reddish-brown, gritty silty clay; moderate, medium, angular blocky structure; hard when dry, plastic when wet; plant roots plentiful; light-gray coatings and clay skins on the surfaces of peds; many fragments of chert; slightly acid.
- C 18 to 30 inches, reddish-brown clay; strong, medium, angular blocky structure; hard when dry, plastic when wet; clay skins, light-gray coatings, and some dark-brown stains of organic matter on the surfaces of peds; many fragments of chert; a few roots; neutral.
- D 30 inches +, light-gray limestone bedrock that is shattered to a depth of several feet.

Dubuque stony silt loam, 2 to 6 percent slopes, moderately eroded (DyB2).—This soil has lost from one-third to two-thirds of its original surface layer through erosion. As a result, it has a lighter colored and thinner surface layer than that in the profile described as typical of the Dubuque stony silt loams. It is also slightly shallower to bedrock.

In a few small areas, this soil is slightly or severely eroded. The surface layer in the slightly eroded areas is thicker than that in this soil, but in the severely eroded areas it is lighter colored and thinner. Capability unit IVs–4.

Dubuque stony silt loam, 6 to 12 percent slopes, moderately eroded (DyC2).—The surface layer of this soil is lighter colored and thinner than that in the profile described as typical of the Dubuque stony silt loams, and depth to limestone bedrock is generally within 2 feet. A few small areas are slightly or severely eroded. Capability unit VIs–6.

Dubuque stony silt loam, 12 to 20 percent slopes (DyD).—In this soil the horizons are slightly thinner than those in the profile described as typical of the Dubuque stony silt loams. Also, depth to bedrock is less. Capability unit VIs–6.

Dubuque stony silt loam, 12 to 20 percent slopes, moderately eroded (DyD2).—This soil has lost more than one-third of its original surface layer through erosion. As a result, the present surface layer is mainly yellowish brown, but plowing has exposed small patches of reddish-brown subsoil in places. The present surface layer is less friable and is thinner than that in the profile described as typical of the Dubuque stony silt loams. Depth to bedrock is generally less than 2 feet, but in a few areas bedrock is at a depth that is even less. Capability unit VIs–6.

Dubuque stony silt loam, 20 to 30 percent slopes (DyE).—This soil has thinner horizons than those in the profile described as typical of the Dubuque stony silt loams. Also, depth to bedrock is less than 2 feet. Capability unit VIIs–6.

Dubuque stony silt loam, 20 to 30 percent slopes, moderately eroded (DyE2).—Most of the original surface layer of this soil has been lost through erosion, and part of the subsoil has been removed. In most places the present surface layer is yellowish brown, but in some places it is reddish brown. It contains little organic

matter and is less friable and more difficult to maintain in good tilth than the surface layer in the profile described as typical of the Dubuque stony silt loams. In many places depth to bedrock is less than 18 inches. Capability unit VIIs–6.

Ettrick Series

The Ettrick series is made up of dark-colored, deep silt loams or silty clay loams on flood plains. The soils are poorly drained. They occupy nearly level areas or are in depressions along intermittent and permanent streams throughout the county. The soils formed in silty alluvium that was washed from the surrounding terraces and uplands. The original vegetation was grasses, sedges, and hardwood trees that tolerate water.

Typically, these soils have a black, silty surface layer. Their subsoil, a grayish silty clay loam, overlies a substratum of grayish silt loam.

The permeability of these soils is moderately slow. Unless they are drained, the water table is high throughout most of the year. The soils are high in moisture-supplying capacity. They are moderately high in natural fertility and are slightly acid to neutral.

Areas of these soils that have been adequately drained are used for cultivated crops. Undrained areas are used mainly to provide feed for livestock. If the soils are adequately drained, most of the crops commonly grown in the area make good yields. The crops respond well if a complete fertilizer is applied. There is only one mapping unit of this series, Ettrick silt loam, in Iowa County.

Ettrick Silt Loams

The following describes a profile of an Ettrick silt loam in a pasture of reed canarygrass:

- A_1 0 to 18 inches, black, heavy silt loam; moderate, medium, granular structure; friable; grass roots plentiful; slightly acid.
- B_{1g} 18 to 25 inches, very dark gray silty clay loam; moderate, fine, subangular blocky structure; firm; a few, fine, distinct spots of light olive brown and brownish gray; many old sedge roots; a few grass roots; slightly acid.
- B_{2g} 25 to 40 inches, grayish-brown silty clay loam; moderate, medium, subangular blocky structure; firm; many, medium, distinct spots of gray and strong brown; many old sedge roots and channels; slightly acid.
- C 40 inches +, light brownish-gray, light silty clay loam that grades to silt with increasing depth; massive; friable; many old sedge roots and channels; neutral.

In many places strata of fine sand and silt are at a depth below 3 feet, and in some places there are layers of chert.

Ettrick silt loam (Et).—The profile of this soil is like the profile described as typical of the Ettrick silt loams. Capability unit IIw–1.

Fayette Series

The Fayette series is made up of light-colored, deep, silty soils on rolling upland ridges and valley slopes. The soils are well drained. They formed in a blanket of silt that was 42 or more inches thick. The silt was probably blown onto the uplands about the time of the last glaciation and came from the flood plains of the Mississippi River. It overlies limestone or sandstone bedrock. The soils have slopes of 0 to 30 percent, but in most places their slopes are between 6 and 20 percent. The original vegetation consisted of various kinds of hardwoods.

These soils are mostly in the southwestern part of the county, where the covering of silt is thickest. They are near soils of the Dubuque series. Typically, their surface layer is grayish brown and is friable. Their subsoil, a yellowish-brown silty clay loam, overlies a substratum of yellowish-brown silt loam.

The Fayette soils have moderate permeability and are moderately high in moisture-supplying capacity. Their natural fertility is moderately high, and they are slightly acid to medium acid. The soils are eroded easily by water, particularly where slopes are long and steep.

Two topographic phases of the Fayette silt loams—uplands and valleys—have been recognized. The Fayette silt loams, uplands, are on rolling ridgetops above areas of Steep stony and rocky land. The valleys phases are on the lower slopes below areas of Steep stony and rocky land.

The Fayette soils on valley slopes formed partly in local alluvium washed from the soils on slopes above. In some places, where the soils lie below sandstone escarpments, they are covered by a thin layer of fine sand. The B horizon of the Fayette soils on valley slopes is less distinct than that of the Fayette soils on upland ridges. The Fayette soils on valley slopes have grit throughout the profile, and there are a few boulders on the surface and in the profile. The stony Fayette silt loams have many large outcrops of rock and blocks, and boulders of limestone are scattered over the surface.

The Fayette soils are used mainly for crops. If slopes are favorable, these soils are fairly easy to cultivate and manage. They are suited to all of the crops commonly grown in the county. Crops respond well if manure and a complete fertilizer are added.

Fayette Silt Loams, Uplands

The following describes a profile of a Fayette silt loam, uplands, in a hay meadow:

- A_p 0 to 8 inches, dark grayish-brown silt loam; moderate, fine, granular structure; friable; plant roots plentiful; medium acid.
- A_2 8 to 13 inches, brown to pale-brown silt loam; moderate, thin to medium, platy structure; friable; plant roots plentiful; medium acid.
- B_1 13 to 17 inches, yellowish-brown, heavy silt loam; moderate, medium, subangular blocky structure; friable; roots plentiful; light-gray coatings on surfaces of peds; medium acid.
- B_2 17 to 36 inches, dark yellowish-brown silty clay loam; moderate to strong, medium, subangular blocky structure; firm when moist, slightly hard when dry; plant roots plentiful; light-gray coatings and clay skins on surfaces of peds; medium acid.
- B_3 36 to 42 inches, yellowish-brown, heavy silt loam; weak, coarse, subangular blocky structure; firm; a few plant roots; gray coatings on surfaces of peds; medium acid.
- C 42 inches +, brown silt loam; massive; friable; medium acid.

Fayette silt loam, uplands, 0 to 2 percent slopes (FaA).—The profile of this soil is like the one described as typical of the Fayette silt loams, uplands. Capability unit I–1.

Fayette silt loam, uplands, 2 to 6 percent slopes (FaB).—The profile of this soil is similar to the profile described as typical of the Fayette silt loams, uplands, but this soil is more sloping than the soil described. Capability unit IIe–1.

Fayette silt loam, uplands, 2 to 6 percent slopes, moderately eroded (FaB2).—This soil has lost more than one-third of its original surface layer through water erosion. The present surface layer is lighter colored and thinner than that described as typical of the Fayette silt loams, uplands. Also, it contains less organic matter. A few small, scattered areas of this soil are severely eroded. Capability unit IIe–1.

Fayette silt loam, uplands, 6 to 12 percent slopes (FaC).—The surface layer of this soil is slightly lighter colored and thinner than that in the profile described as typical of the Fayette silt loams, uplands. Capability unit IIIe–1.

Fayette silt loam, uplands, 6 to 12 percent slopes, moderately eroded (FaC2).—This soil has lost from one-third to two-thirds of the original surface layer through erosion. The present surface layer is pale brown and contains little organic matter. It is less friable than that in the profile described as typical of the Fayette silt loams, uplands, and it is harder to keep in good tilth. Capability unit IIIe–1.

Fayette silt loam, uplands, 6 to 12 percent slopes, severely eroded (FaC3).—This soil has lost almost all of its original surface layer and part of its subsoil through erosion. Plowing has mixed material from the subsoil with the remaining surface soil. As a result, the present surface layer has a brownish color and contains little organic matter. This soil is hard to keep in good tilth. Capability unit IVe–1.

Fayette silt loam, uplands, 12 to 20 percent slopes (FaD).—This soil has a lighter colored, thinner surface layer than that in the profile described as typical of the Fayette silt loams, uplands, and the solum is slightly thinner. The surface layer is 8 to 10 inches thick. Capability unit IVe–1.

Fayette silt loam, uplands, 12 to 20 percent slopes, moderately eroded (FaD2).—This soil has lost about one-third to two-thirds of its original surface layer through erosion. As a result, the present surface layer is lighter colored than the original one and contains less organic matter. Plowing has exposed the subsoil in nearly one-third of the acreage. Capability unit IVe–1.

Fayette silt loam, uplands, 12 to 20 percent slopes, severely eroded (FaD3).—Nearly all of the original surface layer of this soil has been lost through erosion. Plowing has mixed yellowish-brown, heavy silt loam from the subsoil with the remaining surface layer. As a result, the present surface layer is lighter colored than the original one and is less friable. It also has poorer structure and contains less organic matter. In more than half of the acreage that has been plowed, the present surface layer is yellowish brown. Capability unit VIe–1.

Fayette silt loam, uplands, 20 to 30 percent slopes, moderately eroded (FaE2).—This soil has lost from one-third to two-thirds of its original surface layer through erosion. The solum is thinner than that in the profile described as typical of the Fayette silt loams, uplands. In addition, the surface layer is lighter colored, thinner, and contains little organic matter.

In a few areas this soil is slightly or severely eroded. The surface layer in the slightly eroded areas is thicker than the normal surface layer of this soil, but in the severely eroded areas it is thinner and has a yellowish-brown color. In the severely eroded areas, the surface layer contains little organic matter and the soil is hard to keep in good tilth. Capability unit VIe–1.

Fayette Silt Loams, Valleys

The Fayette silt loams, valleys, are on concave slopes. The following describes a typical profile in an alfalfa field:

- A_p 0 to 8 inches, very dark grayish-brown silt loam; moderate, medium, granular structure; friable; plant roots plentiful; much earthworm activity; occasional boulders on the surface; slightly acid.
- A_2 8 to 11 inches, dark grayish-brown silt loam; moderate, thin, platy structure; friable; roots plentiful; medium acid.
- B_1 11 to 16 inches, brown silt loam; weak, fine, subangular blocky structure; friable; a few light-gray coatings on the surfaces of peds; plant roots plentiful; medium acid.
- B_2 16 to 35 inches, dark yellowish-brown, light silty clay loam; moderate, medium, subangular blocky structure; firm; prominent, light-gray coatings on the surfaces of peds; plant roots plentiful; medium acid.
- B_3 35 to 41 inches, yellowish-brown, heavy silt loam; weak, medium, subangular blocky structure; friable; a few, light-gray coatings on the surfaces of peds; a few alfalfa roots; medium acid.
- C 41 inches +, yellowish-brown to brown silt loam; massive; friable; slightly acid.

Fayette silt loam, valleys, 2 to 6 percent slopes (FeB).—The profile of this soil is like the profile described as typical of the Fayette silt loams, valleys. Capability unit IIe–1.

Fayette silt loam, valleys, 2 to 6 percent slopes, moderately eroded (FeB2).—This soil has lost more than one-third, and as much as two-thirds, of its original surface layer through erosion. The present surface layer is dark grayish brown. Capability unit IIe–1.

Fayette silt loam, valleys, 6 to 12 percent slopes, moderately eroded (FeC2).—This soil has less than one-third of its original surface layer remaining. Plowing has mixed material from the subsoil with the remaining surface soil. As a result, the color of the present surface layer is grayish brown. In several small areas, this soil is slightly or severely eroded. The surface layer in the slightly eroded areas is slightly darker and thicker than that in the normal profile of this soil, but in the severely eroded areas the surface layer is lighter colored because more subsoil is exposed. Capability unit IIIe–1.

Fayette silt loam, valleys, 12 to 20 percent slopes, moderately eroded (FeD2).—This soil has lost more than one-third of its original surface layer through erosion. The present surface layer is grayish brown and has patches of brown subsoil exposed. It contains less organic matter than the original one. Some areas are slightly eroded, and in these areas the surface layer is slightly lighter colored and thinner than in the normal soil. Capability unit IVe–1.

Fayette silt loam, valleys, 12 to 20 percent slopes, severely eroded (FeD3).—This soil has lost nearly all of its original surface layer and part of its subsoil through erosion. The present surface layer is pale brown and

contains little organic matter. It is less friable than that described as typical of the Fayette silt loams, valleys, and it is harder to manage. In large areas plowing has turned up patches of brown subsoil. Capability unit VIe–1.

Fayette silt loam, valleys, 20 to 30 percent slopes (FeE).—This soil has thinner horizons than those described as typical of the Fayette silt loams, valleys. Also, the surface layer is slightly lighter colored and contains less organic matter. Capability unit VIe–1.

Fayette stony silt loam, valleys, 6 to 12 percent slopes(FyC).—Except that this soil is stony, its profile is similar to that described as typical of the Fayette silt loams, valleys. Capability unit VIs–6.

Fayette stony silt loam, valleys, 12 to 20 percent slopes (FyD).—The profile of this soil has slightly thinner horizons than the profile described as typical of the Fayette silt loams, valleys. Capability unit VIs–6.

Fayette stony silt loam, valleys, 12 to 20 percent slopes, moderately eroded (FyD2).—This soil has lost more than one-third, and as much as two-thirds, of its original surface layer through erosion. Part of the subsoil has been mixed with the remaining surface soil by plowing. As a result, the present surface layer is grayish brown, and in some places the brown subsoil is exposed. Because of the numerous stones in this soil, only a limited acreage has been cultivated. Capability unit VIs–6.

Fayette stony silt loam, valleys, 20 to 30 percent slopes (FyE).—The profile of this soil is thinner and is slightly lighter colored than that described as typical of the Fayette silt loams, valleys. Also, the subsoil and the entire solum are thinner. Rock outcrops, limestone blocks, and boulders are common. Capability unit VIs–6.

Gale Series

The Gale series is made up of moderately deep, silty soils on uplands throughout the county. The soils are well drained. They have convex slopes and generally occupy fairly small areas between tracts of Steep stony and rocky land and soils formed in alluvium in valleys. The areas are mainly in the southeastern part of the county. The soils formed in loess under a forest cover made up of maple, oak, hickory, and other kinds of hardwoods. Depth to sandstone bedrock generally ranges from 24 to 40 inches.

The Gale soils are associated with the Hixton soils and with the Fayette soils on valley slopes. Typically, their surface layer is silty and is dark grayish brown. Their subsoil, a yellowish-brown silty clay loam, overlies a substratum of yellowish, weathered sandstone. In the stony Gale soils, many boulders and cobbles of sandstone and limestone are scattered on the surface and throughout the profile. In some places there are outcrops of sandstone.

These soils have medium runoff and internal drainage. They are moderate in moisture-supplying capacity and in natural fertility. The supply of organic matter is fairly low, and the soils are slightly acid to medium acid. They are likely to be eroded by water.

These soils are used mainly for cultivated crops and pasture. They require practices to control erosion, but, if slopes are favorable, the soils are suited to all of the crops commonly grown in the county. Crops respond well if lime, manure, and a complete fertilizer are added and if supplemental nitrogen is applied.

Gale Silt Loams

The following describes a typical profile of a Gale silt loam in a cultivated field:

- A_p 0 to 8 inches, grayish-brown silt loam; moderate, fine, granular structure; friable; plant roots plentiful; medium acid.
- A_2 8 to 11 inches, pale-brown silt loam; weak, medium, platy structure; friable; plant roots plentiful; medium acid.
- B_1 11 to 17 inches, yellowish-brown, heavy silt loam; weak, medium, subangular blocky structure; friable; a few light-gray coatings on the surfaces of the blocks; roots plentiful; medium acid.
- B_2 17 to 26 inches, dark yellowish-brown silty clay loam; moderate, medium, subangular blocky structure; firm; light-gray coatings and very dark grayish-brown stains of organic matter; a few clay skins; roots plentiful; medium acid.
- B_3 26 to 32 inches, yellowish-brown fine sandy loam; moderate, medium, subangular blocky structure; friable; roots plentiful to a depth of 30 inches; medium acid.
- C 32 inches +, yellowish-brown fine sand; single grain; loose; grades to yellowish sandstone at a depth of 40 inches; medium acid.

Gale silt loam, 2 to 6 percent slopes (GaB).—The profile of this soil is like the profile described as typical of the Gale silt loams. Capability unit IIe–2.

Gale silt loam, 2 to 6 percent slopes, moderately eroded (GaB2).—This soil has a lighter colored, thinner surface layer than that in the profile described as typical of the Gale silt loams. It has a sandy substratum, which is at a slightly shallower depth than that in the profile described. From one-third to two-thirds of the original surface layer has been removed through water erosion. Capability unit IIe–2.

Gale silt loam, 6 to 12 percent slopes (GaC).—The surface layer of this soil is slightly lighter colored and thinner than that in the profile described as typical of the Gale silt loams. Capability unit IIIe–2.

Gale silt loam, 6 to 12 percent slopes, moderately eroded (GaC2).—This soil has lost from one-third to two-thirds of its original surface layer through erosion. Part of the subsoil has been mixed with the remaining surface layer by plowing. As a result, the present surface layer is pale brown. The solum of this soil is thinner than that in the profile described as typical of the Gale silt loams. Capability unit IIIe–2.

Gale silt loam, 6 to 12 percent slopes, severely eroded (GaC3).—This soil has lost more than two-thirds of its original surface layer and part of its subsoil through erosion. The present surface layer is brown. It contains little organic matter. The solum is less than 30 inches thick and overlies a sandy substratum. This soil is more droughty than the soil described as typical of the Gale silt loams. Capability unit IVe–2.

Gale silt loam, 12 to 20 percent slopes (GaD).—Because of its strong slopes, this soil has thinner horizons than those in the profile described as typical of the Gale silt loams. The substratum is sandy and is at a shallower depth than that in the profile described. The surface layer is also lighter colored and contains less organic matter. Capability unit IVe–2.

Gale silt loam, 12 to 20 percent slopes, moderately eroded (GaD2).—This soil has lost from one-third to two-thirds of its original surface layer through erosion. The present surface layer is brown and contains little organic matter. It is less friable than that in the profile described as typical of the Gale silt loams. The substratum is sandy. In most places it is at a depth of less than 30 inches. This soil is, therefore, more droughty than the soil described as typical. Capability unit IVe–2.

Gale silt loam, 12 to 20 percent slopes, severely eroded (GaD3).—Nearly all of the original surface layer of this soil has been removed through erosion. Plowing has mixed part of the subsoil with the remaining surface layer. The present plow layer is generally brown, but in a few places it is yellowish brown. The substratum is sandy and is at a depth of 2 to 3 feet.

The plow layer contains little organic matter and is less friable than that in the profile described as typical of the Gale silt loams. This soil is hard to keep in good tilth. Capability unit VIe–2.

Gale silt loam, 20 to 30 percent slopes (GaE).—Because of its moderately steep slopes, this soil has thinner horizons than those in the profile described as typical of the Gale silt loams, and its solum is thinner over the sandy substratum. The surface layer is light grayish brown and is generally less than 7 inches thick. It contains less organic matter than the surface layer in the profile described as typical. Capability unit VIe–2.

Gale silt loam, 20 to 30 percent slopes, moderately eroded (GaE2).—In areas of this soil that have been cultivated, the surface layer is brown and contains little organic matter. It is less friable than the surface layer in the profile described as typical of the Gale silt loams. The substratum is sandy and is at a shallower depth than that in the profile described. Also, this soil is more droughty and is harder to cultivate safely. Capability unit VIe–2.

Gale stony silt loam, 6 to 12 percent slopes (GnC).—The surface layer of this soil is slightly lighter colored and thinner than that in the profile described as typical of the Gale silt loams. Capability unit VIs–6.

Gale stony silt loam, 6 to 12 percent slopes, moderately eroded (GnC2).—This soil has lost from one-third to two-thirds of its original surface layer through erosion. Plowing has mixed material from the subsoil with the remaining surface layer. As a result, the present surface layer is pale brown. The substratum is sandy and is nearer the surface than that in the profile described as typical of the Gale silt loams. Capability unit VIs–6.

Gale stony silt loam, 12 to 20 percent slopes (GnD).—This soil has a lighter colored surface layer and thinner horizons than those in the profile described as typical of the Gale silt loams. Its substratum is sandy and is nearer the surface than that in the profile described. Capability unit VIs–6.

Gale stony silt loam, 12 to 20 percent slopes, moderately eroded (GnD2).—More than one-third of the original surface layer of this soil has been lost through water erosion. The present plow layer is less friable and has a browner color than that in the profile described as typical of the Gale silt loams. It also contains less organic matter. The substratum is sandy and is generally at a depth of less than 30 inches. Capability unit VIs–6.

Gale stony silt loam, 20 to 30 percent slopes (GnE).—The surface layer of this soil is light grayish brown. It is generally less than 7 inches thick and contains less organic matter than the surface layer in the soil described as typical of the Gale silt loams. The solum is also thinner and overlies a sandy substratum. This soil is more droughty than the soil described as typical. Capability unit VIIs–6.

Gale stony silt loam, 20 to 30 percent slopes, moderately eroded (GnE2).—This soil has lost more than one-third of its original surface layer through erosion. In areas that have been cultivated, the present surface layer is brown and is less friable than that in the profile described as typical of the Gale silt loams. This soil is more difficult to keep in good tilth than the soil described as typical. Its solum is thinner and overlies a sandy substratum. Capability unit VIIs–6.

Gotham Series

The Gotham series is made up of sandy, somewhat excessively drained soils on low stream terraces along the Wisconsin River. The soils formed under both prairie and forest vegetation in sandy outwash that contained some silt. In most places slopes are less than 2 percent, but in small areas they are as much as 12 percent.

These soils are near the Plainfield and Sparta soils. In most places the surface layer is moderately dark colored, very friable, and sandy. The subsoil is brown and friable. It overlies a yellowish substratum that is loose and sandy.

These soils have moderately rapid permeability and are low in moisture-holding capacity. They are moderately low in natural fertility. In areas that have not been limed, the soils are slightly acid to medium acid. The soils are droughty, and there is a serious hazard of wind erosion.

These soils are used mainly for crops or pasture. The crops respond well if manure and a complete fertilizer are added. Yields are moderate to low.

Gotham Loamy Fine Sands

The following describes a typical profile of a Gotham loamy fine sand in a cultivated field that has been limed:

A_p	0 to 9 inches, very dark grayish-brown loamy fine sand; weak, medium, granular structure; very friable; plant roots plentiful; neutral.
B_1	9 to 13 inches, dark-brown loamy fine sand; weak,medium, subangular blocky structure; very friable; plant roots plentiful; neutral.
B_2	13 to 23 inches, dark-brown sandy loam; moderate, medium, subangular blocky structure; friable; plant roots plentiful; slightly acid.
B_3	23 to 30 inches, dark-brown, light sandy loam; weak, medium, subangular blocky structure; friable; a few plant roots; medium acid.
C	30 inches +, yellowish-brown fine sand; single grain; loose; medium acid.

Gotham loamy fine sand, 0 to 2 percent slopes (GoA).—The profile of this soil is like the profile described as typical of the Gotham loamy fine sands. Capability unit IVs–3.

Gotham loamy fine sand, 2 to 6 percent slopes (GoB).—The surface layer of this soil is slightly lighter colored and thinner than that in the profile described as

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typical of the Gotham loamy fine sands. Capability unit IVs–3.

Gotham loamy fine sand, 2 to 8 percent slopes, eroded (GoB2).—From one-third to two-thirds of the original surface layer of this soil has been lost through erosion. The present plow layer is generally dark brown. It contains less organic matter than the plow layer in the typical profile described and has a slightly coarser texture. The solum is also thinner, and the soil is more droughty. Capability unit IVs–3.

Hesch Series

The Hesch series is made up of dark-colored loams and sandy loams that are well drained. The soils occupy small areas on the lower valley slopes throughout the county. They formed in materials weathered from fine-grained sandstone that contains small amounts of even finer materials. The vegetation was prairie grasses or mixed prairie grasses and oaks.

These soils are near the Hixton and Gale soils. Typically, they have a very dark brown surface layer, a brown to dark-brown subsoil, and a yellowish-brown substratum that is sandy or consists of sandstone. Depth to the underlying sandstone ranges from 18 to 40 inches.

The Hesch soils are moderate to moderately low in moisture-supplying capacity and have moderate natural fertility. They are medium acid to neutral. The soils are likely to erode, especially where slopes are steep.

These soils are used mainly for crops and pasture. The crops respond well if lime and a complete fertilizer are added. Corn and nonleguminous hay or pasture crops need nitrogen. If slopes are favorable and an adequate supply of plant nutrients is maintained, good yields are obtained.

Of the Hesch soils in Iowa County, Hesch loams are dominant, but one Hesch sandy loam has been mapped.

Hesch Loams

The following describes a typical profile of a Hesch loam in a cultivated field that has been limed:

- A_p 0 to 8 inches, very dark brown to dark-gray loam; moderate, fine, granular structure; friable; plant roots plentiful; neutral.
- A_3 8 to 12 inches, dark grayish-brown loam; moderate, fine, granular structure; friable; slightly compact in place; plant roots plentiful; several wormcasts; slightly acid.
- B_1 12 to 19 inches, brown very fine sandy loam; weak, medium, subangular blocky structure; friable; plant roots plentiful; several old root channels; slightly acid.
- B_2 19 to 32 inches, dark-brown sandy clay loam; moderate, medium, subangular blocky structure; slightly hard when dry, plastic when wet; occasional pebbles of sandstone; plant roots plentiful; slightly acid.
- C 32 inches +, yellowish-brown fine sand; single grain; loose; contains fragments of sandstone; grades to sandstone bedrock at a depth of 42 inches; medium acid.

Hesch loam, 2 to 6 percent slopes, moderately eroded (HeB2).—This soil has lost more than one-third of its original surface layer through water erosion. The present surface layer is dark grayish brown and is thinner than that in the profile described as typical of the Hesch loams. Capability unit IIe–2.

Hesch loam, 6 to 12 percent slopes, moderately eroded (HeC2).—The surface layer of this soil is thinner than that described as typical of the Hesch loams. This soil is also shallower over bedrock and is more droughty. The surface layer is mainly dark grayish brown, but there are occasional patches where it is brown. A few areas are slightly eroded. The surface layer in these areas is only slightly thinner than that described as typical of the Hesch loams. Capability unit IIIe–2.

Hesch loam, 12 to 20 percent slopes, moderately eroded (HeD2).—Much of the original surface layer of this soil has been lost through erosion. Plowing has mixed material from the upper part of the subsoil with the remaining surface soil. As a result, the present surface layer has a brownish color and is only 7 to 9 inches thick. The substratum is sandy. Depth to bedrock is less than in the profile described as typical of the Hesch loams, and this soil is more droughty.

Some areas of this soil are mainly in trees or pasture. In these areas the soil is less eroded, has thicker horizons, and is slightly thicker over the substratum than in areas that have been cultivated. Capability unit IVe–2.

Hesch Sandy Loams

The Hesch sandy loams are mostly on south- and west-facing valley slopes, just below areas of Steep stony and rocky land. The following describes a profile of a Hesch sandy loam observed in a bluegrass pasture:

- A_p 0 to 9 inches, very dark brown to black sandy loam; weak, medium, granular structure; very friable; plant roots plentiful; medium acid.
- B_1 9 to 13 inches, dark-brown sandy loam; weak, medium, subangular blocky structure; very friable; plant roots plentiful; slightly acid.
- B_2 13 to 22 inches, dark-brown fine sandy loam; weak to moderate, subangular blocky structure; friable; plant roots plentiful; medium acid.
- B_3 22 to 32 inches, brown sandy loam; weak, coarse, subangular blocky structure; friable; plant roots plentiful; medium acid.
- C 32 inches +, pale-brown fine sand; single grain; loose; grades to unweathered sandstone at a depth of 40 inches; medium acid.

Hesch sandy loam, 20 to 30 percent slopes, moderately eroded (HsE2).—This soil has a lighter colored, thinner surface layer than that in the profile described as typical of the Hesch sandy loams, and the profile is thinner. More than one-third of the original surface layer has been lost through erosion. Plowing has mixed part of the subsoil with the remaining surface layer. As a result, the present surface layer is dark brown and contains less organic matter than the original one. In a few areas this soil is slightly eroded. Except that the surface layer is thinner and lighter colored, the profile in the slightly eroded areas is similar to the profile described as typical of the Hesch sandy loams. Capability unit VIIe–7.

Hixton Series

The Hixton series is made up of light-colored, sandy soils on valley slopes. The soils are somewhat excessively drained. They formed in materials weathered from fine-grained sandstone containing small amounts of silty materials. The vegetation was various kinds of hardwoods. The areas are small and occur throughout the county.

These soils are near areas of Hesch and Gale soils and near Fayette soils on valley slopes. Typically, their sur-

face layer is a grayish-brown sandy loam. Their subsoil, a yellowish-brown loam, is underlain by a substratum of loose sand or sandstone. The substratum is at a depth of 20 to 36 inches, depending somewhat on the slope and on the amount of erosion.

These soils have moderately rapid permeability. They are moderately low in moisture-holding capacity and in natural fertility. The soils are medium acid to strongly acid. They are likely to erode if they are not protected.

The Hixton soils on the lower parts of slopes are used mainly for cultivated crops; the steeper areas are used for pasture or trees. If slopes are favorable, the soils are well suited to corn, oats, and forage crops. Crops respond well if a complete fertilizer is applied and manure is added to build up the content of organic matter. Most areas need lime. In years of prolonged drought, yields of corn and forage crops are likely to be lower than in years of normal rainfall.

HIXTON SANDY LOAMS

The following describes a typical profile of a Hixton sandy loam in a wooded pasture:

- A_1 0 to 7 inches, dark grayish-brown sandy loam; weak, medium, granular structure; very friable; plant roots plentiful; strongly acid.
- A_2 7 to 10 inches, light brownish-gray to pale-brown sandy loam; weak, medium, platy structure; very friable; plant roots plentiful; strongly acid.
- B_1 10 to 18 inches, yellowish-brown, heavy sandy loam; weak, fine, subangular blocky structure; friable; plant roots plentiful; medium acid.
- B_2 18 to 28 inches, yellowish-brown to brown loam to sandy clay loam; moderate, medium, subangular blocky structure; slightly hard when dry, plastic when wet; plant roots plentiful; medium acid.
- B_3 28 to 34 inches, yellowish-brown fine sandy loam; weak, coarse, subangular blocky structure; friable; contains some fragments of sandstone; tree roots plentiful; medium acid.
- C 34 inches +, light yellowish-brown fine sand; single grain; loose; many fragments of sandstone; sandstone bedrock is at a depth of 45 inches; medium acid.

Hixton sandy loam, 2 to 6 percent slopes, moderately eroded (HtB2).—This soil has lost from one-third to two-thirds of its original surface layer through water erosion. As a result, its present surface layer is lighter colored and thinner than that in the profile described as typical of the Hixton sandy loams. The solum is also slightly thinner, and this soil is slightly more droughty. Capability unit IIIs–2.

Hixton sandy loam, 6 to 12 percent slopes (HtC).—The profile of this soil is similar to that described as typical of the Hixton sandy loams. Capability unit IVe–7.

Hixton sandy loam, 6 to 12 percent slopes, moderately eroded (HtC2).—This soil has lost more than one-third of its original surface layer through erosion. In a few small areas, more than two-thirds of the original surface layer is gone. The present surface layer is pale brown and contains less organic matter than that in the profile described as typical. The entire solum is also thinner than that in the profile described, and the soil is generally more droughty. The substratum is loose and sandy. Capability unit IVe–7.

Hixton sandy loam, 12 to 20 percent slopes (HtD).—Because of stronger slopes, this soil has a slightly lighter colored, thinner surface layer than that in the profile described as typical of the Hixton sandy loams. Depth to the substratum is also less. It is generally between 24 and 30 inches. Capability unit VIe–7.

Hixton sandy loam, 12 to 20 percent slopes, moderately eroded (HtD2).—This soil has a lighter colored, thinner surface layer than that in the profile described as typical of the Hixton sandy loams, and loose sand is at a depth of only about 2 feet. The present surface layer is pale brown and contains little organic matter. Capability unit VIe–7.

Hixton sandy loam, 12 to 20 percent slopes, severely eroded (HtD3).—This soil has lost nearly all of its original surface layer and part of its subsoil through erosion. Most of the present surface layer has a brownish color, but there are patches that are yellowish brown. The substratum is sandy and is at a depth of 20 to 24 inches. This soil is fairly droughty. Capability unit VIIe–7.

Hixton sandy loam, 20 to 30 percent slopes (HtE).—This soil has a thinner solum than that described as typical of the Hixton sandy loams. This soil is also more droughty. Capability unit VIIe–7.

Hixton sandy loam, 20 to 30 percent slopes, moderately eroded (HtE2).—This soil has lost more than one-third of its original surface layer through erosion. The substratum is sandy and is at a shallower depth than that in the profile described as typical of these soils. This soil is also more droughty. The present surface layer is light brown and contains little organic matter. The substratum is sandy and is generally at a depth of less than 2 feet. Capability unit VIIe–7.

Hixton sandy loam, 30 to 45 percent slopes (HtF).—Because of its steep slopes, this soil has thinner horizons than those in the profile described as typical of the Hixton sandy loams, and its solum is thinner. The surface layer is also lighter colored. The substratum is sandy. In many places it is at a depth of less than 2 feet. Capability unit VIIe–7.

Huntsville Series

The Huntsville series is made up of nearly level, dark-colored, deep, silty soils that are moderately well drained to well drained. The soils are in small areas on bottom lands and are scattered along many of the smaller streams. They have formed in silty alluvial materials. The materials were washed into streams that flowed from the loess-covered terraces and uplands and were then redeposited on the bottom lands by overflow from the streams. The vegetation consisted of prairie grasses.

The Huntsville soils typically have a very dark gray to black silty surface layer. The underlying material is dark gray to black. It is silty and is several feet thick.

These soils are near the Arenzville soils. They are moderate in permeability, and their moisture-holding capacity is high. The soils contain a large amount of organic matter, are moderately high in natural fertility, and are neutral in reaction.

Areas of these soils that are not likely to be flooded frequently are used for cultivated crops. Most of the areas that are not protected from overflow are in pasture. If these soils are protected from flooding, they are well suited to intensive cultivation. They are suited to all the crops commonly grown in the county, and yields are high. There is only one mapping unit of this series, Huntsville silt loam, in Iowa County.

HUNTSVILLE SILT LOAMS

The following describes a profile of a Huntsville silt loam observed in a bluegrass pasture:

A_{11} 0 to 8 inches, very dark gray to very dark brown silt loam; moderate, fine, granular structure; friable; grass roots abundant; much earthworm activity; neutral.

A_{12} 8 to 16 inches, black silt loam; moderate, medium to coarse, granular structure; friable; somewhat compact in place; plant roots plentiful; neutral.

A_{13} 16 to 38 inches, very dark gray silt loam; weak, coarse, subangular blocky structure; friable; plant roots plentiful; a few, fine, distinct spots of yellowish brown; neutral.

A_{14} 38 inches +, dark gray to very dark gray silt loam; massive; friable; neutral.

Huntsville silt loam (Hu).—The profile of this soil is like the profile described as typical of the Huntsville silt loams. Capability unit IIw–11.

Jackson Series

The Jackson series is made up of light-colored, deep, silty soils on terraces along the larger streams. The soils are moderately well drained. They occur in fairly small areas that are scattered throughout the county. These soils are nearly level to gently sloping, but most of them have slopes of less than 2 percent. The soils formed in a layer of silt that was 42 or more inches thick.

The Jackson soils are near areas of Bertrand and Curran soils. Typically, their surface layer is dark grayish brown. Their subsoil is yellowish-brown silty clay loam and overlies brown, stratified silt and sand.

These soils are moderate in permeability, and their moisture-supplying capacity is high. They are moderate in natural fertility and are medium acid to strongly acid. The hazard of erosion is not serious.

The Jackson soils are well suited to corn, small grains, and forage crops, and most of the larger areas are cultivated. The crops respond well if a complete fertilizer is applied, and corn requires supplemental nitrogen. Legumes require lime.

Runoff and seepage from the adjoining uplands cause excess wetness in places. Diversion terraces can be used to remove the excess water.

JACKSON SILT LOAMS

The following describes a profile of a Jackson silt loam in a cultivated field:

A_1 0 to 7 inches, dark grayish-brown silt loam; moderate, medium, granular structure; friable; plant roots plentiful; medium acid.

A_2 7 to 11 inches, brown to pale-brown silt loam; moderate, medium, platy structure; friable; roots plentiful; slightly vesicular; medium acid.

B_1 11 to 16 inches, yellowish-brown, heavy silt loam; weak, thick, platy and weak, fine, subangular blocky structure; friable; a few gray coatings on the surfaces of peds; plant roots plentiful; strongly acid.

B_2 16 to 37 inches, dark yellowish-brown to brown silty clay loam; moderate, fine to medium, subangular blocky structure; firm; clay skins and gray coatings on the surfaces of peds; a few, distinct, fine spots of dark reddish brown and yellowish red increasing to many with increasing depth; plant roots plentiful; strongly acid.

C 37 inches +, brown silt loam; massive; friable; many, medium, distinct spots of yellowish red and light brownish gray; stratified silt and fine sand at a depth below 44 inches; medium acid.

Jackson silt loam, 0 to 2 percent slopes (JaA).—The profile of this soil is like the profile described as typical of the Jackson silt loams. Capability unit I–1.

Jackson silt loam, 2 to 6 percent slopes (JaB).—This soil has a slightly thinner and lighter colored surface layer than that in the profile described as typical of the Jackson silt loams. In a few scattered areas, the soil is moderately eroded. In these areas more of the original surface layer has been lost than has been removed from the normal soil, and the present surface layer is pale brown and thin. Capability unit IIe–1.

Judson Series

The Judson series consists of dark-colored, deep, silty soils that are well drained. The soils are at the heads of draws; along the bottom lands of small intermittent streams; and at the bases of steep slopes. The areas are small and are scattered throughout the county. The soils have slopes of 0 to 12 percent. They formed under a mixture of grass and forest vegetation in local alluvium. The alluvium, which is more than 42 inches thick, was washed down by water or was brought down by gravity from the steeper slopes above.

The texture of the Judson soils is generally silt loam throughout the profile. These soils are similar to the Chaseburg soils and occur in similar positions, but they have a darker surface layer and subsoil than the Chaseburg soils. The surface layer is very dark brown to black, the subsoil is very dark gray to brown, and the substratum is dark grayish brown.

These soils are moderate in permeability, and their moisture-supplying capacity is high. They have moderately high natural fertility and are nearly neutral. Erosion is not a serious hazard, but the soils are likely to be flooded.

The larger areas of these soils are used mainly for cultivated crops, but many small areas are in pasture or trees. The soils are well suited to all of the crops commonly grown in the county. Yields are high if protection is given from overflow and good management is used.

JUDSON SILT LOAMS

The following describes a typical profile of a Judson silt loam in an undisturbed area:

A_{11} 0 to 20 inches, very dark brown to black silt loam; moderate, medium, granular structure; friable; plant roots abundant; occasional stones; much earthworm activity; neutral.

B 20 to 38 inches, very dark gray to dark grayish-brown, heavy silt loam; weak, coarse, subangular blocky structure; friable; a few, fine, distinct spots of yellowish brown and grayish brown in the lower part; plant roots plentiful; neutral.

C 38 inches +, very dark grayish-brown silt loam; massive; friable; a few, medium, distinct spots of yellowish brown and grayish brown; neutral.

In a few places there are thin deposits, or layers, of sandy material within the profile. In small areas the texture of the surface layer is fine sand. In some places there are cobbles and pebbles of limestone, chert, and sandstone.

Judson silt loam, 0 to 2 percent slopes (JuA).—The profile of this soil is like the profile described as typical of the Judson silt loams. Capability unit IIw–11.

Judson silt loam, 2 to 6 percent slopes (JuB).—In this soil the surface layer is generally slightly thinner than that in the profile described as typical of the Judson silt loams. Capability unit IIw–11.

Judson silt loam, 6 to 12 percent slopes (JuC).—This soil has a slightly lighter colored and thinner surface layer than that in the profile described as typical of the Judson silt loams. The lower part of the profile is also browner. Capability unit IIIe–1.

Lawson Series

The Lawson series consists of nearly level, dark-colored, deep, silty soils on flood plains along streams. The soils are somewhat poorly drained. They formed in silty alluvium washed down from the surrounding terraces and uplands. The vegetation was prairie grasses.

These soils are near the Huntsville soils, which are better drained. Typically, they have a thick, silty surface layer and are underlain by gray silty clay loam.

The Lawson soils are moderately slow in permeability, and their moisture-supplying capacity is high. The soils are moderately high in natural fertility and contain a large amount of organic matter. They are slightly acid to neutral.

These soils require drainage and need protection from flooding. Areas that are drained and protected from flooding are mainly in corn. Unimproved areas are used mainly for pasture, but some hay is grown. If the soils are drained, they are suited to all the crops commonly grown in the area, and high yields are obtained. Lime is seldom needed. Only one soil of this series, Lawson silt loam, is mapped in Iowa County.

Lawson Silt Loams

The following describes a profile of a Lawson silt loam in a cornfield:

- A_p 0 to 9 inches, black silt loam; moderate, fine, granular structure; friable; plant roots abundant; neutral.
- A_{11} 9 to 13 inches, black silt loam; weak, coarse, subangular blocky structure; friable; plant roots plentiful; neutral.
- A_{12} 13 to 36 inches, black to very dark brown silt loam; weak, medium, subangular blocky structure; friable; many, medium, distinct spots of dark gray and brown; a few plant roots; neutral.
- A_{13g} 36 inches +, grayish-brown, light silty clay loam; massive; firm; many, medium, distinct spots of dark gray and brown; slightly acid.

In places in the solum, or in the material below, there are thin layers of fine sand and an occasional layer of chert.

Lawson silt loam (La).—The profile of this soil is like the profile described as typical of the Lawson silt loams. Capability unit IIw–1.

Lindstrom Series

The Lindstrom series is made up of dark-colored, deep, silty soils on concave valley slopes. The soils are well drained. They lie below areas of Steep stony and rocky land. The areas are small and are scattered throughout the county. These soils formed mainly under prairie grasses in deposits of loess and in local alluvium that was washed from the steeper slopes above. The deposits are more than 42 inches thick.

The Lindstrom soils are near the valley soils of the Fayette series. They are similar to those soils, but the Fayette soils formed under forest. The surface layer of the Lindstrom soils is very dark brown silt loam, and the subsoil is dark-brown, light silty clay loam. The substratum is yellowish brown and silty.

These soils are moderate in permeability, and their moisture-supplying capacity is high. They have moderately high natural fertility and are slightly acid to neutral throughout. The soils are likely to erode, especially if slopes are long and steep.

If slopes are favorable and erosion can be controlled, the Lindstrom soils are suited to all of the crops commonly grown in the county. They are used mainly for cultivated crops. The crops respond well if manure and a complete fertilizer are added.

Lindstrom Silt Loams

The following describes a profile of a Lindstrom silt loam in a cultivated area that is slightly eroded:

- A_{12} 0 to 8 inches, very dark brown silt loam; moderate, medium, granular structure; friable; plant roots abundant; much earthworm activity; neutral.
- A_1 8 to 12 inches, very dark brown silt loam; weak, thin, platy and moderate, medium, granular structure; friable; plant roots plentiful; nearly neutral.
- B_1 12 to 17 inches, dark-brown silt loam; weak, fine to medium, subangular blocky structure; friable; plant roots plentiful; many root channels and earthworm holes and casts; highly vesicular; light-gray coatings on the surfaces of peds; slightly acid.
- B_2 17 to 42 inches, dark yellowish-brown, light silty clay loam; moderate, medium, subangular blocky structure in upper part, and weak, medium, subangular blocky structure in lower part; firm; plant roots plentiful; a few fragments of sandstone; slightly acid.
- C 42 inches +, yellowish-brown silt loam; massive; friable; slightly acid.

In many places a small amount of grit occurs throughout the profile. In a few places stones or boulders are on the surface and within the profile. The number of stones varies. In some areas there are no stones, but in a few places the stones are numerous enough to interfere with tillage. In a few places the material underlying these soils is reddish sandstone and the subsoil and substratum are reddish brown.

Lindstrom silt loam, 2 to 6 percent slopes (LsB).—The profile of this soil is like the profile described as typical of the Lindstrom silt loams. Capability unit IIe–1.

Lindstrom silt loam, 2 to 6 percent slopes, moderately eroded (LsB2).—This soil has a thinner surface layer than that in the profile described as typical of the Lindstrom silt loams. Plowing has turned up small patches of dark-brown subsoil in many places. Capability unit IIe–1.

Lindstrom silt loam, 6 to 12 percent slopes (LsC).—The surface layer of this soil is slightly lighter colored and thinner than that in the profile described as typical of the Lindstrom silt loams. Capability unit IIIe–1.

Lindstrom silt loam, 6 to 12 percent slopes, moderately eroded (LsC2).—This soil has lost from one-third to two-thirds of its original surface layer through water erosion. The present surface layer is browner and thinner than that in the profile described as typical. In about half the acreage, the brown subsoil has been exposed by plowing. In a few small areas the soil is severely eroded. If the severely eroded areas are culti-

vated, a larger proportion of brown subsoil will be exposed. Capability unit IIIe–1.

Lindstrom silt loam, 12 to 20 percent slopes (lsD).—This soil has a slightly lighter colored, much thinner surface layer than that in the profile described as typical of these soils, and the underlying horizons are slightly thinner. The surface layer is very dark grayish brown and is 6 to 10 inches thick. Capability unit IVe–1.

Lindstrom silt loam, 12 to 20 percent slopes, moderately eroded (lsD2).—This soil has lost more than one-third, and as much as two-thirds, of its original surface layer through erosion. Plowing has mixed part of the brown subsoil with the material in the remaining surface layer. As a result, the present surface layer is browner and thinner than that in the profile described. This soil also contains less organic matter and is slightly less friable.

In several small areas this soil is severely eroded. In these areas the content of organic matter is even lower than in the moderately eroded soil, and the soil is less friable. Capability unit IVe–1.

Loamy Alluvial Land

Loamy alluvial land is a miscellaneous land type made up of sandy and silty sediments deposited by water. The soil materials vary widely in texture and are generally stratified. They have been in place long enough for trees and other plants to grow, but the areas are flooded frequently unless they are protected.

Loamy alluvial land (lo).—This miscellaneous land type is nearly level. It is on flood plains along the major streams and drainageways in the county. The surface layer is made up of grayish-brown to dark-brown, friable silt loam that is about 8 inches thick. It has a moderate, medium, granular structure, contains many plant roots, and is slightly acid. Just below is grayish-brown to brown, stratified silt and fine sand with little or no structure. At increasing depths, the soil material is more stratified and is neutral in reaction.

Although the upper part of the soil material is dominantly silty, in places it is loamy or sandy. It is moderately high in fertility and is nearly neutral. The moisture-holding capacity is generally high. During most of the growing season, the water table is at the surface or is at a depth within 5 feet of the surface.

Included with this land type are areas of Riverwash and of Arenzville, Huntsville, Lawson, and Orion soils. These areas were too small to map separately.

Loamy alluvial land is used mainly to grow forage crops. If the areas are large enough to till and are protected from flooding, corn, small grains, and forage crops will make moderate yields. The areas are likely to be flooded, however, throughout the growing season. Areas that are not protected from flooding are probably best used for pasture (fig. 17). Adding commercial fertilizer or improving drainage by installing tile drains generally does not pay. Many small areas are near areas of more productive soils and are used and managed the same as those soils. Capability unit IIIw–14.

Loamy alluvial land, poorly drained (lp).—This miscellaneous land type is nearly level and occurs on the lower parts of flood plains along the major streams. The surface layer is grayish-brown to dark grayish-brown,

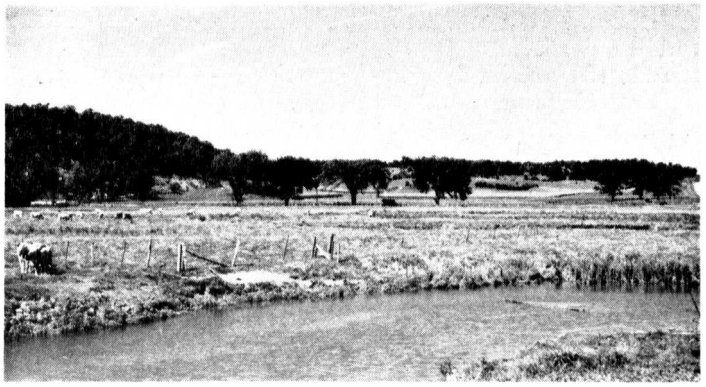

Figure 17.—**Areas of Loamy alluvial land that are not protected from flooding. These areas are probably best used for pasture. By Soil Survey Division, Wisconsin Geological and Natural History Survey, University of Wisconsin.**

friable silt loam. It has moderate, medium, granular structure and is about 10 inches thick. The surface layer contains many roots of grasses and sedges and is slightly acid. It overlies dark grayish-brown to dark-gray, friable, stratified silt and sand that include a few thin layers of silty clay loam. This underlying material is neutral in reaction. At a depth below 18 inches are the roots of sedges and old root channels.

Included with this land type are areas of Riverwash and Marsh and of Boaz, Ettrick, Lawson, and Orion soils. These areas were too small to map separately.

Loamy alluvial land, poorly drained, is not suitable for crops because the areas are likely to be flooded throughout the growing season. Most of the acreage is in pasture or has been left in trees. The trees are mainly black or river birch, elm, black ash, and willow. Capability unit Vw–15.

Marsh

Marsh (Ma).—This miscellaneous land type is nearly level. It is made up of a mixture of wet alluvial soils on flood plains adjacent to streams. In many places there are small areas of organic soils or areas made up of a mixture of organic and mineral materials. The areas are covered by floodwaters during most of the year. The natural vegetation is mostly swamp grasses, reeds, and sedges, but it includes willow, black ash, swamp birch, and others trees that tolerate water.

The soils in this land type have a dark-colored surface layer and a grayish substratum. The water table is permanently high, and the moisture-supplying capacity is also high. Natural fertility is moderate to high. The soils are slightly acid to nearly neutral.

Marsh is not suited to cultivation and provides poor yields of pasture. The areas are used mainly for wildlife. In most places the areas are too low in relation to the streams to permit drainage. If the areas are drained and cleared, however, moderate to high yields of pasture are obtained. The pastures respond well if a complete fertilizer is applied. Except for streambank cutting, erosion is not a hazard. Generally, it is not economical or feasible to use structures to protect the areas from streambank cutting. Capability unit VIIIw–15.

Meridian Series

The Meridian series consists of light-colored, sandy soils on stream terraces. These soils are dominantly well drained, but, in areas that are nearly level and in slight depressions, drainage is somewhat poor. The Meridian soils occur along the larger streams in the county but are mainly along the Wisconsin River. Their slopes are mostly less than 6 percent. The parent material of these soils is predominantly sandy, but it contains some finer textured materials. The parent material was laid down by water. The native vegetation was a hardwood forest made up of various kinds of deciduous trees.

These soils generally occupy fairly large areas near the Dakota soils. They are somewhat similar to the Dakota soils, but their surface layer is lighter colored. Their surface layer is typically a grayish-brown sandy loam and overlies a dark-brown, sandy subsoil. The substratum is brown and sandy. The soils are underlain by sandy outwash at a depth between 24 and 40 inches.

The Meridian soils have moderate to moderately rapid permeability, and their moisture-holding capacity is moderate to moderately low. Natural fertility is moderate. The soils are slightly acid to strongly acid. The wet areas require drainage.

The dominant Meridian soils are sandy loams, but, in areas of the somewhat poorly drained variant, the soils have a surface layer of loam. Here, depth to sandy outwash ranges from 24 to 36 inches and the water table normally is at a depth of 3 to 5 feet in wet seasons. The small areas in which the texture of the surface layer is loam are near areas of Meridian sandy loams.

These soils are used mainly for cultivated crops. If slopes are favorable, the Meridian sandy loams are well suited to all of the crops commonly grown in the county. Yields are sometimes limited by lack of water during periods of extended drought, but generally yields are moderate if the soils are well managed. Meridian loam, somewhat poorly drained variant, requires drainage, but, if it is adequately drained, moderate yields are obtained. Crops respond well on all of the soils if manure is added and lime and a complete fertilizer are applied. Corn and small grains require nitrogen fertilizer for high yields.

Meridian Sandy Loams

The following describes a typical profile of a Meridian sandy loam in a cultivated field that has been limed:

- A_p 0 to 7 inches, dark grayish-brown sandy loam; moderate, medium, granular structure; very friable; plant roots plentiful; neutral.
- A_2 7 to 9 inches, dark grayish-brown to grayish-brown sandy loam; weak, medium, platy structure; very friable; plant roots plentiful; neutral.
- B_1 9 to 17 inches, dark-brown loam; weak, medium, subangular blocky structure; friable; plant roots plentiful; medium acid.
- B_2 17 to 25 inches, dark yellowish-brown loam; moderate, medium, subangular blocky structure; friable; plant roots plentiful; medium acid.
- B_3 25 to 30 inches, dark-brown sandy loam; weak, medium, subangular blocky structure; friable; plant roots plentiful; medium acid.
- C 30 inches +, dark-brown fine sand that grades to yellowish brown with increasing depth; single grain; loose; stratified and contains thin layers or lenses of dark-brown sandy loam; slightly acid.

Meridian sandy loam, 0 to 2 percent slopes (MeA).—The profile of this soil is like the profile described as typical of the Meridian sandy loams. Capability unit IIIs–2.

Meridian sandy loam, 2 to 6 percent slopes (MeB).—The surface layer of this soil is thinner than that in the profile described as typical of the Meridian sandy loams. Also, depth to the sandy substratum is generally shallower. Capability unit IIIs–2.

Meridian sandy loam, 2 to 6 percent slopes, moderately eroded (MeB2).—This soil has lost from one-third to two-thirds of its original surface layer as the result of erosion by wind or water. The present surface layer is browner than that in the profile described as typical of the Meridian sandy loams, and it is lower in organic matter. Also, depth to the sandy substratum is shallower, and the soil is more droughty. Capability unit IIIs–2.

Meridian sandy loam, 6 to 12 percent slopes (MeC).—The surface layer of this soil is grayish brown and is generally less than 7 inches thick. The substratum is sandy and is at a depth of 24 inches to 30 inches. Consequently, this soil is more droughty than the Meridian sandy loam described. Capability unit IVe–7.

Meridian sandy loam, 6 to 12 percent slopes, moderately eroded (MeC2).—This soil has a lighter colored, slightly finer textured, thinner surface layer than that in the profile described as typical of the Meridian sandy loams. Depth to the sandy substratum is generally 2 feet, and this soil is more droughty than the Meridian sandy loam described. Because of tillage and past erosion, the present surface layer has a brown color and contains little organic matter. Capability unit IVe–7.

Meridian Loams, Somewhat Poorly Drained Variant

The following describes a profile of a Meridian loam, somewhat poorly drained variant, in a cultivated field:

- A_p 0 to 7 inches, very dark gray loam; weak, medium, subangular blocky structure that breaks to fine granules; friable; plant roots abundant; many earthworm casts; slightly acid.
- A_2 7 to 13 inches, dark grayish-brown loam; moderate, medium, platy structure; friable; plant roots plentiful; many wormholes and casts; a few, distinct, fine spots, or mottles, of yellowish brown; strongly acid.
- B_1 13 to 18 inches, grayish-brown sandy clay loam; weak, medium, subangular blocky structure; slightly hard when dry, slightly plastic when wet; many, medium, distinct mottles of yellowish brown; a few plant roots; strongly acid.
- B_{2g} 18 to 28 inches, gray to grayish-brown sandy clay loam; moderate, medium, subangular blocky structure; slightly plastic when wet, hard when dry; a few plant roots; strongly acid.
- C 28 inches +, grayish-brown to yellow fine sand; single grain; loose; stratified; a few thin bands of light sandy loam are at a depth of more than 4 feet; medium acid.

Meridian loam, somewhat poorly drained variant (Md).—A profile of this soil has been described. The subsoil and substratum are slightly grayer and are more mottled and streaked with yellow and brown than those in the typical soils of the Meridian series. Capability unit IIw–5.

Millsdale Series, Shale Variant

The Millsdale series, shale variant, is made up of poorly drained, dark-colored silty clay loams on uplands. The soils are gently sloping and occur in depressions. They formed in a thin blanket of silt over materials weathered from fine-textured shale. Typically, large boulders of chert are scattered on the surface. The original vegetation consisted of sedges and grasses that tolerate water.

The Millsdale soils, shale variant, have slow permeability and high moisture-holding capacity. They are moderately high in natural fertility. The reaction ranges from medium acid in the upper part of the profile to mildly alkaline in the parent material.

These soils are probably best suited to pasture. Their poor drainage and the many boulders on the surface limit their use for cultivated crops. Seepage and the slow rate at which water infiltrates through the profile make satisfactory yields difficult to obtain. Millsdale silty clay loam, shale variant, is the one mapping unit of this variant in Iowa County.

MILLSDALE SILTY CLAY LOAMS, SHALE VARIANT

The following describes a typical profile of a Millsdale silty clay loam, shale variant, in a pastured area:

A_1 0 to 6 inches, black silty clay loam; moderate, medium, granular structure; friable; roots of grasses and sedges abundant; medium acid.

A_3 6 to 12 inches, black silty clay loam; moderate, medium, subangular blocky structure; firm; plant roots plentiful; medium acid.

B_{1g} 12 to 16 inches, very dark gray silty clay; moderate, fine, angular blocky structure; hard when dry, plastic when wet; many, fine, distinct spots of yellowish brown; thick clay skins and stains of organic matter on the surfaces of the peds; roots plentiful; medium acid.

B_{2g} 16 to 30 inches, grayish-brown silty clay; moderate to strong, fine and medium, angular blocky structure; hard when dry, plastic when wet; many, medium, distinct spots of yellowish brown; thick clay skins and stains of organic matter on the surfaces of the peds; a few sedge roots and many old channels of sedge roots; neutral.

C 30 inches +, grayish-brown silty clay loam that grades to Maquoketa shale with increasing depth; massive; firm; many, large, prominent yellowish-brown spots in the upper part of this horizon; many old roots and channels of sedges; mildly alkaline.

Millsdale silty clay loam, shale variant (Mm).—Most of this soil is wooded or in pasture. It occupies a small acreage on the upper slopes of Blue Mounds. The profile is similar to the profile described as typical of the Millsdale silty clay loams, shale variant. Capability unit IIIw–3.

Mine Pits and Dumps

Mine pits and dumps (Mp).—This miscellaneous land type is made up of rock pits and excavations and of areas from which lead and zinc have been removed in mining explorations. The areas are inextensive. They are scattered throughout the uplands in the western part of the county. In some places all of the soil material in these areas has been scraped away. In other places piles of tailings and other wastes that were removed from the mines have been dumped. The original soils in many of the areas were those of the Dubuque, Dodgeville, and Sogn series. Now, in most places the individual soils cannot be recognized.

Some areas of this miscellaneous land type provide limited yields of pasture, but most areas support little or no vegetation. If feasible to use them for that purpose, the best use of the areas is probably for pasture. The areas are too droughty for trees to grow well. Capability unit VIIs–6.

Muscatine Series

The Muscatine series consists of dark-colored, deep, silty soils on upland ridges. The soils are predominantly somewhat poorly drained, but some areas that are moderately well drained are included. The soils formed in silt, which was probably blown onto the ridges from the flood plains of the Mississippi and other large rivers. They are mainly on the larger ridges in the west-central part of the county. Slopes are mostly less than 2 percent.

The Muscatine soils occur near Downs and Tama soils. Their surface layer is typically black to very dark gray silt loam. Their subsoil, a brown silty clay loam, overlies a substratum of yellowish-brown, heavy silt loam.

These soils have moderate permeability and high moisture-holding capacity. They are high in natural fertility and are generally slightly acid. Erosion is not a hazard.

The Muscatine soils are among the most productive in the county and are well suited to all of the crops commonly grown. Most of the acreage is cultivated. Crops grown on them respond well if a complete fertilizer is added. If a good supply of plant nutrients is maintained, yields are high. In the few low-lying areas that are wet, the drainage can be improved by tile. There is only one mapping unit of this series, Muscatine silt loam, in Iowa County.

MUSCATINE SILT LOAMS

The following describes a typical profile of a Muscatine silt loam in a pastured area that has been limed:

A_1 0 to 14 inches, black silt loam; moderate, medium, granular structure; friable; plant roots abundant; very high in organic matter; neutral.

B_1 14 to 20 inches, dark grayish-brown silt loam; weak, medium, subangular blocky structure; friable; plant roots plentiful; slightly acid.

B_2 20 to 36 inches, dark-brown silty clay loam; moderate, medium, subangular blocky structure; firm when dry, slightly plastic when wet; many, fine, distinct spots of yellowish brown and gray; roots plentiful; medium acid.

C 36 inches +, yellowish-brown, heavy silt loam; massive; friable; a few plant roots; slightly acid, but neutral at a depth below 4 feet.

Muscatine silt loam (Mu).—The profile of this soil is like the profile described as typical of the Muscatine silt loams. Capability unit I–1.

Northfield Series

The soils of the Northfield series are light colored and well drained. They formed on uplands in a mixture of loess and material weathered from sandstone bedrock (fig. 18). The vegetation was a forest made up of various kinds of hardwoods. The soils occur in small areas below limestone ridges. The areas are scattered

throughout the county but are mainly in the southeastern part. The soils have slopes ranging from 2 to 30 percent.

These soils are near the Gale and Hixton soils. Their surface layer consists of very dark grayish-brown or very dark gray loam, sandy loam, or stony loam. The subsoil is brown and overlies yellowish or yellowish-brown, strongly cemented sandstone.

These soils are moderate in permeability and are moderately low in moisture-holding capacity. During extended periods of low rainfall, they are somewhat droughty. Natural fertility is moderate, and the soils are slightly acid to strongly acid. Erosion is a hazard.

The Northfield loams and Northfield sandy loams are mainly in crops and pasture, but yields of cultivated crops grown on them are only moderate. The Northfield stony loams are likely to be difficult to cultivate and are mainly in pasture and trees. All of the Northfield soils require protection from runoff.

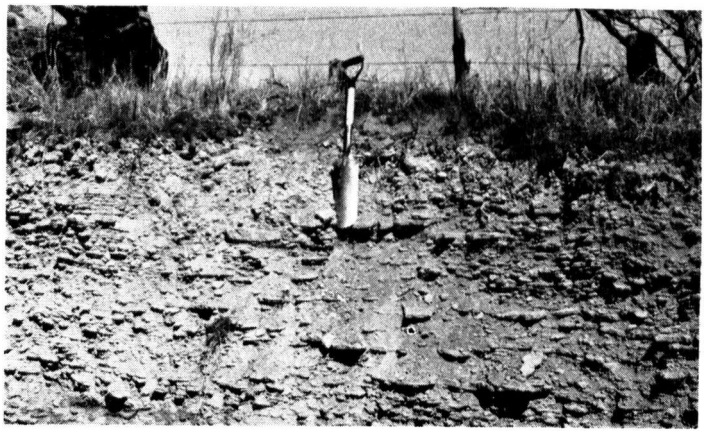

Figure 18.—**This roadcut in a Northfield soil shows a thin soil profile over layers of platy, resistant sandstone.**

Northfield Loams

The following describes a typical profile of a Northfield loam in a cultivated field:

- A_p 0 to 8 inches, very dark grayish-brown loam; moderate, medium, granular structure; friable; plant roots plentiful; medium acid.
- A_2 8 to 11 inches, dark grayish-brown loam; moderate, medium, platy structure; friable; plant roots plentiful; medium acid.
- B_1 11 to 14 inches, brown, heavy loam; weak, coarse, subangular blocky structure; friable; plant roots plentiful; medium acid.
- B_2 14 to 21 inches, dark-brown, light clay loam; moderate, medium, subangular blocky structure; firm; plant roots plentiful; medium acid.
- D 21 inches +, yellowish-brown sandstone bedrock that is strongly cemented with iron in the uppermost few inches.

Northfield loam, 2 to 6 percent slopes, moderately eroded (NfB2).—The surface layer of this soil is slightly lighter colored and thinner than that in the profile described as typical of the Northfield loams. This soil is also slightly shallower over bedrock. Capability unit IIIe–3.

Northfield loam, 6 to 12 percent slopes (NfC).—The profile of this soil is similar to the profile described as typical of the Northfield loams. Capability unit IVe–3.

Northfield loam, 6 to 12 percent slopes, moderately eroded (NfC2).—This soil has lost from one-third to two-thirds of its original surface layer through erosion. As a result, the present surface layer is grayish brown and is thinner than that in the profile described as typical of the Northfield loams. Bedrock is at a depth of less than 20 inches. In a few small areas, this soil is severely eroded. In these areas the soil is even thinner over bedrock. If it is cultivated, patches of brown subsoil are exposed. Capability unit IVe–3.

Northfield loam, 12 to 20 percent slopes (NfD).—This soil has a slightly lighter colored, thinner surface layer than that in the profile described as typical of the Northfield loams, and it is shallower over bedrock. Capability unit VIe–3.

Northfield loam, 12 to 20 percent slopes, moderately eroded (NfD2).—This soil has lost more than one-third of its original surface layer through erosion. The present surface layer is lighter colored and slightly less friable than that in the profile described as typical of the Northfield loams. It is mainly grayish brown, but in places it is brown where plowing has exposed patches of the subsoil. Bedrock is at a depth of less than 20 inches. Capability unit VIe–3.

Northfield loam, 20 to 30 percent slopes (NfE).—This soil has a slightly lighter colored, thinner surface layer than that in the profile described as typical of the Northfield loams. Also, bedrock is generally at a depth of less than 18 inches. Capability unit VIIe–3.

Northfield loam, 20 to 30 percent slopes, moderately eroded (NfE2).—This soil has lost more than one-third of its original surface layer through erosion. Plowing has mixed material from the upper part of the subsoil with the remaining surface layer. As a result, the present surface layer is grayish brown to brown. It is less friable than the original surface layer, contains less organic matter, and is harder to keep in good tilth. Sandstone is generally at a depth of less than 15 inches in this soil. Capability unit VIIe–3.

Northfield Sandy Loams

The following describes a typical profile of a Northfield sandy loam:

- A_p 0 to 9 inches, very dark gray sandy loam; weak, medium, granular structure; very friable; plant roots plentiful; slightly acid.
- A_2 9 to 11 inches, dark grayish-brown sandy loam; moderate, medium, platy structure; very friable; plant roots plentiful; slightly acid.
- B_1 11 to 14 inches, dark-brown loam; weak, medium, subangular blocky structure; friable; plant roots plentiful; medium acid.
- B_2 14 to 20 inches, dark-brown to yellowish-brown loam; moderate, medium, subangular blocky structure; friable; plant roots plentiful; many fragments of resistant sandstone; medium acid.
- D 20 inches +, yellowish-brown sandstone bedrock that is strongly cemented with iron in the uppermost few inches.

Northfield sandy loam, 6 to 12 percent slopes (NoC).—The profile of this soil is like the profile described as typical of the Northfield sandy loams. Capability unit IVe–3.

Northfield sandy loam, 6 to 12 percent slopes, moderately eroded (NoC2)..—This soil has lost from one third to two-thirds of its present surface layer through erosion.

As a result, the present surface layer is lighter colored and thinner than that in the profile described as typical of the Northfield sandy loams, and the soil is correspondingly shallower over bedrock. Capability unit IVe–3.

Northfield sandy loam, 12 to 20 percent slopes (NoD).—This soil has a slightly lighter colored and thinner surface layer than that in the profile described as typical of the Northfield sandy loams. Capability unit VIe–3.

Northfield sandy loam, 12 to 20 percent slopes, moderately eroded (NoD2).—This soil has lost more than one-third of its original surface layer through erosion. In a few small areas, more than two-thirds of the original surface layer is gone. The present surface layer is mainly grayish brown, but there are large, brown patches where the subsoil is exposed. Depth to bedrock is generally less than 18 inches. Capability unit VIe–3.

Northfield sandy loam, 20 to 30 percent slopes (NoE).—The surface layer of this soil is lighter colored and thinner than that in the profile described as typical of the Northfield sandy loams. The subsoil is also thinner, and depth to bedrock is generally shallower. Capability unit VIIe–3.

Northfield sandy loam, 20 to 30 percent slopes, moderately eroded (NoE2).—This soil has lost more than one-third of its original surface layer through erosion. In a few places the upper part of the subsoil is gone. The color of the present surface layer ranges from grayish brown to brown.

The present surface layer has a slightly finer texture than that in the profile described as typical. It contains less organic matter and is harder to keep in good tilth. This soil is also much shallower over bedrock. Capability unit VIIe–3.

Northfield Stony Loams

The Northfield stony loams are more extensive than the other Northfield soils in Iowa County. Generally, they occupy the steeper slopes near areas of rock outcrops and escarpments. The following describes a Northfield stony loam in a pastured area that has been limed:

- A_1 0 to 4 inches, very dark grayish-brown to dark grayish-brown stony loam; moderate, medium, granular structure; friable; numerous flat-sided stones or cemented fragments of sandstone that are 1 to 3 inches in diameter; grass roots plentiful; neutral.
- A_2 4 to 6 inches, dark grayish-brown loam; moderate, thin, platy structure; friable; plant roots plentiful; many fragments of sandstone; strongly acid.
- B_1 6 to 8 inches, dark-brown, heavy loam; weak, medium, subangular blocky structure; friable; many fragments of sandstone; plant roots plentiful; strongly acid.
- B_2 8 to 16 inches, dark-brown to dark yellowish-brown silty clay loam; moderate, medium, subangular blocky structure; firm; a few clay skins and gray coatings on structural peds; plant roots plentiful; strongly acid.
- D 16 inches +, yellowish sandstone bedrock that is strongly cemented with iron in the uppermost few inches.

Northfield stony loam, 6 to 20 percent slopes (NsD).—This soil has lost as much as one-third of its original surface layer through erosion. The present surface layer is browner than that in the profile described as typical of the Northfield stony loams, and bedrock is nearer the surface. In a few small areas, this soil is moderately or severely eroded. Capability unit VIs–6.

Northfield stony loam, 12 to 20 percent slopes, moderately eroded (NsD2).—This soil has lost more than one-third of its original surface layer through erosion. In a few places part of the subsoil is gone. The present surface layer is browner than the original one, and it contains little organic matter. Bedrock is generally at a depth of less than 15 inches. Capability unit VIs–6.

Northfield stony loam, 20 to 30 percent slopes (NsE).—The surface layer of this soil is generally lighter colored and thinner than that in the profile described as typical of the Northfield stony loams. Depth to bedrock is also shallower. Capability unit VIIs–6.

Northfield stony loam, 20 to 30 percent slopes, moderately eroded (NsE2).—This soil has lost more than one-third of its original surface layer through erosion. In a few places part of the subsoil is gone. The present surface layer has a brownish color and contains little organic matter. Depth to bedrock is generally less than 15 inches. Capability unit VIIs–6.

Norwalk Series

The Norwalk series consists of light-colored, silty soils on upland ridges. The soils are moderately well drained to somewhat poorly drained. The upper part of the profile formed in loess that was probably blown onto the uplands during glacial times. The lower part formed in clay weathered from limestone bedrock. The soils are gently sloping to sloping and are mainly on slopes that lead into drainageways. The native vegetation was a forest made up of various kinds of hardwoods.

The Norwalk soils are near areas of Dubuque and Fayette soils. Typically, their surface layer is a dark-gray silt loam. The subsoil, a dark-brown, firm silt loam, overlies a substratum of reddish clay.

These soils have moderately slow permeability, and their moisture-supplying capacity is high. They have moderate natural fertility and are slightly acid to strongly acid. Erosion is a hazard.

These soils are used mainly for cultivated crops, but a few small areas are in pasture or trees. If the soils are well managed, yields are good. The crops respond well if manure is added and lime and a complete fertilizer are applied. Practices are required to protect the soils from erosion.

Norwalk Silt Loams, Deep

The following describes a profile of a deep Norwalk silt loam in a virgin area:

- A_1 0 to 4 inches, very dark gray silt loam; moderate, medium, granular structure; friable; plant roots plentiful; much earthworm activity; slightly acid.
- A_2 4 to 8 inches, pale-brown silt loam; moderate, medium, platy structure; friable; a few, distinct, fine spots of light brownish gray and dark yellowish brown; tree roots plentiful; strongly acid.
- A_3 8 to 12 inches, brown silt loam; weak, medium, platy structure; friable; tree roots plentiful; a few, distinct, fine spots of light brownish gray and dark yellowish brown; medium acid.
- B_1 12 to 17 inches, dark-brown, heavy silt loam; weak, coarse, subangular blocky structure; firm; tree roots plentiful; a few light brownish-gray coatings on the surfaces of peds; a few, distinct, medium spots of gray and dark yellowish brown; strongly acid.
- B_2 17 to 26 inches, dark-brown to dark yellowish-brown silty clay loam; moderate, medium, subangular blocky structure; slightly hard when dry, slightly plastic when wet; light-gray coatings and clay skins on the surfaces of peds; a few tree roots; strongly acid.

B_3 26 to 31 inches, dark-brown silty clay; moderate, medium, angular blocky structure; hard when dry, plastic when wet; prominent clay skins on the surfaces of peds; a few angular fragments of chert; a few tree roots; medium acid.

C 31 inches +, reddish-brown clay; moderate, medium, angular blocky structure; hard when dry, plastic when wet; many fragments of chert; limestone bedrock is at a depth of 4 feet; medium acid.

Norwalk silt loam, deep, 2 to 6 percent slopes, moderately eroded (NwB2).—This soil has lost from one-third to two-thirds of its original surface layer through water erosion. The present surface layer is lighter colored and thinner than that in the profile described as typical of the deep Norwalk silt loams. Capability unit IIe–6.

Norwalk silt loam, deep, 6 to 12 percent slopes, moderately eroded (NwC2).—More than one-third of the original surface layer of this soil has been removed through erosion. In a few places the upper part of the subsoil is gone. The present surface layer is a lighter gray and is thinner than that in the profile described as typical of the deep Norwalk silt loams, and patches of brown subsoil are exposed. Also, depth to the clayey substratum weathered from bedrock is slightly shallower. Capability unit IIIe–6.

Orion Series

The Orion series consists of nearly level, light-colored, silty soils in valleys along streams. The soils are likely to be flooded and are somewhat poorly drained. They formed in silty alluvial material. The material was washed from uplands and terraces by streams and was then redeposited on the floors of valleys by overflow from the streams. A dark-colored, silty horizon is at a depth between 12 and 40 inches in these soils. This layer probably formed when the soils were covered by prairie grasses or consists of material washed from dark-colored soils. The soils occupy small areas scattered throughout the county.

The surface layer of these soils is light-brown silt loam. It is underlain by a substratum of black silt loam.

These soils are moderate in permeability, and their moisture-holding capacity is high. They are moderate in natural fertility and are nearly neutral.

There is only one mapping unit of this series, Orion silt loam, in Iowa County. Nearly all of this soil is in pasture, and only a few areas have been improved and used for cultivated crops. If this soil is protected from overflow and is drained adequately, it is suited to all of the crops commonly grown in the county and good yields are obtained.

Orion Silt Loams

The following describes a profile of an Orion silt loam in a pastured area:

A_1 0 to 18 inches, dark grayish-brown silt loam; moderate, fine, subangular blocky structure that breaks to moderate to coarse granules; friable; many, medium, distinct spots of yellowish brown; grass and sedge roots abundant; neutral.

A_{b1} 18 to 31 inches, black silt loam; weak, fine to medium, subangular blocky structure; friable; a few, medium, distinct spots or mottles of yellowish brown; a few sedge roots; neutral.

A_{b2} 31 to 42 inches, very dark grayish-brown, light silty clay loam; massive; firm; many, fine, distinct mottles of yellowish brown; many old sedge roots and channels; neutral.

Orion silt loam (Or).—The profile of this soil is like the profile described as typical of the Orion silt loams. Capability unit IIIw–14.

Osseo Series

The Osseo series is made up of light-colored, somewhat poorly drained, silty soils in narrow drainageways and on fans. The soils are in small areas scattered throughout the county. They formed in local silty alluvium washed from higher lying areas. The vegetation consisted of a forest made up of various kinds of hardwoods. Slopes range from 0 to 6 percent.

These soils are near the Chaseburg soils. They have moderate permeability and high moisture-supplying capacity. Their natural fertility is moderate. The soils are slightly acid to medium acid. They are subject to erosion and to overflow from streams.

About one-half of the acreage of Osseo soils is cultivated, and the rest is in pasture or trees. If the soils are adequately drained, they are suited to all the crops commonly grown in the county and yields are good. The crops respond well if manure and a complete fertilizer are added.

Osseo Silt Loams

The following describes a profile of an Osseo silt loam observed in a pastured area:

A_1 0 to 12 inches, grayish-brown to light brownish-gray silt loam; moderate, medium, granular structure; friable; grass roots abundant; slightly acid.

C_1 12 to 20 inches, grayish-brown silt loam; weak, medium, subangular blocky structure; friable; many, medium, distinct spots or mottles of gray and yellowish brown; roots plentiful; slightly acid.

C_2 20 to 32 inches, light brownish-gray, light silty clay loam; weak, coarse, subangular blocky structure; firm; many, medium, distinct mottles of yellowish red; a few plant roots; slightly acid.

C_3 32 inches +, light brownish-gray silt loam; massive; friable; many, medium, distinct mottles of pale brown; medium acid.

Osseo silt loam, 0 to 2 percent slopes (OsA).—The profile of this soil is like the profile described as typical of the Osseo silt loams. Capability unit IIw–2.

Osseo silt loam, 2 to 6 percent slopes (OsB).—This soil generally has a slightly lighter colored and thinner surface layer than that described as typical of the Osseo silt loams. Capability unit IIIw–2.

Peat and Muck

Peat and Muck consists of organic soils in depressions on flood plains. The soils are frequently flooded by overflow from streams. They were derived from grasses, sedges, and woody plants. Most of the areas are along the flood plains of the Wisconsin River, but small areas are on the bottom lands of other streams. If the soils are cultivated or pastured (fig. 19), the peaty material in the uppermost 8 to 12 inches breaks readily to muck.

These soils are moderate in permeability, and their moisture-supplying capacity is high. They are moderate in natural fertility and are nearly neutral. If the areas are drained and all of the plant cover is removed, there is a serious hazard of wind erosion.

Figure 19.—**Area of Peat and Muck that has been pastured; the hummocks were caused by the trampling of livestock when the areas were saturated. By Soil Survey Division, Wisconsin Geological and Natural History Survey, University of Wisconsin.**

If these soils are adequately drained and protected from flooding, they are suited to most of the crops commonly grown in the county and good yields are obtained. The crops respond well if phosphate and potash are applied.

PEAT AND MUCK

The following describes a profile in a cultivated field:

O_p 0 to 8 inches, black mucky peat; moderate, fine crumb structure; very friable; plant roots plentiful; neutral.

O_1 8 to 32 inches, very dark brown sedge peat; weak, thick, platy structure; very friable; a few sedge roots and many remains of old sedge roots and old root channels; neutral.

O_2 32 inches +, very dark grayish-brown sedge peat; weak, thick, platy structure; friable; neutral.

Peat and Muck, deep (Pd).—This is the most extensive mapping unit of the Peat and Muck soils. The profile is like the one described as typical of the dominant soils. Capability unit IIIw–9.

Peat and Muck, shallow (Pe).—The profile of these inextensive soils differs from that described, principally in being underlain, in most places, by sand at a depth bebetween 18 and 42 inches. In some places the underlying material is silt instead of sand. In most places the areas cannot be improved to make them suitable for crops. Capability unit Vw–7.

Plainfield Series

The Plainfield series consists of light-colored, sandy soils on low stream terraces and in slight depressions. The soils are along the Wisconsin River. They are nearly level to gently sloping and are excessively drained. The parent material was sandy outwash that contains occasional pebbles of glacial age. The vegetation was a forest made up of hardwoods and pines.

The surface layer of these soils is dark-brown to brown or dark grayish-brown fine sand or loamy fine sand. It overlies yellowish-brown fine sand. In the soils in depressions, there are many, distinct, fine spots of brown and dark brown, just below the surface layer. The lower part of the solum is lighter colored than the upper part, but it is even more highly discolored with spots and streaks of brown and dark brown.

Some areas of Plainfield soils are intermixed with Sparta soils. These areas are undulating and are made up of stabilized dunes and ridges. They were too small to map separately, and, as a result, the soils have been mapped together as Plainfield and Sparta fine sands and Dune land.

The Plainfield soils have very rapid permeability. Their moisture-holding capacity is very low, and they are low in natural fertility. The soils are slightly acid to strongly acid and are droughty. If the cover of vegetation is removed, there is a serious hazard of wind erosion (fig. 20).

Some areas of these soils are used for crops or pasture, and others are in trees. Crops grown on them give good response if lime and a complete fertilizer are added, but yields are generally low. Many fields that formerly were cultivated have now been abandoned.

PLAINFIELD FINE SANDS

The following describes a profile of a Plainfield fine sand in an abandoned field:

A_p 0 to 5 inches, dark-brown to dark grayish-brown fine sand; weak, medium, granular structure; very friable; plant roots plentiful; slightly acid.

C_1 5 to 15 inches, yellowish-brown fine sand; single grain; loose; a few plant roots; medium acid.

C_2 15 inches +, yellowish-brown to brownish-yellow fine sand; single grain; loose; a few roots to a depth of 3 feet; medium acid.

Plainfield fine sand, 0 to 6 percent slopes, eroded (PfB2).—The profile of this soil is like the profile described as typical of the Plainfield fine sands. Capability unit VIIs–3.

PLAINFIELD LOAMY FINE SANDS

The Plainfield loamy fine sands are along the Wisconsin River, near soils of the Gotham and Sparta series. The surface layer contains a little more fine material than that in the profile described as typical of the Plainfield fine sands. The substratum is also darker and is slightly coarser in texture.

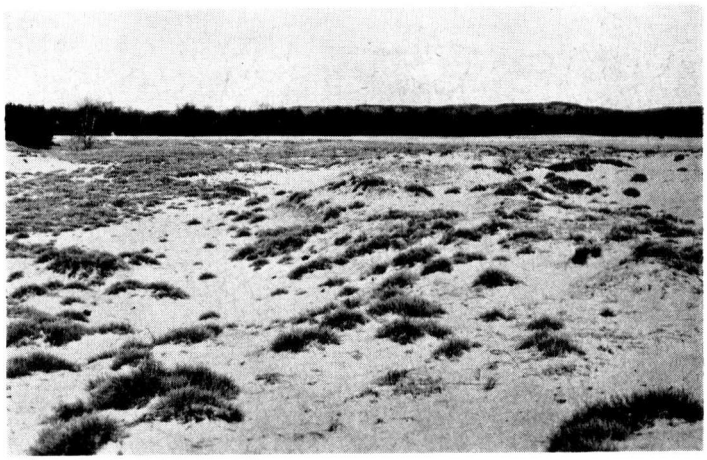

Figure 20.—**An area of Plainfield fine sand along the Wisconsin River that has been damaged severely by wind erosion.**

Plainfield loamy fine sand, 0 to 2 percent slopes (PgA).—Capability unit IVs–3.

Plainfield loamy fine sand, 2 to 6 percent slopes (PgB).—Capability unit IVs–3.

Plainfield loamy fine sand, mottled substratum variant (Pm).—This soil, unlike the typical Plainfield soils, is moderately well drained. It is in slight depressions, where the water table is high during wet seasons. This soil has slopes of less than 2 percent. Its permeability is less rapid than that of the typical Plainfield soils, and it has higher moisture-supplying capacity. Capability unit IVs–3.

PLAINFIELD AND SPARTA FINE SANDS

Plainfield and Sparta fine sands and Dune land (Ps).—These soils are undulating and are on terraces along the Wisconsin River. Their profiles are similar to the profiles described as typical of the Plainfield and Sparta soils. Capability unit VIIs–3.

Richwood Series

The Richwood series consists of dark-colored, deep, silty soils on high stream terraces. The soils are well drained. They formed under prairie in a layer of silt more than 42 inches thick. Most areas of these soils are at least 10 acres in size and are along the valleys of major streams in the county. Slopes range from 0 to 12 percent.

These soils occur near Bertrand and Toddville soils. Typically, their surface layer is thick and black and is made up of silty materials. Their subsoil, a dark yellowish-brown silty clay loam, overlies a yellowish-brown, silty substratum. In many places stratified sand is in the substratum at a depth below 42 inches.

The Richwood soils are moderate in permeability. Their moisture-supplying capacity is high, and they are high in natural fertility. The soils are medium acid to neutral. The hazard of erosion is serious, especially in the more sloping areas.

These soils are used mainly for crops, and the less sloping areas can be farmed intensively if the content of organic matter and supply of plant nutrients are maintained. Yields are high.

RICHWOOD SILT LOAMS

The following describes a profile of a Richwood silt loam in a cultivated field that has been limed:

- A_p 0 to 8 inches, black to very dark brown silt loam that is cloddy because of tillage; friable; much earthworm activity; plant roots abundant; neutral.
- A_{12} 8 to 16 inches, very dark brown silt loam; weak, fine, subangular blocky structure; friable; roots plentiful; neutral.
- B_1 16 to 26 inches, dark-brown, heavy silt loam; weak, fine, subangular blocky structure; friable; roots plentiful; medium acid.
- B_2 26 to 36 inches, dark yellowish-brown, light silty clay loam; moderate, medium, subangular blocky structure; firm; a few clay skins on the surfaces of peds; roots plentiful; medium acid.
- B_3 36 to 42 inches, dark yellowish-brown, heavy silt loam; weak, very fine, subangular blocky structure; friable; medium acid.
- C 42 inches +, yellowish-brown silt; massive; friable; medium acid.

Richwood silt loam, 0 to 2 percent slopes (RcA).—The profile of this soil is like the profile described as typical of the Richwood silt loams. Capability unit I–1.

Richwood silt loam, 2 to 6 percent slopes (RcB).—This soil generally has a slightly thinner surface layer than that in the profile described as typical of the Richwood silt loams. Capability unit IIe–1.

Richwood silt loam, 2 to 6 percent slopes, moderately eroded (RcB2).—This soil has lost more than one-third of its original surface layer through water erosion. The present surface layer is very dark brown and is 8 to 12 inches thick. Capability unit IIe–1.

Richwood silt loam, 6 to 12 percent slopes (RcC).—Because of stronger slopes, the surface layer of this soil is slightly lighter colored and thinner than that in the profile described as typical of the Richwood silt loams. Capability unit IIIe–1.

Richwood silt loam, 6 to 12 percent slopes, moderately eroded (RcC2).—This soil has lost more than one-third of its original surface layer through erosion. As a result, the present surface layer is very dark brown. In some places tillage has exposed patches of dark-brown subsoil. Capability unit IIIe–1.

Riverwash

Riverwash (Re).—This miscellaneous land type consists of sandbars and gravel banks on the bottom lands of the Wisconsin River. In many places the sandy and gravelly materials making up the areas have been deposited so recently that little or no vegetation is growing on them. In other areas the materials have been in place long enough for willows, river birch, and scrub oak to have become established.

Riverwash is very open and porous. As a result, the moisture-holding capacity is very low and the areas are very droughty. The water table generally is at a depth of less than 5 feet. Riverwash is very low in natural fertility and is strongly acid. The areas are likely to be flooded frequently.

All of this land type is idle. It is not suited to crops, nor is it suitable for pasture. Capability unit VIIs–3.

Rowley Series

The Rowley series consists of dark-colored, deep, silty soils on terraces along streams. The soils are nearly level and are somewhat poorly drained. They formed under prairie in a layer of silt, 42 or more inches thick, over stratified sand and silt.

The Rowley soils occur in small areas near the Richwood and Toddville soils, but they are in lower positions on the terraces than those soils. Typically, their surface layer is black silt loam. Their subsoil, a brown silty clay loam, overlies a silty, gray substratum.

These soils are moderately slow in permeability. Their moisture-holding capacity is high, and they are high in natural fertility. The soils are slightly acid to strongly acid.

These soils are used mainly for cultivated crops. If lime is added, adequate drainage is provided, and the soils are otherwise well managed, yields are high. Crops on these soils respond fairly well if manure is added and

lime and a complete fertilizer are applied. There is only one mapping unit of this series, Rowley silt loam, in Iowa County.

ROWLEY SILT LOAMS

The following describes a typical profile of a Rowley silt loam in a cultivated field:

A_p 0 to 9 inches, black silt loam; moderate, fine, granular structure; friable; plant roots abundant; slightly acid.

A_3 9 to 13 inches, dark grayish-brown silt loam; weak, medium, platy structure that breaks to moderate, fine granules; friable; plant roots plentiful; much earthworm activity; medium acid.

B_1 13 to 20 inches, dark-brown silt loam; moderate, fine, subangular blocky structure; friable; plant roots plentiful; some earthworm activity; a few, distinct, medium spots, or mottles, of dark brown and light brownish gray; a few light brownish-gray coatings on the surfaces of the structural peds; strongly acid.

B_{2g} 20 to 40 inches, grayish-brown silty clay loam; moderate, medium, subangular blocky structure; firm; clay skins, very dark grayish-brown stains of organic matter, and grayish coatings on the surfaces of peds; plant roots plentiful; a few old root channels and wormholes; many, medium, distinct mottles of dark brown and strong brown; medium acid.

C_g 40 inches +, gray silt and fine sand; massive to single grain; friable; stratified; mottling more intense than in the B_{2g} horizon; medium acid.

Rowley silt loam (Ro).—The profile of this soil is like the profile described as typical of the Rowley silt loams. The acreage is small. Capability unit IIw–1.

Rozetta Series

The Rozetta series is made up of light-colored, deep, silty soils on upland ridges. The soils are moderately well drained. They occur in scattered areas near the heads of drainageways that cut through the uplands. Most of the areas are fairly small. Slopes range from 2 to 6 percent. These soils formed under forest in deposits of silt more than 42 inches thick. The silt probably originated on the bottom lands of the Mississippi River and was blown onto the ridgetops by winds during or just after glacial times. Limestone or sandstone bedrock underlies the silt.

The Rozetta soils are near the Fayette soils. Their parent material is similar to that in which the Fayette and Stronghurst soils formed, but the Rozetta soils are intermediate in drainage between the soils of these two series. The Rozetta soils have a dark grayish-brown, silty surface layer. Their subsoil, a yellowish-brown silty clay loam, overlies a yellowish-brown, mottled, silty substratum.

These soils are moderate in permeability, and their moisture-supplying capacity is high. They are moderately high in natural fertility. Generally, the soils are slightly acid to moderately acid. The hazard of erosion is moderate.

There is only one soil of this series, Rozetta silt loam, mapped in Iowa County. This soil is easy to cultivate and manage and is mainly in crops or pasture. Crops grown on it respond well if manure and a complete fertilizer are added.

ROZETTA SILT LOAMS

The following describes a typical profile of a Rozetta silt loam observed in an alfalfa and bromegrass meadow that has been limed:

A_p 0 to 6 inches, dark grayish-brown silt loam; moderate, fine, granular structure; friable; many earthworm casts; roots plentiful; neutral.

B_1 6 to 10 inches, dark yellowish-brown silt loam; moderate, medium, subangular blocky structure; friable; slightly vesicular; many earthworm holes and casts; roots plentiful; neutral.

B_2 10 to 30 inches, yellowish-brown silty clay loam; moderate, fine to medium, subangular blocky structure; firm; clay skins on peds; a few, distinct, medium spots, or mottles, of olive brown and pale yellow; plant roots plentiful; medium acid.

B_3 30 to 42 inches, yellowish-brown to pale-brown, light silty clay loam; weak, medium, subangular blocky structure; firm; a few plant roots; this horizon is more highly mottled than the B_2 horizon; medium acid.

C 42 inches +, yellowish-brown, heavy silt loam; massive; friable; highly mottled with grayish brown and brownish gray; medium acid.

Rozetta silt loam, 2 to 6 percent slopes, moderately eroded (RzB2).—The profile of this soil is like the profile described as typical of the Rozetta silt loams. Capability unit IIe–1.

Sogn Series

The Sogn series is made up of dark-colored, shallow silt loams on upland ridges. The soils are well drained. They are generally on steep slopes or near the breaks to steep slopes. Their slopes range from 2 to 30 percent. The soils formed in a thin covering of silty material over shattered limestone bedrock. In many places in the cracks in the bedrock, there is dark reddish-brown clay that weathered from the limestone.

The Sogn soils are near areas of Dodgeville soils. Typically, they have a surface layer of black silt loam, and they lack a subsoil. Depth to bedrock generally is less than 12 inches. In many places rocks are on the surface and throughout the profile.

These soils have very low moisture-holding capacity and moderate natural fertility. They are droughty. The hazard of erosion is moderate to severe.

Generally, the Sogn soils are not suited to crops, and they are mostly in pasture. The soils are shallow, and they require care to protect them from erosion.

Because the areas are small and too intricately mixed with the shallow Dodgeville silt loams, the Sogn soils are not mapped separately in Iowa County. The Dodgeville soils with which they are mapped are similar to the Dodgeville silt loams, shallow, described elsewhere in the report. The profile of the Sogn soils is similar to the profile described as typical of the Sogn silt loams.

SOGN SILT LOAMS

The following describes a typical profile of a Sogn silt loam in a pastured area:

A_{11} 0 to 9 inches, black, heavy silt loam; moderate, fine, granular structure; friable; many roots; scattered fragments of chert and a few limestone cobbles; neutral.

A_{12} 9 to 11 inches, very dark brown, light silty clay loam; moderate, fine, granular structure; firm; plant roots plentiful; occasional fragments of chert; neutral.

D 11 inches +, shattered limestone bedrock; reddish-brown, clayey material weathered from limestone is in the cracks of the limestone.

Sogn and Dodgeville silt loams, shallow, 2 to 6 percent slopes (SoB).—Capability unit IVe–3.

Sogn and Dodgeville silt loams, shallow, 2 to 6 percent slopes, moderately eroded (SoB2).—Capability unit IVe–3.

Sogn and Dodgeville silt loams, shallow, 6 to 12 percent slopes (SoC).—Capability unit VIe–3.

Sogn and Dodgeville silt loams, shallow, 6 to 12 percent slopes, moderately eroded (SoC2).—Capability unit VIe–3.

Sogn and Dodgeville silt loams, shallow, 12 to 20 percent slopes (SoD).—Capability unit VIIe–3.

Sogn and Dodgeville silt loams, shallow, 12 to 20 percent slopes, moderately eroded (SoD2).—Capability unit VIIe–3.

Sogn and Dodgeville silt loams, shallow, 20 to 30 percent slopes (SoE).—Capability unit VIIe–3.

Sogn and Dodgeville silt loams, shallow, 20 to 30 percent slopes, moderately eroded (SoE2).—Capability unit VIIe–3.

Sparta Series

The Sparta series consists of dark-colored, deep, sandy soils that are excessively drained. The soils are in large areas on low stream terraces along the Wisconsin River. Their slopes range from 0 to 6 percent but are mostly less than 2 percent. The soils formed under prairie in sandy deposits that were laid down by water.

The Sparta soils occur near areas of Dakota soils, which also are on terraces but at a slightly higher elevation. Their surface layer is typically black to very dark gray loamy fine sand and grades to yellowish-brown fine sand at a depth between 18 and 28 inches. In some places the soils are in slight depressions or in drainageways. In these areas the uppermost part of the surface layer is black to very dark brown, but the color grades to very dark grayish brown or dark brown with increasing depth. The surface layer ranges from 12 to 30 inches in thickness. In some places there are a few pebbles of glacial age scattered on the surface and throughout the profile.

These soils have rapid to very rapid permeability and very low moisture-holding capacity. Their natural fertility is moderately low to low. The soils are slightly acid to strongly acid. They erode easily; the hazard of erosion is severe.

The Sparta soils are mainly in crops or pasture. Even if they are well managed, they are not suited to intensive cultivation. Crops grown on them are severely damaged by drought. Controlling erosion, maintaining the content of organic matter, adding a complete fertilizer, and using supplemental irrigation will help to increase yields.

Sparta Loamy Fine Sands

The following describes a typical profile of a Sparta loamy fine sand in a pastured area:

A_1 0 to 9 inches, black to very dark gray loamy fine sand; weak, fine, granular structure; very friable when moist, and loose when dry; grass roots plentiful; slightly acid.

A_3 9 to 18 inches, dark-brown loamy fine sand; weak, fine, granular structure; very friable; grass roots plentiful; strongly acid.

C 18 to 26 inches, yellowish-brown fine sand; single grain; loose; underlain by stratified sand; strongly acid.

Sparta loamy fine sand, 0 to 2 percent slopes (SpA).—The profile of this soil is like the profile described as typical of the Sparta loamy fine sands. Capability unit IVs–3.

Sparta loamy fine sand, 0 to 2 percent slopes, eroded (SpA2).—This soil has lost more than one-third of its original surface layer through wind erosion. The present surface layer is very dark brown and is thinner than that in the profile described. Capability unit IVs–3.

Sparta loamy fine sand, 2 to 6 percent slopes (SpB).—The surface layer of this soil is slightly lighter colored and thinner than that in the profile described as typical of the Sparta loamy fine sands. Capability unit IVs–3.

Sparta loamy fine sand, 2 to 6 percent slopes, eroded (SpB2).—This soil has lost more than one-third of its original surface layer through wind erosion. As a result, the present surface layer is dark brown and is less than 12 inches thick. Capability unit IVs–3.

Sparta loamy fine sand, moderately well drained variant (Sr).—This soil is moderately well drained and has slopes of less than 2 percent. It occurs in slight depressions or in drainageways, where the water table is high during periods of high rainfall. When there is little rainfall, the soil is very droughty.

This soil has less rapid permeability than the Sparta soils and somewhat more favorable moisture-supplying capacity. The soil is moderately low in natural fertility and is moderately acid. Crops grown on it respond well if manure and a complete fertilizer are added. Except in years of high rainfall, yields are moderately low. Capability unit IVs–3.

Steep Stony and Rocky Land

Steep stony and rocky land (Ss).—This miscellaneous land type is made up of various kinds of shallow soils with many rock outcrops and large boulders. The areas are on steep breaks below the upland ridges and are underlain by sandstone or limestone bedrock (fig. 21). Slopes range from 25 to 60 percent.

The texture of the soil materials between the rock outcrops ranges from sand to silt. The soil materials were derived from thin deposits of loess or from materials weathered from sandstone or limestone, and they are low in fertility. Runoff is rapid, and the hazard of erosion is severe.

All of this miscellaneous land type is used for pasture or has been kept in forest. Capability unit VIIs–6.

Stony Alluvial Land

Stony alluvial land (St).—This miscellaneous land type consists of various large boulders and stones mixed with medium-textured soil materials. In many places these materials overlie soils that are better suited to farming. This land type occurs near areas of Chaseburg soils at the heads of small draws and on local fans adjacent to streams. The areas are small and are scattered throughout the county.

Figure 21.—**Steep stony and rocky land with outcrops of Cambrian sandstone.**

Most areas of Stony alluvial land are in grass and trees. Controlling runoff from higher lying areas, if feasible, will help to prevent more of the stony alluvial material from being deposited. Capability unit VIs–6.

Stronghurst Series

The Stronghurst series is made up of light-colored, deep, silty soils along natural drains and in seepage areas on upland ridges. The soils are somewhat poorly drained. The areas are small and are scattered throughout the county. They have slopes ranging from 0 to 6 percent. The soils formed under hardwoods in a layer of silty deposits more than 42 inches thick. The silt probably originated on the bottom lands of the Mississippi River and was blown onto the ridgetops by wind during or just after glacial times. It overlies limestone or sandstone bedrock.

The Stronghurst soils occur near areas of Fayette and Rozetta soils. Typically, the Stronghurst soils have a surface layer of dark-gray silt loam. The subsoil, a pale-brown silty clay loam, is mottled with yellowish brown. The substratum is pale-brown silt loam.

These soils have moderately slow permeability, and their moisture-supplying capacity is high. They are low in organic matter but are moderately high in natural fertility. The soils are slightly acid to strongly acid. The hazard of erosion is moderate.

The Stronghurst soils are fairly easy to cultivate and manage. They are used mainly for cultivated crops. The crops respond well if organic matter is added and lime and a complete fertilizer are applied. If the soils are well managed, yields are generally moderate to high. Drainage is required before alfalfa can be grown successfully.

Stronghurst Silt Loams

The following describes a profile of a Stronghurst silt loam in an area that has been limed:

A_p 0 to 5 inches, dark-gray silt loam; moderate, fine, granular structure; friable; plant roots abundant; slightly acid.

A_2 5 to 15 inches, light brownish-gray silt loam; moderate, medium, platy structure; friable; plant roots plentiful; slightly vesicular; a few, small iron concretions; medium acid.

B_1 15 to 22 inches, pale-brown, heavy silt loam; moderate, medium, angular blocky structure; firm when moist, slightly plastic when wet; a few, medium, distinct spots, or mottles, of yellowish brown; plant roots plentiful; strongly acid.

B_2 22 to 27 inches, pale-brown silty clay loam; moderate, medium, angular blocky structure; slightly hard when dry, slightly plastic when wet; many, medium, distinct mottles of yellowish brown and dark yellowish brown; a few plant roots; strongly acid.

B_3 27 to 37 inches, pale-brown, light silty clay loam; weak, coarse, subangular blocky structure; slightly hard when dry, plastic when wet; many, medium, distinct mottles of strong brown; a few plant roots; medium acid.

C 37 inches +, pale-brown silt loam; massive; friable; medium acid.

Stronghurst silt loam, 0 to 2 percent slopes (SuA).—The profile of this soil is like the profile described as typical of the Stronghurst silt loams. Capability unit IIw–2.

Stronghurst silt loam, 2 to 6 percent slopes (SuB).—The surface layer of this soil is grayer and slightly thinner than that in the profile described as typical of the Stronghurst silt loams. Capability unit IIIw–2.

Stronghurst silt loam, 2 to 6 percent slopes, moderately eroded (SuB2).—This soil has lost from one-third to two-thirds of its original surface layer through erosion. As a result, the present surface layer is light brownish gray and is less than 10 inches thick. Capability unit IIIw–2.

Tama Series

The Tama series consists of dark-colored, deep, silty soils on upland ridges. The soils are well drained. They occur in large areas on Military Ridge and on other broad ridgetops. They have slopes ranging from 0 to 12 percent. The soils formed under prairie in a thick blanket of silt. The silt probably originated on the flood plains of the Mississippi River and was blown onto the uplands by winds during or just after glacial times. It overlies limestone or sandstone bedrock.

The Tama soils typically have a surface layer of black silt loam. Their subsoil, a dark-brown silty clay loam, overlies a substratum of yellowish-brown silt loam.

These soils are moderate in permeability. They are high in moisture-supplying capacity and natural fertility and are slightly acid to strongly acid.

All of the acreage of Tama soils is used for cultivated crops. The soils are among the most productive in the county (fig. 22) and are well suited to all of the crops commonly grown. The crops respond well if lime and a complete fertilizer are added. If erosion is controlled and the supply of plant nutrients and organic matter are maintained, the soils can be cultivated intensively.

Tama Silt Loams

The following describes a typical profile of a Tama silt loam that has been cultivated:

A_p 0 to 8 inches, black silt loam; moderate, fine, crumb structure; friable; plant roots abundant; slightly acid

A_3 8 to 16 inches, very dark gray silt loam; moderate, coarse, granular structure; friable; plant roots plentiful; slightly acid.

B_1 16 to 20 inches, dark grayish-brown silt loam; moderate, medium, subangular blocky structure; friable; plant roots plentiful; strongly acid.

B_2 20 to 36 inches, dark-brown silty clay loam; moderate, medium, subangular blocky structure; firm; plant roots plentiful; strongly acid.

C 36 inches +, brown silt loam that grades to yellowish brown with increasing depth; massive; friable; a few plant roots; slightly acid.

Tama silt loam, 0 to 2 percent slopes (TaA).—The profile of this soil is like the profile described as typical of the Tama silt loams. Capability unit I–1.

Tama silt loam, 2 to 6 percent slopes (TaB).—The surface layer of this soil is very dark brown and is slightly thinner than that in the profile described as typical of the Tama silt loams. Capability unit IIe–1.

Tama silt loam, 2 to 6 percent slopes, moderately eroded (TaB2).—This soil has lost more than one-third of its original surface layer through erosion. As a result, the present surface layer is dark gray and is less than 12 inches thick. In a few places plowing has exposed patches of the dark grayish-brown subsoil. Capability unit IIe–1.

Tama silt loam, 6 to 12 percent slopes, moderately eroded (TaC2).—More than one-third, and in a few places nearly all, of the original surface layer of this soil has been removed through erosion. The present surface layer is lighter colored and much thinner than that in the profile described as typical of the Tama silt loams. It is also lower in organic matter. Capability unit IIIe–1.

Tell Series

The Tell series consists of light-colored, well-drained, silty soils on terraces along streams. The soils are in fairly large areas that are scattered throughout the county. In most places they are nearly level, but in some places slopes are as much as 12 percent. The soils formed under hardwoods in silt underlain by sandy outwash. The silt ranges from 24 to 36 inches in thickness.

The surface layer of these soils is grayish brown and silty. The subsoil, a yellowish-brown silty clay loam, overlies a yellowish-brown, sandy substratum.

The Tell soils are moderate in permeability and in moisture-holding capacity. They are moderate in natural fertility and are medium acid to strongly acid. Erosion is a hazard on the sloping areas.

All of the larger areas of these soils are cultivated, but a few small, sloping areas are in pasture. The crops respond well if manure is added and lime and a complete fertilizer are applied. Yields are moderate. In extended dry periods these soils are likely to be droughty.

Tell Silt Loams

The following describes a typical profile of a Tell silt loam observed in a field of alfalfa:

A_p 0 to 8 inches, dark grayish-brown silt loam; moderate, medium, granular structure; friable; plant roots plentiful; medium acid.

A_2 8 to 11 inches, pale-brown silt loam; moderate, medium platy structure; friable; slightly vesicular; plant roots plentiful; strongly acid.

B_1 11 to 16 inches, brown, heavy silt loam: weak, medium, subangular blocky structure; friable; plant roots plentiful; a few grayish-brown coatings on the surfaces of structural peds; medium acid.

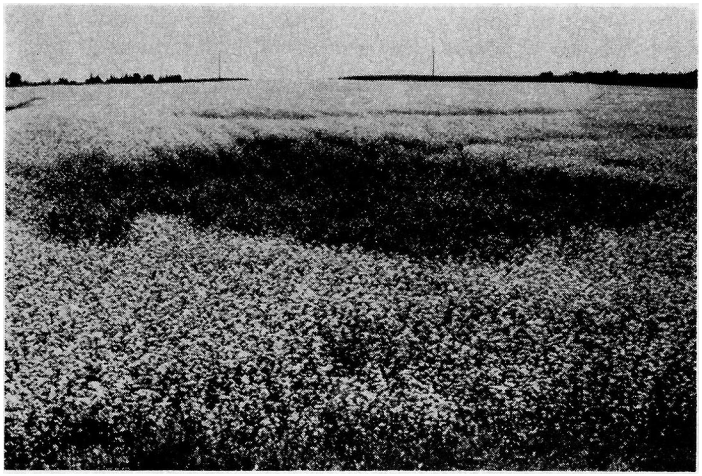

Figure 22.—**Typical landscape in which Tama silt loams are dominant; the dark area is a Muscatine silt loam where alfalfa has winterkilled. By Soil Survey Division, Wisconsin Geological and Natural History Survey, University of Wisconsin.**

B_2 16 to 27 inches, dark yellowish-brown silty clay loam; moderate, medium, subangular blocky structure; firm when moist, slightly plastic when wet; clay skins and many grayish-brown coatings on the surfaces of peds; roots plentiful; strongly acid.

B_3 27 to 34 inches, dark yellowish-brown loam; weak, medium, subangular blocky structure; friable; a few grayish-brown coatings on the surfaces of peds; roots plentiful; medium acid.

D 34 inches +, yellowish-brown medium sand; single grain; loose; becomes stratified with increasing depth; medium acid.

Tell silt loam, 0 to 2 percent slopes (TeA).—The profile of this soil is like the profile described as typical of the Tell silt loams. Capability unit IIs–1.

Tell silt loam, 2 to 6 percent slopes (TeB).—The surface layer of this soil is lighter colored than that in the profile described as typical of the Tell silt loams, and the substratum is at a slightly shallower depth. The substratum is sandy. Capability unit IIe–2.

Tell silt loam, 2 to 6 percent slopes, moderately eroded (TeB2).—More than one-third of the original surface layer of this soil has been lost through erosion. As a result, the present surface layer is pale brown and is less than 8 inches thick. If the soil is plowed, patches of brown subsoil are exposed. Generally, the solum is less than 30 inches thick. Capability unit IIe–2.

Tell silt loam, 6 to 12 percent slopes, moderately eroded (TeC2).—This soil has lost more than one-third of its original surface layer through water erosion. In a few small areas, nearly all of the surface layer and part of the subsoil have been removed. The present surface layer is pale brown to brown and is less than 8 inches thick. The substratum is sandy and is at a shallower depth than that in the profile described as typical of the Tell silt loams. It is generally at a depth of less than 30 inches. Capability unit IIIe–2.

Terrace Escarpments

This miscellaneous land type is mainly along the Wisconsin River, but some areas are along other major

streams in the county. The areas are small and occupy strips on breaks between terraces at two different levels. They have slopes ranging from 12 to 45 percent. The surface layer in the soil materials ranges from fine sand to silt loam and is easily eroded. The areas are difficult to use and manage. In most places they are not suited to cultivation.

Terrace escarpments, sandy (Ts).—This miscellaneous land type is made up of Dakota and of Meridian sandy loams, of Plainfield and Sparta fine sands, and of Gotham loamy fine sands. The soils are low in moisture-holding capacity. The hazard of erosion is severe.

This land is not suited to cultivated crops, and most areas are in pasture. It is best kept in pasture, trees, or other permanent vegetation. Some areas can be renovated and improved for pasture. The areas that are pastured need to be protected from overgrazing and resultant erosion. The wooded areas require protection from fire and from grazing. Yields of forage and wood products are poor to good, depending on the moisture-supplying capacity and on the direction of the slopes. Capability unit VIIe–7.

Terrace escarpments, loamy (Tr).—This miscellaneous land type is made up of Bertrand, Richwood, and Tell silt loams. These soils have a medium-textured surface layer and a finer textured subsoil. Their fertility and moisture-supplying capacity are moderate, and there is a severe hazard of erosion.

The soils in this land type are more productive than those in Terrace escarpments, sandy, but they are not suited to cultivated crops. Most of the areas are pastured. The soils are best kept in pasture or trees. If overgrazing is prevented and erosion is controlled, yields of forage crops are fair to good. Areas where the slopes are not too steep to prevent the use of farm machinery can be renovated and used for improved pastures. Yields are high on pastures that have been renovated.

The wooded areas require protection from fire and grazing. On the north- and east-facing slopes, high yields are obtained from the woodlands; on the south- and west-facing slopes, yields are lower. Capability unit VIe–7.

Toddville Series

The Toddville series consists of dark-colored, deep, silty soils on terraces along streams. The soils are well drained. In most areas they have slopes of less than 2 percent, but in some places slopes are as much as 6 percent. The soils formed under prairie in deposits of water-laid silt. The silt is 42 or more inches thick and overlies stratified silt and sand.

These soils are near areas of Richwood soils. Typically, their surface layer is black silt loam. Their subsoil, a dark-brown silty clay loam, is mottled in the lower part. The substratum is dark brown and silty.

The Toddville soils are moderate in permeability and are high in moisture-supplying capacity and natural fertility. They are slightly acid to medium acid, and they contain a large amount of organic matter. There is a slight hazard of erosion, particularly in areas that receive runoff from higher lying areas.

These soils are used mainly for crops. They are well suited to intensive cultivation.

Toddville Silt Loams

The following describes a typical profile of a Toddville silt loam in a pastured area:

- A_1 0 to 10 inches, black silt loam; moderate, medium, crumb structure; friable; plant roots abundant; slightly acid.
- A_3 10 to 16 inches, very dark gray silt loam; weak, medium, platy structure that breaks to medium, very fine, subangular blocks; friable; roots plentiful; a few light brownish-gray coatings on the surfaces of peds; medium acid.
- B_1 16 to 24 inches, dark grayish-brown silt loam; medium, fine, subangular blocky structure; friable; roots plentiful; light brownish-gray coatings on the surfaces of peds; a few, fine, faint spots, or mottles, of yellowish brown in lower part; medium acid.
- B_2 24 to 38 inches, dark-brown silty clay loam; moderate, fine to medium, subangular blocky structure; firm; many, fine, distinct, yellowish-brown mottles and clay skins; roots plentiful; strongly acid.
- C 38 inches +, dark-brown, light silty clay loam that grades to yellowish brown with increasing depth; massive; firm; many, medium, distinct mottles of yellowish brown and light brownish gray; a few segregations of black manganese; a few plant roots; strongly acid.

Toddville silt loam, 0 to 2 percent slopes (TvA).—The profile of this soil is like the profile described as typical of the Toddville silt loams. Capability unit I–1.

Toddville silt loam, 2 to 6 percent slopes (TvB).—The surface layer of this soil is slightly thinner than that in the profile described as typical of the Toddville silt loams. Capability unit IIe–1.

Wallkill Series

The Wallkill series consists of light-colored, silty soils on flood plains. The soils are somewhat poorly drained. They occupy a few small, nearly level areas or slight depressions where they formed in recent deposits of silt. The silt was washed from loess-covered terraces and uplands and was redeposited by stream overflow over organic soils. The thickness of the silt ranges from 18 to 40 inches.

These soils are moderate in permeability, and their moisture-supplying capacity is high. They are moderate in natural fertility and are slightly acid to neutral. The soils are likely to be flooded frequently.

These soils are used mainly for pasture. If the areas are protected from flooding and are adequately drained, good yields of crops can be obtained. The crops respond well if a complete fertilizer is applied. There is only one mapping unit of this series, Wallkill silt loam, in Iowa County.

Wallkill Silt Loams

The following describes a typical profile of a Wallkill silt loam in a pastured area:

- A_{11} 0 to 6 inches, grayish-brown silt loam; weak, medium, platy structure; friable; plant roots plentiful; slightly acid.
- A_{12} 6 to 24 inches, pale-brown silt loam; moderate, thin, platy structure or weakly stratified; friable; some strata of fine sand; many, fine, distinct mottles of gray and yellowish brown; plant roots plentiful; neutral.
- O_1 24 inches +, black to very dark brown sedge peat; granular in the upper part; many old sedge roots throughout; neutral.

Wallkill silt loam (Wa).—The profile of this soil is like the profile described as typical of the Wallkill silt loams. Capability unit IIIw–9.

Formation, Classification, and Morphology of Soils

In this section are discussed the factors that affect soil formation, the morphology and composition of the soils of Iowa County, and the classification of the soils in higher categories.

Factors of Soil Formation

Soil is formed by weathering and other processes that act on parent material. The characteristics of the soil at any given point depend upon (1) the physical and mineralogical composition of the parent material, (2) the plant and animal life, (3) the climate, (4) the relief, or lay of the land, and (5) time. Climate and its effect on soil and plants is modified by the characteristics of the soil and by relief. Relief, in turn, strongly influences drainage, aeration, runoff, erosion, and exposure of the surface of the soil to sun and wind.

Parent material

Iowa County is in the Driftless Area of Wisconsin, and, therefore, deposits of glacial till are absent. The parent materials from which the soils formed are made up of (1) materials derived from the weathering of rock in place, and (2) materials transported by wind, water, or gravity and laid down as unconsolidated deposits of sand, silt, and fragments of rock. Materials derived from the weathering of rocks in place are related directly to the underlying rock from which they originated; the transported materials are related to the soils or rocks from which they came. Each soil has formed in one of these two kinds of materials or in a mixture of both kinds of materials.

The parent materials formed in place consist of materials weathered from sedimentary rocks. Because the sedimentary rocks differ greatly in chemical and mineralogical composition, the soils formed from them also differ in characteristics. The bedrock in the county is made up largely of Galena-Platteville dolomite. In the northern part fairly large areas of Cambrian sandstone and Prairie du Chien dolomite underlie the soils. Outcrops of St. Peter sandstone occur along the bluffs of the rivers and in the more highly dissected parts of the county. The Hixton and Hesch soils occur in the parts of the county underlain by Cambrian sandstone.

Transported materials consist of (1) windblown fine sand and silt, or loess, deposited throughout the county in a blanket of variable thickness, and (2) water-deposited sand and silt, or alluvium, laid down on stream bottoms and terraces.

Soils formed wholly or partly in loess overlie each of the geologic formations in the county. The kind of soil formed in loessal material depends, in part, upon the thickness of the deposit. If the mantle of loess is thin, the characteristics of the soil are determined mainly by the material that has weathered from the underlying bedrock. The Dubuque and Dodgeville soils are examples of soils that have formed in areas where the mantle of loess is thin. These soils formed partly in loess and partly in red clay weathered from the underlying dolomite. The Fayette and Tama soils, on the other hand, formed in areas where the mantle of silt is thick, and they formed entirely in loess.

Soils formed in sand and silt deposited by water occur on terraces and on stream bottoms. The kind of soil formed in materials laid down by water is determined in part by the thickness and texture of the deposit. Of the soils on terraces, the Bertrand and Richwood formed in deep, silty deposits, and the Dakota and Meridian soils, in fairly deep, loamy deposits. The Plainfield and Sparta soils, also on terraces, formed in deep, sandy deposits.

Living organisms

Plants and animals are active in the soil-forming processes. The nature of the changes they bring about depends, among other things, upon the kind of life and life processes peculiar to the dominant species present. The kinds of plants and animals that live on and in the soil are affected, in turn, by the climate, the parent material, relief, and age of the soil, and by other living organisms.

Practically all of the light-colored soils of the county formed under deciduous forests. The trees consisted mainly of maple, basswood, oak, and hickory, but there were several less important species. The dark-colored soils formed under prairie grasses. Where both forest and prairie grasses were present, the soils have characteristics intermediate between forest and prairie soils.

The trees and shrubs that grow in the county have roots that penetrate moderately deep to feed on the plant nutrients in the soil. Most of them shed their leaves annually. The content of plant nutrients in the leaves varies among the different species, but, generally, considerable amounts of bases and phosphorus are returned to the soil by the leaves. Through this exchange, plant nutrients are returned to the upper part of the soil from the lower layers and partly replace those leached out by percolating water. This process also accounts for the more nearly neutral reaction and higher content of plant nutrients in the A horizon as compared to that in the B horizon.

Much organic material is added to the soil through the decay of leaves, twigs, roots, and entire plants. The plant nutrients released by decomposition thus become available for the growth of new plants. Where soils formed under forest, most of the organic matter accumulates on the surface, where it is acted upon by microorganisms, earthworms and other forms of life, and by direct chemical action. In soils formed under prairie, much of the organic matter accumulates below the soil surface through decomposition of the roots of prairie grasses.

As organic material decays, it releases organic acids that make the slowly soluble mineral materials in the soil more soluble. Consequently, the leaching and translocation of inorganic materials is hastened. The rate of decomposition is strongly influenced by temperature and by the amount of moisture present. The short summers and cold winters in Iowa County slow decomposition of the

organic matter and reduce the amount of leaching, thus helping to hold plant nutrients in the soil.

Climate

The climate of Iowa County, like that of most of southern Wisconsin, is marked by wide extremes of temperature, both within and between seasons. The climate is fairly uniform throughout the county, however, and has been responsible for few of the differences among the soils.

Precipitation is distributed fairly evenly throughout the county. The average annual rainfall is about 31 inches a year, and much of it falls during the growing season. Snowfall averages 39 inches a year.

Relief

Relief in Iowa County ranges from nearly level to steep. In some areas where slopes are steep, a large amount of water runs off the surface. Erosion is rapid, and the soil materials do not remain in place long enough for a distinct profile to develop. As a result, soils on these steep slopes have a thin solum, and in many places there are outcrops of rock. Little water percolates through these soils, and, as a result, there is little leaching and the amount of translocated materials is small.

Most of the soils in this county have formed on slopes that favor the development of a well-defined soil profile. Examples of such soils are those of the Bertrand, Fayette, and Tama series. Some areas in depressions or on bottom lands, however, have slow surface runoff and slow internal drainage. The soils in these areas differ from the soils in well-drained areas in having a somewhat compact subsoil that is mottled with yellow and gray.

The vegetation growing on the wetter areas differs from that on the well-drained soils, and the microorganisms in the soils are also different. The poorly drained or somewhat poorly drained soils contain a large amount of organic matter because they are not so well aerated as better drained soils. Conditions are, therefore, less favorable for the organic matter to decompose rapidly.

Time

The soils of this county differ but little because of age. All of the soils formed from silty deposits on the uplands and terraces show about the same degree of development and are probably of about the same age. The parent material of the soils formed in place from materials weathered from rock is very old. The soils formed in this material are on steep slopes, however, and, because of erosion, they are not so well developed as the soils on milder slopes. The youngest soils in the county are those that have formed in alluvium. Because of the brief time their parent material has been in place, the soils formed in alluvium show little or no horizon development.

Classification and Morphology of Soils

One of the main objectives of a soil survey is to describe and identify the soils and to determine their relationship to agriculture. A second objective is to group the soils according to the characteristics they have in common. Such a grouping will show the relationship of the soils to one another and to soils of other areas. This is necessary because there are so many different kinds of soils that it would be difficult to remember the characteristics of all of them. If the soils are placed in a few groups, each group having selected characteristics in common, their general characteristics can be remembered more easily.

The lower categories of classification, the soil type and soil series, are defined in the section "How Soils are Named, Mapped, and Classified." The soil phase is also defined in that section. Soil series are grouped into higher categories—great soil groups and soil orders (*5*). These relationships are shown in table 8. All three soil orders—the zonal, intrazonal, and azonal—are represented in this county.

The zonal order is made up of soils that have well-developed profiles. The soils reflect the predominant influence of climate and living organisms in their formation. In Iowa County the great soil groups of the zonal order are the Gray-Brown Podzolic and the Brunizem (Prairie soils).

Soils in the intrazonal order have more or less well-defined characteristics that reflect the dominating influence of some local factor, such as relief or parent material, over the effects of climate and living organisms. In this county the only soils in the intrazonal order are those of the Humic Gley great soil group.

The azonal order is made up of soils that, because of youth, resistant parent material, or relief, lack well-developed profiles. The azonal soils in this county belong to the Alluvial, Lithosol, and Regosol great soil groups.

This classification is incomplete. It may be revised as knowledge of the soils increases. The great soil groups are described in the following pages, along with the series that is representative of each group. Several of the soil series in the county are not representative of any one great soil group but intergrade from one great soil group to another.

Gray-Brown Podzolic soils

Gray-Brown Podzolic soils belong to the zonal order. They have a fairly thin covering of organic matter (A_0) and an organic-mineral layer (A_1). The organic-mineral layer overlies a grayish-brown, leached A_2 horizon, and the A_2 horizon rests upon a fine textured (illuvial), brown B horizon.

The Gray-Brown Podzolic soils formed under deciduous trees in a moist, temperate climate. The soil series in this great soil group are:

Bertrand.	Fayette.	Northfield.
Curran.	Gale.	Norwalk.
Derinda.	Hixton.	Rozetta.
Downs.	Jackson.	Stronghurst.
Dubuque.	Meridian.	Tell.

Soils of the Gray-Brown Podzolic group make up a large part of the acreage in the county. The soils of the Fayette series, which formed under forest in a fairly thick deposit of loess, are typical of these soils. The loess, which is 42 or more inches thick, overlies bedrock of sandstone or limestone. The Fayette soils are well drained. They are on uplands and have slopes of 0 to 30 percent.

TABLE 8.—*Classification of soil series by higher categories*

Great soil group and series	Remarks
ZONAL	
Gray-Brown Podzolic soils:	
Bertrand.	
Curran	Intergrades toward Low-Humic Gley soils.
Derinda.	
Downs	Intergrades toward Brunizems.
Dubuque.	
Fayette.	
Gale.	
Hixton.	
Jackson.	
Meridian.	
Northfield.	
Norwalk.	
Rozetta.	
Stronghurst	Intergrades toward Low-Humic Gley soils.
Tell.	
Brunizems (Prairie soils):	
Dakota.	
Dodgeville.	
Gotham	Intergrades toward Gray-Brown Podzolic soils.
Hesch.	
Judson	Intergrades toward Alluvial soils.
Lindstrom.	
Muscatine.	
Richwood.	
Rowley	Intergrades toward Humic Gley soils.
Tama.	
Toddville.	
INTRAZONAL	
Humic Gley soils:	
Dillon.	
Ettrick.	
Millsdale (variant).	
AZONAL	
Alluvial soils:	
Arenzville.	
Boaz	Intergrades toward Low-Humic Gley soils.
Chaseburg	Intergrades toward Gray-Brown Podzolic soils.
Huntsville	Intergrades toward Brunizems.
Lawson	Intergrades toward Humic Gley soils.
Orion.	
Osseo.	
Wallkill.	
Lithosols:	
Sogn.	
Regosols:	
Boone.	
Plainfield.	
Sparta	Intergrades toward Brunizems.

The following describes a typical profile of a gently sloping Fayette silt loam in a forested area:

- A_0 ½ inch to 0 of forest litter.
- A_1 0 to 2½ inches, very dark grayish-brown (10YR 3/2)[5] silt loam; weak, thin, platy structure that breaks to moderate, fine granules; friable; fine roots abundant; slightly acid.
- A_2 2½ to 14 inches, pale-brown (10YR 6/3) silt loam; moderate, thin, platy structure; friable; slightly vesicular; tree roots plentiful; strongly acid.
- B_1 14 to 17 inches, yellowish-brown (10YR 5/4) silt loam; moderate, medium, subangular blocky structure; friable; light-gray (10YR 7/2) silica coatings on the surfaces of the structural peds; roots plentiful; strongly acid.
- B_2 17 to 32 inches, yellowish-brown (10YR 5/4 to 5/6), light silty clay loam; moderate to strong, medium, subangular blocky structure; firm; light-gray (10YR 7/2) silica coatings on the surfaces of the structural peds; strongly acid.
- B_3 32 to 40 inches, yellowish-brown (10YR 5/6), heavy silt loam; moderate, coarse, subangular blocky structure; friable; strongly acid.
- C 40 inches +, yellowish-brown (10YR 5/6) silt loam; massive; friable; medium acid.

The parent material of the Fayette soils is calcareous at a depth between 60 and 70 inches. In many places, at a depth below 80 inches, it has a neutralizing value equivalent to 15 to 20 percent of calcium carbonate.

The Gray-Brown Podzolic soils in the county differ from one another primarily as the result of differences in parent material, relief, or natural drainage, but they also differ as the result of differences in the thickness of the original deposits. The Fayette soils, for example, differ from the Hixton soils mainly as the result of differences in parent material. They are finer textured than the Hixton soils because they formed in silty material, and the Hixton soils, in material weathered from sandstone.

Like the Fayette and Hixton soils, the Gale and Dubuque soils differ from one another largely as the result of differences in parent material. The soils of both series are well drained, and the upper part of their profile formed in a thin mantle of silt. Nevertheless, these soils differ because the Gale soils are underlain by sandstone and their lower horizons formed in material weathered from sandstone. The Dubuque soils overlie limestone, and their lower horizons formed in clay weathered from limestone.

Differences among the Gray-Brown Podzolic terrace soils, such as the Bertrand and Meridian, are related mainly to the thickness of the deposit of loessal material over the underlying sand and gravel. The soils of both the Bertrand and Meridian series are well drained, so differences are not related to differences in drainage nor to marked differences in relief.

The Derinda, Jackson, Northfield, Norwalk, Rozetta, and Tell soils are other Gray-Brown Podzolic soils that differ from one another mainly as the result of differences in parent material, relief, or drainage. The soils of the Curran, Downs, and Stronghurst, also classified as Gray-Brown Podzolic soils, are similar, in some respects, to the other Gray-Brown Podzolic soils, but they have characteristics similar to those of soils in other great soil groups. The Curran and Stronghurst soils are intergrades toward Low-Humic Gley soils, and the Downs, toward Brunizems.

[5] Symbols express Munsell color notations; unless otherwise stated, color is that of moist soil. Other terms used are defined in the Soil Survey Manual (7).

Brunizems

The Brunizems, or Prairie soils, are zonal soils that formed in a humid, temperate climate under a cover of tall grasses. Typically, Brunizems have a thick, very dark brown to black A horizon and a brownish subsoil. The underlying parent materials are lighter colored than the material in the soil profile. Brunizems do not have accumulations of calcium carbonate, derived from soil-forming processes, in any part of the profile.

In this county the soil series in the Brunizem great soil group are:

Dakota.
Dodgeville.
Gotham.
Hesch.
Judson.
Lindstrom.
Muscatine.
Richwood.
Rowley.
Tama.
Toddville.

The soils of the Tama series are typical of the Brunizem soils in the county. They formed in deep deposits of loess, similar to those in which the Fayette soils of the Gray-Brown Podzolic great soil group formed. The Tama soils, however, formed under prairie grasses, and the Fayette soils, under forest. Tama soils that have formed where the deposits of loess are thick are calcareous at a depth between 60 and 70 inches. Tama soils that have formed in thinner deposits of silt contain no free lime.

The following describes a typical profile of a Tama silt loam in a well-managed field of corn:

A_p 0 to 8 inches, black (10YR 2/1) silt loam; moderate, fine, crumb structure; friable; roots numerous; neutral.

A_3 8 to 16 inches, very dark gray (10YR 3/1) silt loam; moderate, coarse, granular structure; friable; plant roots abundant; slightly acid.

B_1 16 to 20 inches, dark grayish-brown (10YR 4/2) silt loam; moderate, medium, subangular blocky structure; friable; several roots; strongly acid.

B_2 20 to 36 inches, dark-brown (10YR 4/3) silty clay loam; moderate, medium, subangular blocky structure; firm; strongly acid.

B_3 36 to 42 inches, brown to yellowish-brown (10YR 5/3 to 5/4), heavy silt loam; weak, coarse, subangular blocky structure; friable; medium acid.

C 42 inches +, yellowish-brown (10YR 5/4 to 5/6) silt loam; massive; friable; slightly acid in the upper part; below a depth of 70 inches, calcareous.

The surface layer of the Tama soils varies in color and in thickness. In some places the Tama soils grade toward Muscatine soils, which are predominantly somewhat poorly drained but include areas that are moderately well drained. In these places the upper part of the B horizon in the Tama soils is grayer than normal; also, the lower part of the B horizon or upper part of the C horizon is mottled in places.

The Lindstrom soils formed in silty local alluvium washed from areas of Tama and Hesch soils. The profile of the Lindstrom soils is more weakly expressed than that of the Tama soils, and the Lindstrom soils contain more grit. The Judson soils have formed in material washed from higher lying soils. They are young, weakly developed soils that intergrade toward Alluvial soils. The Hesch soils formed in materials weathered from sandstone. Their parent material was similar to that of the Hixton soils of the Gray-Brown Podzolic great soil group. The Hesch soils, however, have a thicker, darker A_1 horizon than that of the Hixton soils, and they lack an A_2 horizon.

The Dodgeville soils, which occur near the Tama soils, are the most extensive of the Brunizems in the county. Unlike the Tama soils, they formed partly in loess and partly in the underlying red clay weathered from limestone.

The Dakota and Gotham soils formed on plains covered by sandy outwash and on terraces along streams near the Sparta soils. In many places the Dakota soils lie between areas of Sparta soils and the surrounding upland bluffs. The Dakota soils have a somewhat darker, finer textured A horizon and a more strongly expressed B horizon than the Sparta soils. The Gotham soils, like the Sparta soils, are sandy. They are somewhat excessively drained and intergrade toward Gray-Brown Podzolic soils. The parent material of the Sparta soils is similar to that of the Plainfield soils. The Sparta soils intergrade toward soils of the Regosol great soil group.

The Richwood, Rowley, and Toddville soils formed on terraces in deep deposits of silt laid down by wind and water. The Toddville soils are near the well-drained Richwood soils, but, unlike the Richwood soils, they are only moderately well drained. The Rowley soils are in lower positions on the terraces than the Toddville and Richwood soils and are somewhat poorly drained. The Richwood and Toddville soils are true Brunizems, but the Rowley intergrade toward soils of the Humic Gley great soil group.

Humic Gley soils

Humic Gley soils belong to the intrazonal order. These soils formed in depressions where water tends to accumulate during heavy rains. They have slow to very slow internal drainage. The Humic Gley soils have a thick, dark surface layer that contains a large amount of organic matter. Their subsoil is gleyed.

In Iowa County the soil series in this great soil group are:

Dillon.
Ettrick.
Millsdale (variant).

The Millsdale shale variant is an example of a Humic Gley soil in this county. This soil is shallower over bedrock, however, than the typical Humic Gley soils. It occurs in depressions on the tops of ridges.

The following describes a profile of Millsdale silty clay loam, shale variant:

A_1 0 to 6 inches, black (N 2/0) silty clay loam; moderate, medium, granular structure; friable; plant roots abundant; medium acid; clear, wavy boundary.

A_3 6 to 12 inches, black (N 2/0) silty clay loam; moderate, medium, subangular blocky structure; firm; plant roots plentiful; medium acid; gradual, irregular boundary.

B_{1g} 12 to 16 inches, very dark gray (2.5Y 3/1) silty clay; moderate, fine, angular blocky structure; hard when dry, plastic when wet; plant roots plentiful; clay skins and black stains of organic matter on the surfaces of peds; many, fine, distinct mottles of yellowish brown (10YR 5/6); slightly acid; gradual, irregular boundary.

B_{2g} 16 to 30 inches, grayish-brown (2.5Y 5/2) silty clay that grades to heavy silty clay loam with increasing depth; moderate to strong, fine to medium, angular, blocky structure; hard when dry, plastic when wet; a few sedge roots, many old channels of sedge roots; stains

of organic matter and clay skins on the surfaces of peds; many, medium, distinct mottles of yellowish brown (10YR 5/6); neutral; clear, wavy boundary.

C 30 inches +, grayish-brown (2.5Y 5/2) silty clay loam; massive; firm; many old sedge roots; many, large distinct mottles of yellowish brown (10YR 5/6); calcareous; grades to Maquoketa shale at a depth of more than 3 feet.

The surface layer of the Millsdale shale variant contains a large amount of organic matter. In many places large pieces of chert are scattered over the surface.

The Ettrick soil occurs along the larger streams and is the most extensive of the Humic Gley soils in the county. The Dillon soils are sandy and are on low terraces along streams, near soils of the Plainfield series.

Alluvial soils

The Alluvial soils are in the azonal order and are forming from materials recently deposited on flood plains. Each time the areas are flooded, the soils receive fresh deposits of material. In some places the floodwaters, in addition to bringing in new material, remove part of the old surface material. As a result, the soil material has not been in place long enough for distinct horizons and a distinct profile to develop.

In Iowa County the following soils are in this great soil group:

Arenzville.	Huntsville.	Osseo.
Boaz.	Lawson.	Wallkill.
Chaseburg.	Orion.	

The Arenzville soil is an example of an Alluvial soil. This soil is well drained to moderately well drained, and it is subject to overflow unless it is protected. It occurs on flood plains, where it formed under forest. The parent material was medium-textured alluvium washed from areas of Fayette, Dubuque, Gale, and Hixton soils.

The following describes a typical profile of an Arenzville silt loam:

A_{11} 0 to 9 inches, dark-gray (10YR 4/1) to dark grayish-brown (10YR 4/2) silt loam; moderate, medium, granular structure; friable; plant roots plentiful; neutral; clear, wavy boundary.

A_{12} 9 to 20 inches, grayish-brown (10YR 5/2) to dark grayish-brown (10YR 4/2) silt loam; stratified; has some thin seams of fine sand; friable; plant roots plentiful; neutral; clear, wavy boundary.

A_{13} 20 to 34 inches, light brownish-gray (10YR 6/2) to brown (10YR 5/3) silt; thin seams of fine sands that are massive and stratified; friable; a few plant roots; the lighter colored materials are generally coarser textured than the darker material and occur in thin strata; this horizon shows considerable crossbedding and no structural or textural development; neutral; abrupt, smooth boundary.

A_{14b} 34 to 42 inches +, very dark brown (10YR 2/2) to very dark grayish-brown (10YR 3/2) silt loam; weak, medium, granular structure; friable; neutral.

The color of the surface layer varies in the Arenzville soil. In most places there is the dark-colored surface layer of an old, buried soil at a depth of approximately 1½ to 3 feet. In many places the Arenzville soil is slightly mottled at a depth below 36 inches. It is neutral to slightly alkaline throughout the profile.

The Orion soil occurs near areas of the Arenzville soil, but, unlike the Arenzville soil, it is somewhat poorly drained. The Huntsville and Lawson soils are in positions similar to those occupied by the Arenzville and Orion soils. The Huntsville soil, however, has characteristics typical of the Brunizems and is intergrading toward that great soil group. The Lawson soil has some characteristics typical of the Humic Gley soils and is intergrading toward that group.

The Chaseburg soils are young and are forming in local alluvial deposits. Because of their weakly expressed profiles, these soils are classified as Alluvial soils. The Chaseburg soils have a lighter colored surface layer than is typical of the Alluvial soils and are intergrading toward the Gray-Brown Podzolic great soil group.

The Boaz, Osseo, and Wallkill soils are all somewhat poorly drained. The Osseo soils are typical of the Alluvial soils, but the Boaz soil has characteristics similar to those of soils in the Low-Humic Gley great soil group and is intergrading toward that soil group. The Wallkill soil is underlain by deposits of organic matter.

Lithosols

Lithosols typically are shallow and have little or no profile development. They consist mainly of partly weathered fragments of rock or of nearly bare rock. In Iowa County the Sogn soils are classed as Lithosols. They are very shallow and have an AC profile. In some places the Sogn soils are similar to the shallow Dodgeville soils. Typically, however, the Sogn soils have slabs of limestone and fragments of chert on the surface and throughout the profile.

Regosols

Regosols are an azonal group of soils forming in deep, unconsolidated deposits of geological materials. Because of the steepness of the slopes or the coarse texture of the parent materials, the Regosols show little or no horizon development. In this county the following soils are in this great soil group:

Boone.
Plainfield.
Sparta.

The Regosols, like Lithosols, lack a textural B horizon. The Boone soils formed on valley slopes over sandstone bedrock. The Plainfield soils, on the other hand, formed on low stream terraces in coarse-textured sandy outwash. The parent material of the Sparta soils is similar to that of the Plainfield soils, but the Sparta soils are darker colored than the Plainfield. Consequently, they are classified as intergrades toward Brunizems.

Agriculture

Iowa County is located along the northern border of the major corn-producing area of the United States. The agricultural economy is based partly on dairy farming and partly on the raising of hogs and beef cattle. The outstanding features of the agriculture are discussed in the following pages. Statistics used are from reports published by the U.S. Bureau of the Census.

Land Use

In 1954, about 468,469 acres, or 96.2 percent of the total acreage in Iowa County, was in farms. The farmland,

by use, and the acreage used for each purpose in that year are as follows:

	Acres	Percent
Cropland, total	216,278	46.2
Harvested	183,530	39.2
Used only for pasture	28,540	6.1
Not harvested or pastured	4,208	.9
Woodland, total	103,859	22.1
Pastured	87,256	18.6
Not pastured	16,603	3.5
Other land pastured (not cropland and not woodland)	129,545	27.7
Land pastured, total	245,341	52.4
Other land (house lots, roads, wasteland, and so on)	18,787	4.0

In this county crops are harvested from a somewhat smaller acreage than in most counties in southeastern Wisconsin. This is because many areas are too rugged to use for tilled crops. In 1954, stripcropping was practiced to help protect the land on 43.3 percent of the farms where harvested cropland was reported. In addition, an increasing number of other conservation practices are being applied.

Types and Sizes of Farms

There were 2,268 farms in Iowa County in 1954. Of these, about 9 percent were miscellaneous and unclassified. The rest are listed according to the major source of income as follows:

	Number
Dairy farms	1,566
Livestock farms other than dairy or poultry	403
General farms	50
Cash grain	26
Poultry	15
Vegetable farms	6

The sale of livestock and livestock products accounted for about 96 percent of the farm income in 1954. Most of the income is derived from the raising of dairy cattle, hogs, and beef cattle, and little is from the sale of crops. Most of the crops are fed to the dairy cattle or other livestock.

The size of farms varies considerably, but the average-sized farm in 1954 was 206.6 acres. Generally, the larger farms are in the northeastern part of the county, where broad terraces are the most extensive.

Crops

Forage crops are grown widely in Iowa County to provide feed for the livestock. The climate is favorable for grain crops, but many parts of the county are sloping and are more suitable for hay and pasture crops than for grain. Consequently, there has been an increasing expansion of livestock farming, with emphasis on pasture crops. The most common cropping system consists of growing corn and oats for 1 year each, and then hay for 2 years. Cash crops are important on a few farms. The acreage of the various crops grown in stated years is shown in table 9.

Corn is an important crop in this county. Practically all of it is fed to the livestock on the farm. The yield per acre varies but has increased, on the average, from 47 bushels per acre in 1940 to more than 62 bushels per acre in 1954. Much of the corn is harvested for grain or is cut for silage.

TABLE 9.—*Acreage of principal crops and number of apple trees of bearing age*

Crop	1939	1949	1954
Corn for all purposes:	*Acres*	*Acres*	*Acres*
Harvested for grain	32,115	46,050	43,957
Cut for silage	11,414	12,356	12,271
Hogged, grazed, or cut for fodder	1,415	3,519	2,814
Small grains threshed or combined:			
Grown together and threshed as a mixture	4,494	2,771	1,314
Oats	34,690	42,959	40,818
Winter wheat	237	247	42
Spring wheat	157	1,276	471
Barley	3,947	438	663
Rye	1,982	927	353
Hay total	67,363	73,076	77,588
Alfalfa and alfalfa mixtures	22,921	41,130	64,784
Clover, timothy, and mixtures with grasses	35,616	29,855	8,835
Small grain hay	1,341	158	217
Wild hay cut	2,312	646	348
Other hay cut	5,173	638	553
Silage from grasses or hay crops	[1]	649	2,851
Soybeans for all purposes	5,760	869	1,420
Red clover harvested for seed	[1]	1,188	158
Irish potatoes harvested for home use or for sale	705	[2]105	[3]30
Apple trees	*Number* [4] 6,136	*Number* [4] 9,979	*Number* [5] 1,173

[1] Not reported.
[2] Does not include acreage for farms with less than 15 bushels harvested.
[3] Does not include acreage for farms with less than 20 bushels harvested.
[4] One year later than the year given at head of column.
[5] Does not include acreage for farms with less than 20 trees.

Most of the corn is grown on the more nearly level areas in the county. The soil is generally plowed in spring and prepared for seeding in May. If fertilizer is used, it is applied by using an attachment on the corn-planter. Generally, a mixed fertilizer is used and is applied at the rate of 100 to 150 pounds per acre. The corn is cultivated two or three times during the season to control weeds. It is harvested for grain in October or November, depending upon the weather. Corn cut for silage generally is harvested when the grain begins to dent. But, if there has been an early frost, the crop is harvested as soon after the first frost as possible.

Oats have always been an important crop in the county. The average yield has been about 38 bushels per acre, but in 1954 the average yield was 45.5 bushels per acre.

Most of the oats are grown as a nurse crop for hay. The fields used for oats are often plowed in fall and left rough during the winter. In spring the soil is disked and smoothed. The oats are seeded in April or before the 15th of May. Fertilizer is sometimes applied to increase the yield and to assure a better stand of the accompanying hay crop. A grain drill is generally used for seeding, but the oats can be broadcast and covered by harrowing.

After the oats mature, they are harvested by using a binder or combine. Most of them are ground, mixed with protein concentrates, and fed to the livestock on the farm. The straw is baled and used as bedding. In

some places oats are used as a supplementary hay crop and are cut green.

Because of the importance of dairy farming in the county, hay crops are grown extensively. Also, many areas are rugged and are better suited to hay crops than to cultivated crops. Hay crops were grown on about 36 percent of the total cropland in 1954.

Alfalfa is grown in all parts of the county. Yields are fairly constant, but they can be increased slightly by adding larger amounts of lime and fertilizer and by using other improved agricultural practices. Alfalfa and alfalfa mixtures were grown on about 84 percent of the total acreage used for hay crops in 1954. Alfalfa gives higher yields of good-quality forage than other kinds of hay. It needs a fertile, well-drained soil and requires lime, potash, and phosphate to yield well. Alfalfa is generally planted in April. It is seeded with oats or with some other nurse crop, in a mixture consisting of alfalfa and bromegrass, or of alfalfa, clover, and timothy. As a rule, two cuttings are made each season; sometimes the alfalfa is pastured in fall.

Other than alfalfa, the crops most widely used for hay are clover and timothy grown together. The mixture commonly used for seeding is 6 to 8 pounds per acre of red clover and 3 to 5 pounds of timothy. This mixture is generally seeded in April, with oats or with some other small grain used as a nurse crop. The seed is drilled in with the small grain, or it is broadcast after the small grain has been seeded. Sometimes, the crop is pastured lightly in the fall of the first year and after one or two hay crops are removed the following year.

Soybeans were introduced in the county around 1930. They could be grown on many of the soils used for corn, but they have been grown on only a small acreage. If the clover or alfalfa crop fails, soybeans are often used as a catch crop and are fed to livestock. Soybeans are generally planted in May. The seedbed is prepared about the same as when corn is to be grown.

Wheat, rye, and barley were once important as cash crops in Iowa County. They have become less important as the livestock industry expanded.

Potatoes have never been grown extensively in the county, but they are grown on a few farms. Vegetables and fresh fruits are grown on most farms for home use. Peas and sweet corn for canning are grown extensively on several farms and contribute much to the farm income. Apple orchards are important on a few farms. Some honey is produced, especially in the more rugged parts of the county.

Permanent Pastures

More than half of the acreage in farms in Iowa County in 1954, or 245,341 acres, was used for pasture. Of this acreage, about 36 percent was pastured woodland and about 53 percent was used only for pasture. The most common plants on the permanent pastures are Kentucky bluegrass, whiteclover, redtop, and timothy.

Pastured woodland is not productive of trees, nor does it give good yields of forage. Many of the areas are so steep and stony that they cannot be renovated. Such areas can be fenced to keep the cattle out and can then be used to grow trees and to provide habitats for wildlife. If feasible, wooded areas that are needed for pasture should be cleared.

Many of the permanent pastures provide little forage, but they can be improved by renovating them. Experiments show that 1 acre of renovated pasture is equal to between 2 and 5½ acres of untreated pasture, or to 11.3 acres of woodland pasture (*1*).

To renovate pastures, broadcast ground lime and a complete fertilizer. Use amounts determined by soil tests, based upon the needs of alfalfa and bromegrass. Then, tear the sod with a field cultivator. Fields prepared in this way are left rough and are less likely to erode than plowed fields. Seed the pastures around the first of May.

Inoculated legumes are desirable in mixtures used for seeding pastures. The well-drained loams and silt loams should be seeded to mixtures made up of 10 pounds of alfalfa, 5 pounds of bromegrass, and one-half pound of ladino clover. On the wetter soils, the seeding mixture should consist of ladino clover, alsike clover, and reed canary-grass. The native grasses replace the legumes as the legumes die out, but the legumes will give better yields of high-quality forage than the native grasses. The legumes should be allowed to reseed and to become well established, for they will help to retard growth of the less desirable plants.

The first year, renovated pastures are grazed moderately in summer. Grazing is withheld, however, in September and October, or until growth has been retarded by cold weather. The areas can be grazed lightly thereafter without damaging the legumes. Best results are obtained if grazing is rotated between renovated pastures and other pastures.

Areas that are in grass, but that are not feasible to renovate, can be improved by applying enough lime to raise the pH of the soils to 6.5 or 7.0. Phosphate and potash can be added according to the needs indicated by soil tests. Nitrogen can be applied early in spring at the rate of 50 to 75 pounds per acre.

Livestock and Livestock Products

In Iowa County livestock and livestock products provide the major part of the income derived from the sale of farm products. Dairy cattle and hogs are the most important of the animals raised. The number of livestock on farms in the county is shown in table 10.

TABLE 10.—*Number of livestock on farms*

Livestock	1940	1950	1954
	Number	*Number*	*Number*
Cattle and calves	[1] 68, 459	85, 324	100, 310
Hogs and pigs	[2] 29, 840	74, 007	97, 639
Horses and mules	[1] 10, 071	4, 729	2, 224
Sheep and lambs	[3] 9, 985	10, 054	9, 555
Chickens	[2] 176, 326	[2] 171, 907	[2] 177, 844

[1] More than 3 months old.
[2] More than 4 months old.
[3] More than 6 months old.

The principal breed of dairy cattle raised in the county is Holstein, but many cattle of the Guernsey,

Jersey, and Brown Swiss breeds are also raised. The Aberdeen Angus and Hereford are the most common breeds of beef cattle raised. Whole milk and butter are the most important dairy products, but cheese is also important. In 1954, nearly 259 million pounds of whole milk and more than 40,000 pounds of butterfat were sold. In addition, the sale of calves and breeding stock provided some income.

Income from the sale of hogs and pigs was reported from more than 78 percent of the farms in 1954. These animals accounted for about 26 percent of the farm income.

The number of horses and mules has decreased considerably in the past few years. Sheep are raised on some farms, mostly in the hillier parts of the county, but their number is declining.

In 1954, 899,064 dozen chicken eggs were sold from 1,326 farms. In addition, the sale of turkeys, ducks, geese, and their eggs provided part of the income on 114 farms.

Farm Income and Expenditures

Most of the farm income in the county in 1954 came from livestock and livestock products, but about 4 percent was derived from the sale of crops. Potatoes, fruit, sweet corn, and peas are the most important cash crops.

In 1954, the largest item of expense for most farmers in the county was feed for livestock, mainly concentrates. About 90 percent of the farmers reported purchases of feed. Other large items were expenditures for machine hire and for hired labor. Commercial fertilizer was reported purchased by 1,894 farmers, and lime and liming materials, by 642 farmers.

Farm Tenure

In 1954, owners operated 55.3 percent of the farms in the county; tenants operated 32.5 percent; and part owners operated 11.8 percent. Only 10 farms were operated by managers.

The proportion of farms operated by tenants has decreased somewhat in recent years. Under the usual agreement, the owner provides the land and farm buildings and half the feed, seed, fertilizer, and livestock. The operator provides the other half and the labor. The proceeds are divided, 50 percent going to the owner and 50 percent to the operator. There are many variations of the agreement, depending upon the desirability of the farm and upon the ability of the operator. A few farms are rented on a cash basis.

Farm Power and Mechanical Equipment

Because of the increasing use of tractors, horses and mules are no longer a major source of farm power in this county. Except on the small farms, they are used only for light work and for odd jobs. In 1954, there were 3,417 tractors, 2,403 automobiles, and 1,539 trucks reported on the farms. In addition, there were 864 corn-pickers, 723 pickup hay balers, 639 grain combines, and 307 field forage harvesters. About 92 percent of the farms had electricity, and nearly 74 percent had milking machines. In the same year, more than 76 percent of the farms had telephones, and about 58 percent of the farm homes had running water. Most farms have either a hay loader or other power equipment for making hay, or the farmer has access to such equipment. Corn choppers and ensilage cutters are commonly used in preparing corn for silage.

Additional Facts About the County

In this section the settlement of Iowa County is discussed. Information is also given about the industries, transportation and markets, and community facilities in the county.

Settlement

Marquette and Joliet passed through this part of Wisconsin when they made their historic trip down the Wisconsin River in 1673. After these missionaries and explorers had passed through, only bands of Indians and trappers roamed the area until about 1827, when the first permanent settlement was made. The first settlements were mainly in the southern part of the county, where lead and other mineral deposits were located. Most of the early settlers were native Americans who came to the area by way of the Mississippi River. A few were Cornish miners from England. Later, many Scandinavian and German immigrants came to the area.

Iowa County was established in 1829. It was named for a powerful tribe of Sioux Indians. Originally, the area included many other counties, but in 1846 the present boundaries were set.

Little attention was given to farming until after 1850, when mining became unprofitable. In the early years wheat was the main crop, but after about 1870 the importance of wheat as a crop declined. The farmers turned to dairying and the raising of beef cattle and hogs.

Iowa County had a population of 9,525 people in 1850 (*10*). By 1960, the population had increased to 19,631. The city of Dodgeville had a population of 2,911 in 1960, and Mineral Point had a population of 2,385. A number of smaller towns and villages are in the county.

Industries

Agriculture is the most important industry in the county and engages more than 50 percent of the labor force. About 11 percent of the other workers in the county are employed in wholesale and retail activities, and about 7 percent are employed in manufacturing. There are about 64 manufacturing plants in the county, of which milk-processing plants are the most important. Other industries are concerned with mining, construction, transportation, communications, and other services.

Transportation and Markets

Much of the early transportation of the county depended upon the rivers. Surplus agricultural products were carried to market by steamboats on the Mississippi, Wisconsin, and Fox Rivers. Produce was carried by

wagon over the lead trail through Janesville and the Military Ridge road by way of Madison to markets along the shores of lakes. In 1857, a railroad was completed along the Wisconsin River Valley to Prairie du Chien. The Chicago and North Western Railway Company completed a railroad along Military Ridge in 1881, and a few years later ran a branch line to Dodgeville.

United States highways and State highways crisscross the county. In addition, there are many roads that are well maintained by the county and townships. About 10 percent of the 1,236 miles of roads in the county are paved, 15 percent have a bituminous surface, and 75 percent are gravel or dirt roads. Only a few miles are unsurfaced. About 86 percent of the farm population lives less than 10 miles from a trading center, and the average distance is 5 miles.

Trucks now transport all of the agricultural products to market. Most of the products are marketed locally, but some livestock are shipped to Madison, Wis.; to Chicago, Ill.; and to Dubuque, Iowa.

Community Facilities

In most parts of the county, educational and medical facilities are available. There are churches of many denominations throughout the county. Fishing, hunting, boating, swimming, and other recreational facilities are available. Among the many interesting places to visit for recreation are two State parks—Tower Hill and Governor Dodge.

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1956. WISCONSIN RURAL RESOURCES, IOWA COUNTY. Crop and Livestock Reporting Serv., in cooperation with the Agr. Market. Serv., Univ. of Wis. 56 pp., illus. Madison.

Glossary

Acidity. See Reaction.

AC soil. A soil that has only A and C horizons in the profile and no clearly developed B horizon. Lacks a subsoil.

Aggregate, soil. A single mass or cluster consisting of many soil particles held together, such as a prism, crumb, or granule.

Alluvium. Soil or rock material, such as gravel, sand, silt, or clay, deposited by a stream of water.

Blowout. An area of soil from which most, or all, of the fine soil material has been removed by wind.

Bottom land. Nearly level land occupying the bottom of a valley that has a stream flowing through it. Subject to flooding and often referred to as a flood plain.

Chert. A structureless form of silica, closely related to flint. Chert breaks into irregularly shaped, angular fragments that are as much as 3 inches in diameter.

Clay. (1) As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. (2) As a soil textural class, soil material that contains 40 percent or more clay, as defined under (1), less than 45 percent sand, and less than 40 percent silt.

Concave slope. A slope that is shaped like a dish or bowl.

Consistence. The nature of soil material that is expressed by the resistance of the individual particles to separating from one another (cohesion) or by the ability of a soil mass to undergo a change in shape without breaking (plasticity). The consistence varies with the contents of moisture. Thus, a soil aggregate or clod may be hard when dry and plastic when wet. Terms used to describe consistence are:

Friable. When moist, easily crushed by hand and coheres when pressed together. Friable soils are easily tilled.

Firm. When moist, crushes under moderate pressure, but resistance is distinctly noticeable. Firm soils are likely to be difficult to till.

Hard. When dry, is moderately resistant to pressure; can be broken in the hands without difficulty but is barely breakable between thumb and forefinger.

Loose. Noncoherent when moist or dry. Loose soils are generally coarse textured and are easily tilled.

Plastic. When wet, retains an impressed shape and resists being deformed; plastic soils are high in clay and are difficult to till.

Soft. Weakly coherent and fragile; when dry, breaks to powder or individual grains under slight pressure.

Convex slope. A slope that is bowed out.

Crop residue. The part of a plant, or crop, left in the field after harvest.

Depressions. Low-lying areas that have no surface outlets for the water that accumulates in them or that have only poor outlets.

Dolomite. A rock that contains a high proportion of calcium and magnesium carbonates. Ground dolomitic limestone that contains considerable magnesium carbonate, as well as calcium carbonate, is used widely as agricultural lime, especially on soils with a low content of magnesium.

Droughty soil. A soil that is low in water-storing capacity.

Dune. A mound or ridge of loose sand piled up by the wind; common in areas where sand is abundant and the wind is usually strong, as along shores of lakes or the sea and in some desert or semidesert areas.

Erosion. The detachment and movement of the solid material of the land surface by wind, moving water, or ice, and by such processes as landslides and creep.

Escarpment. A long, steep ridge of land or rock that resembles a cliff. It faces in one general direction and separates two areas of more nearly level land.

Horizon, soil. A layer of soil, approximately parallel to the soil surface, with characteristics produced by soil-forming processes. The relative positions of the several soil horizons in the soil profile and their nomenclature are given below:

Horizon A. The master horizon consisting of (1) one or more mineral horizons of maximum organic accumulation; or (2) surface or subsurface horizons that are lighter in color than the underlying horizon and that have lost clay minerals,

iron, and aluminum with resultant concentration of the more resistant minerals; or (3) horizons belonging to both of these categories.

Horizon B. The master horizon of altered material characterized by (1) an accumulation of clay, iron, or aluminum, with accessory organic materials; or (2) blocky or prismatic structure together with other characteristics, such as stronger colors, unlike those of the A horizons or the underlying horizons of nearly unchanged material; or (3) characteristics of both these categories. Commonly, the lower limit of the B horizon corresponds to the lower limit of the solum.

Horizon C. A layer of unconsolidated material, relatively little affected by the influence of organisms and presumed to be similar in chemical, physical, and mineralogical composition to the material from which at least a part of the overlying solum has developed.

Horizon D. Any stratum underlying the C, or the B if no C is present, which is unlike the C, or unlike the material from which the solum has formed.

Loess. Geological deposit of fairly uniform, fine material, mostly silt, presumably transported by the wind.

Massive. Large uniform masses of cohesive soil, sometimes with ill-defined and irregular breakage, as in some of the fine-textured alluvial soils; structureless.

Mottled. Marked with spots of color and usually associated with poor drainage.

Neutral, soil. See Reaction.

Nutrients, plant. Any element taken in by a plant, essential to its growth, and used by it in elaboration of its food and tissue.

Outwash. Crossbedded gravel, sand, and silt deposited by melt water as it flowed from ice.

Parent material (soils). The horizon of weathered rock or partly weathered soil material from which the soil is formed. Horizon C of the soil profile.

Ped. An individual natural soil aggregate, such as a crumb, prism, or block, in contrast to a clod, which is a mass of soil brought about by digging or other disturbance.

Permeability, soil. That quality of the soil that enables it to transmit air and water. Moderately permeable soils transmit air and water readily, and, as a result, the soil is favorable for the growth of roots. Slowly permeable soils allow water and air to move so slowly that growth of the roots may be restricted. Rapidly permeable soils transmit air and water rapidly; as a result, roots make good growth.

Profile, soil (See also Horizon, soil). A vertical section of the soil through all its horizons and extending into the parent material.

Reaction. The degree of acidity or alkalinity of the soil expressed in pH values or in words as follows:

	pH		*pH*
Extremely acid	Below 4.5	Neutral [1]	6.6 to 7.3
Very strongly acid	4.5 to 5.0	Mildly alkaline	7.4 to 7.8
Strongly acid	5.1 to 5.5	Moderately alkaline	7.9 to 8.4
Medium acid	5.6 to 6.0	Strongly alkaline	8.5 to 9.0
Slightly acid	6.1 to 6.5	Very strongly alkaline.	9.1 and higher.

[1] Where significant, the terms very slightly acid and very mildly alkaline may be used for soils of pH 6.6 to 6.9 and 7.1 to 7.3, respectively.

Relief. Elevations or inequalities of the land surface, considered collectively.

Renovation. Method of restoring soils used for pasture or hay to higher productivity by cultivating them carefully so that the tillage will not cause erosion. The soils are then limed, fertilized, and reseeded.

Sand. (1) Individual rock or mineral fragments having diameters ranging from 0.05 millimeter (0.002 inch) to 2.0 millimeters (0.079 inch). Sand grains consist chiefly of quartz, but they may be of any mineral composition. (2) The textural class name of any soil that contains 85 percent or more sand and not more than 10 percent clay.

Silt. (1) Individual mineral particles of soil that range in diameter between the upper size of clay, 0.002 millimeter, and the lower size of very fine sand, 0.05 millimeter. (2) Soil of the textural class called silt contains 80 percent or more of silt and less than 12 percent of clay. (3) Sediments deposited from water in which the individual grains are approximately of the size of silt, although the term is sometimes applied loosely to sediments containing considerable sand and clay.

Solum. The upper part of a soil profile, above the parent material, in which the processes of soil formation are active. The solum in mature soils includes the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying parent material. The living roots and other plant and animal life characteristics of the soil are largely confined to the solum.

Stratified. Composed of, or arranged in, strata, or layers, such as stratified alluvium. The form is confined to geological materials. Layers in soils that result from the processes of soil formation are called horizons; those inherited from the parent material are called strata.

Structure, soil. The aggregation of primary soil particles into compound particles, or clusters, of primary particles, which are separated from adjoining aggregates by surfaces of weakness. Soil structure is classified according to grade, class, and type.

Grade. Distinctness of aggregation. It expresses the differential between cohesion within aggregates and adhesion between aggregates. Terms: Structureless (single grain or massive), weak, moderate, and strong.

Class. Size of soil aggregates. Terms: Very fine or very thin, fine or thin, medium, coarse or thick, and very coarse or very thick.

Type. Shape and arrangement of individual, natural soil aggregates. Terms: Platy, prismatic, columnar, blocky, subangular blocky, granular, and crumb. (Example of soil-structure grade, class, and type: Moderate, coarse, subangular blocky.)

Subsoil. Technically, the B horizon of soils with distinct profiles; roughly, that part of the profile below plow depth.

Substratum. Any layer lying beneath the solum, or true soil. (See also Horizon, soil; and Parent Material (soils).

Surface soil. Technically, the A horizon; commonly, the upper part of the profile usually stirred by plowing.

Terrace, stream. Areas that lie above the present flood plain; they are generally underlain by stratified stream sediments.

Terracing. Construction of shallow, nearly level ditches with broad slopes that can be farmed. Terraces are needed on slopes to control runoff water.

Topography. (See Relief.)

Topsoil (engineering application). Presumably fertile soil material containing organic matter and suitable as a surfacing for shoulders and slopes.

Upland. Land that lies above the stream terraces and that is underlain by bedrock at a fairly shallow depth; generally all areas not included in terraces and bottom lands.

Vesicular. Small openings or pores between the structural aggregates of a soil.

GUIDE TO MAPPING UNITS[1] AND CAPABILITY UNITS

Symbol	Soil	Page	Capability unit	Page
Ar	Arenzville silt loam	57	IIw-11	13
BeA	Bertrand silt loam, 0 to 2 percent slopes	58	I-1	10
BeB	Bertrand silt loam, 2 to 6 percent slopes	58	IIe-1	11
BeB2	Bertrand silt loam, 2 to 6 percent slopes, moderately eroded	58	IIe-1	11
BeC2	Bertrand silt loam, 6 to 12 percent slopes, moderately eroded	58	IIIe-1	13
Bm	Boaz silt loam	58	IIw-1	12
BoC2	Boone fine sand, 6 to 12 percent slopes, eroded	58	VIIs-3	20
BoD2	Boone fine sand, 12 to 30 percent slopes, eroded	59	VIIs-3	20
CaA	Chaseburg fine sandy loam, 0 to 2 percent slopes	59	IIw-11	13
CaB	Chaseburg fine sandy loam, 2 to 6 percent slopes	59	IIw-11	13
CaC	Chaseburg fine sandy loam, 6 to 12 percent slopes	59	IIIe-1	13
ChA	Chaseburg silt loam, 0 to 2 percent slopes	59	IIw-11	13
ChB	Chaseburg silt loam, 2 to 6 percent slopes	59	IIw-11	13
ChC	Chaseburg silt loam, 6 to 12 percent slopes	59	IIIe-1	13
CuA	Curran silt loam, 0 to 3 percent slopes	60	IIw-2	12
DaA	Dakota loam, 0 to 2 percent slopes	61	IIs-1	12
DaB	Dakota loam 2 to 6 percent slopes	61	IIe-2	11
DbA	Dakota sandy loam, 0 to 2 percent slopes	60	IIIs-2	14
DbB	Dakota sandy loam, 2 to 6 percent slopes	60	IIIs-2	14
DbB2	Dakota sandy loam, 2 to 6 percent slopes, moderately eroded	60	IIIs-2	14
DbC2	Dakota sandy loam, 6 to 12 percent slopes, moderately eroded	60	IVe-7	17
DeB	Derinda stony silt loam, 2 to 6 percent slopes	61	IIe-6	11
DeC	Derinda stony silt loam, 6 to 12 percent slopes	61	IIIe-6	14
Df	Dillon loamy fine sand	61	IIIw-5	15
DgB	Dodgeville silt loam, 2 to 6 percent slopes	62	IIe-2	11
DgB2	Dodgeville silt loam, 2 to 6 percent slopes, moderately eroded	62	IIe-2	11
DgC	Dodgeville silt loam, 6 to 12 percent slopes	62	IIIe-2	13
DgC2	Dodgeville silt loam, 6 to 12 percent slopes, moderately eroded	62	IIIe-2	13
DgD	Dodgeville silt loam, 12 to 20 percent slopes	62	IVe-2	16
DgD2	Dodgeville silt loam, 12 to 20 percent slopes, moderately eroded	63	IVe-2	16
DgE2	Dodgeville silt loam, 20 to 30 percent slopes, moderately eroded	63	VIe-2	18
DhA	Dodgeville silt loam, deep, 0 to 2 percent slopes	63	I-1	10
DhB	Dodgeville silt loam, deep, 2 to 6 percent slopes	63	IIe-1	11
DhB2	Dodgeville silt loam, deep, 2 to 6 percent slopes, moderately eroded	63	IIe-1	11
DhC2	Dodgeville silt loam, deep, 6 to 12 percent slopes, moderately eroded	63	IIIe-1	13
DhD	Dodgeville silt loam, deep, 12 to 20 percent slopes	63	IVe-1	16
DhD2	Dodgeville silt loam, deep, 12 to 20 percent slopes, moderately eroded	63	IVe-1	16
DlC	Dodgeville silt loam, shallow, 4 to 12 percent slopes	63	IVe-3	16
DlB2	Dodgeville silt loam, shallow, 2 to 6 percent slopes, moderately eroded	63	IIIe-3	14
DlC2	Dodgeville silt loam, shallow, 6 to 12 percent slopes, moderately eroded	63	IVe-3	16
DlD	Dodgeville silt loam, shallow, 12 to 20 percent slopes	64	VIe-3	18
DlD2	Dodgeville silt loam, shallow, 12 to 20 percent slopes, moderately eroded	64	VIe-3	18
DmB3	Dodgeville soils, 2 to 6 percent slopes, severely eroded	64	IIIe-2	13
DmC3	Dodgeville soils, 6 to 12 percent slopes, severely eroded	64	IVe-2	16
DmD3	Dodgeville soils, 12 to 20 percent slopes, severely eroded	64	VIe-2	18
DnB3	Dodgeville soils, deep, 2 to 6 percent slopes, severely eroded	64	IIIe-1	13
DnC3	Dodgeville soils, deep, 6 to 12 percent slopes, severely eroded	64	IVe-1	16
DnD3	Dodgeville soils, deep, 12 to 20 percent slopes, severely eroded	64	VIe-1	18
DoB	Downs silt loam, 2 to 6 percent slopes	65	IIe-1	11
DoB2	Downs silt loam, 2 to 6 percent slopes, moderately eroded	65	IIe-1	11
DoC2	Downs silt loam, 6 to 12 percent slopes, moderately eroded	65	IIIe-1	13
DsB	Dubuque silt loam, 2 to 6 percent slopes	65	IIe-2	11
DsB2	Dubuque silt loam, 2 to 6 percent slopes, moderately eroded	65	IIe-2	11
DsC	Dubuque silt loam, 6 to 12 percent slopes	65	IIIe-2	13
DsC2	Dubuque silt loam, 6 to 12 percent slopes, moderately eroded	65	IIIe-2	13
DsD	Dubuque silt loam, 12 to 20 percent slopes	66	IVe-2	16
DsD2	Dubuque silt loam, 12 to 20 percent slopes, moderately eroded	66	IVe-2	16
DsE	Dubuque silt loam, 20 to 30 percent slopes	66	VIe-2	18
DsE2	Dubuque silt loam, 20 to 30 percent slopes, moderately eroded	66	VIe-2	18
DsF	Dubuque silt loam, 30 to 45 percent slopes	66	VIIe-2	19
DsF2	Dubuque silt loam, 30 to 45 percent slopes, moderately eroded	66	VIIe-2	19
DtB	Dubuque silt loam, deep, 2 to 6 percent slopes	66	IIe-1	11
DtB2	Dubuque silt loam, deep, 2 to 6 percent slopes, moderately eroded	66	IIe-1	11
DtC	Dubuque silt loam, deep, 6 to 12 percent slopes	66	IIIe-1	13
DtC2	Dubuque silt loam, deep, 6 to 12 percent slopes, moderately eroded	66	IIIe-1	13
DtD	Dubuque silt loam, deep, 12 to 20 percent slopes	66	IVe-1	16
DtD2	Dubuque silt loam, deep, 12 to 20 percent slopes, moderately eroded	66	IVe-1	16
DtE	Dubuque silt loam, deep, 20 to 30 percent slopes	66	VIe-1	18
DtE2	Dubuque silt loam, deep, 20 to 30 percent slopes, moderately eroded	66	VIe-1	18
DuB3	Dubuque soils, 2 to 6 percent slopes, severely eroded	67	IIIe-2	13
DuC3	Dubuque soils, 6 to 12 percent slopes, severely eroded	67	IVe-2	16
DuD3	Dubuque soils, 12 to 20 percent slopes, severely eroded	67	VIe-2	18
DuE3	Dubuque soils, 20 to 30 percent slopes, severely eroded	67	VIIe-2	19
DvC3	Dubuque soils, deep, 6 to 12 percent slopes, severely eroded	67	IVe-1	16
DvD3	Dubuque soils deep, 12 to 20 percent slopes, severely eroded	67	VIe-1	18

[1] Table 7, p. 54, shows the acreage and proportionate extent of the soils; table 2, p. 20, gives estimated crop yields; and table 3, p. ,27 gives estimated yields of wood products. To find the engineering properties of the soils, see the section beginning on p. 26.

GUIDE TO MAPPING UNITS[1] AND CAPABILITY UNITS—Continued

Symbol	Soil	Page	Capability unit	Page
DyB2	Dubuque stony silt loam, 2 to 6 percent slopes, moderately eroded	67	IVs–4	17
DyC2	Dubuque stony silt loam, 6 to 12 percent slopes, moderately eroded	67	VIs–6	19
DyD	Dubuque stony silt loam, 12 to 20 percent slopes	67	VIs–6	19
DyD2	Dubuque stony silt loam, 12 to 20 percent slopes, moderately eroded	67	VIs–6	19
DyE	Dubuque stony silt loam, 20 to 30 percent slopes	67	VIIs–6	20
DyE2	Dubuque stony silt loam, 20 to 30 percent slopes, moderately eroded	67	VIIs–6	20
Et	Ettrick silt loam	68	IIw–1	12
FaA	Fayette silt loam, uplands, 0 to 2 percent slopes	68	I–1	10
FaB	Fayette silt loam, uplands, 2 to 6 percent slopes	69	IIe–1	11
FaB2	Fayette silt loam, uplands, 2 to 6 percent slopes, moderately eroded	69	IIe–1	11
FaC	Fayette silt loam, uplands, 6 to 12 percent slopes	69	IIIe–1	13
FaC2	Fayette silt loam, uplands, 6 to 12 percent slopes, moderately eroded	69	IIIe–1	13
FaC3	Fayette silt loam, uplands, 6 to 12 percent slopes, severely eroded	69	IVe–1	16
FaD	Fayette silt loam, uplands, 12 to 20 percent slopes	69	IVe–1	16
FaD2	Fayette silt loam, uplands, 12 to 20 percent slopes, moderately eroded	69	IVe–1	16
FaD3	Fayette silt loam, uplands, 12 to 20 percent slopes, severely eroded	69	VIe–1	18
FaE2	Fayette silt loam, uplands, 20 to 30 percent slopes, moderately eroded	69	VIe–1	18
FeB	Fayette silt loam, valleys, 2 to 6 percent slopes	69	IIe–1	11
FeB2	Fayette silt loam, valleys, 2 to 6 percent slopes, moderately eroded	69	IIe–1	11
FeC2	Fayette silt loam, valleys, 6 to 12 percent slopes, moderately eroded	69	IIIe–1	13
FeD2	Fayette silt loam, valleys, 12 to 20 percent slopes, moderately eroded	69	IVe–1	16
FeD3	Fayette silt loam, valleys, 12 to 20 percent slopes, severely eroded	69	VIe–1	18
FeE	Fayette silt loam, valleys, 20 to 30 percent slopes	70	VIe–1	18
FyC	Fayette stony silt loam, valleys, 6 to 12 percent slopes	70	VIs–6	19
FyD	Fayette stony silt loam, valleys, 12 to 20 percent slopes	70	VIs–6	19
FyD2	Fayette stony silt loam, valleys, 12 to 20 percent slopes, moderately eroded	70	VIs–6	19
FyE	Fayette stony silt loam, valleys, 20 to 30 percent slopes	70	VIs–6	19
GaB	Gale silt loam, 2 to 6 percent slopes	70	IIe–2	11
GaB2	Gale silt loam, 2 to 6 percent slopes, moderately eroded	70	IIe–2	11
GaC	Gale silt loam, 6 to 12 percent slopes	70	IIIe–2	13
GaC2	Gale silt loam, 6 to 12 percent slopes, moderately eroded	70	IIIe–2	13
GaC3	Gale silt loam, 6 to 12 percent slopes, severely eroded	70	IVe–2	16
GaD	Gale silt loam, 12 to 20 percent slopes	70	IVe–2	16
GaD2	Gale silt loam, 12 to 20 percent slopes, moderately eroded	71	IVe–2	16
GaD3	Gale silt loam, 12 to 20 percent slopes, severely eroded	71	VIe–2	18
GaE	Gale silt loam, 20 to 30 percent slopes	71	VIe–2	18
GaE2	Gale silt loam, 20 to 30 percent slopes, moderately eroded	71	VIe–2	18
GnC	Gale stony silt loam, 6 to 12 percent slopes	71	VIs–6	19
GnC2	Gale stony silt loam, 6 to 12 percent slopes, moderately eroded	71	VIs–6	19
GnD	Gale stony silt loam, 12 to 20 percent slopes	71	VIs–6	19
GnD2	Gale stony silt loam, 12 to 20 percent slopes, moderately eroded	71	VIs–6	19
GnE	Gale stony silt loam, 20 to 30 percent slopes	71	VIIs–6	20
GnE2	Gale stony silt loam, 20 to 30 percent slopes, moderately eroded	71	VIIs–6	20
GoA	Gotham loamy fine sand, 0 to 2 percent slopes	71	IVs–3	17
GoB	Gotham loamy fine sand, 2 to 6 percent slopes	71	IVs–3	17
GoB2	Gotham loamy fine sand, 2 to 8 percent slopes, eroded	72	IVs–3	17
HeB2	Hesch loam, 2 to 6 percent slopes, moderately eroded	72	IIe–2	11
HeC2	Hesch loam, 6 to 12 percent slopes, moderately eroded	72	IIIe–2	13
HeD2	Hesch loam, 12 to 20 percent slopes, moderately eroded	72	IVe–2	16
HsE2	Hesch sandy loam, 20 to 30 percent slopes, moderately eroded	72	VIIe–7	19
HtB2	Hixton sandy loam, 2 to 6 percent slopes, moderately eroded	73	IIIs–2	14
HtC	Hixton sandy loam, 6 to 12 percent slopes	73	IVe–7	17
HtC2	Hixton sandy loam, 6 to 12 percent slopes, moderately eroded	73	IVe–7	17
HtD	Hixton sandy loam, 12 to 20 percent slopes	73	VIe–7	19
HtD2	Hixton sandy loam, 12 to 20 percent slopes, moderately eroded	73	VIe–7	19
HtD3	Hixton sandy loam, 12 to 20 percent slopes, severely eroded	73	VIIe–7	19
HtE	Hixton sandy loam, 20 to 30 percent slopes	73	VIIe–7	19
HtE2	Hixton sandy loam, 20 to 30 percent slopes, moderately eroded	73	VIIe–7	19
HtF	Hixton sandy loam, 30 to 45 percent slopes	73	VIIe–7	19
Hu	Huntsville silt loam	74	IIw–11	13
JaA	Jackson silt loam, 0 to 2 percent slopes	74	I–1	10
JaB	Jackson silt loam, 2 to 6 percent slopes	74	IIe–1	11
JuA	Judson silt loam, 0 to 2 percent slopes	74	IIw–11	13
JuB	Judson silt loam, 2 to 6 percent slopes	75	IIw–11	13
JuC	Judson silt loam, 6 to 12 percent slopes	75	IIIe–1	13
La	Lawson silt loam	75	IIw–1	12
Lo	Loamy alluvial land	76	IIIw–14	16
Lp	Loamy alluvial land, poorly drained	76	Vw–15	18
LsB	Lindstrom silt loam, 2 to 6 percent slopes	75	IIe–1	11
LsB2	Lindstrom silt loam, 2 to 6 percent slopes, moderately eroded	75	IIe–1	11
LsC	Lindstrom silt loam, 6 to 12 percent slopes	75	IIIe–1	13
LsC2	Lindstrom silt loam, 6 to 12 percent slopes, moderately eroded	75	IIIe–1	13
LsD	Lindstrom silt loam, 12 to 20 percent slopes	76	IVe–1	16
LsD2	Lindstrom silt loam, 12 to 20 percent slopes, moderately eroded	76	IVe–1	16
Ma	Marsh	76	VIIIw–15	20
Md	Meridian loam, somewhat poorly drained variant	77	IIw–5	12

GUIDE TO MAPPING UNITS[1] AND CAPABILITY UNITS—Continued

Symbol	Soil	Page	Capability unit	Page
MeA	Meridian sandy loam, 0 to 2 percent slopes	77	IIIs–2	14
MeB	Meridian sandy loam, 2 to 6 percent slopes	77	IIIs–2	14
MeB2	Meridian sandy loam, 2 to 6 percent slopes, moderately eroded	77	IIIs–2	14
MeC	Meridian sandy loam, 6 to 12 percent slopes	77	IVe–7	17
MeC2	Meridian sandy loam, 6 to 12 percent slopes, moderately eroded	77	IVe–7	17
Mm	Millsdale silty clay loam, shale variant	78	IIIw–3	15
Mp	Mine pits and dumps	78	VIIs–6	20
Mu	Muscatine silt loam	78	I–1	10
NfB2	Northfield loam, 2 to 6 percent slopes, moderately eroded	79	IIIe–3	14
NfC	Northfield loam, 6 to 12 percent slopes	79	IVe–3	16
NfC2	Northfield loam, 6 to 12 percent slopes, moderately eroded	79	IVe–3	16
NfD	Northfield loam, 12 to 20 percent slopes	79	VIe–3	18
NfD2	Northfield loam, 12 to 20 percent slopes, moderately eroded	79	VIe–3	18
NfE	Northfield loam, 20 to 30 percent slopes	79	VIIe–3	19
NfE2	Northfield loam, 20 to 30 percent slopes, moderately eroded	79	VIIe–3	19
NoC	Northfield sandy loam, 6 to 12 percent slopes	79	IVe–3	16
NoC2	Northfield sandy loam, 6 to 12 percent slopes, moderately eroded	79	IVe–3	16
NoD	Northfield sandy loam, 12 to 20 percent slopes	80	VIe–3	18
NoD2	Northfield sandy loam, 12 to 20 percent slopes, moderaetly eroded	80	VIe–3	18
NoE	Northfield sandy loam, 20 to 30 percent slopes	80	VIIe–3	19
NoE2	Northfield sandy loam, 20 to 30 percent slopes, moderately eroded	80	VIIe–3	19
NsD	Northfield stony loam, 6 to 12 percent slopes	80	VIs–6	19
NsD2	Northfield stony loam, 12 to 20 perennt slopes, moderately eroded	80	VIs–6	19
NsE	Northfield stony loam, 20 to 30 percent slopes	80	VIIs–6	20
NsE2	Northfield stony loam, 20 to 30 percent slopes, moderately eroded	80	VIIs–6	20
NwB2	Norwalk silt loam, 2 to 6 percent slopes, moderately eroded	81	IIe–6	11
NwC2	Norwalk silt loam, deep, 6 to 12 percent slopes, moderately eroded	81	IIIe–6	14
Or	Orion silt loam	81	IIIw–14	16
OsA	Osseo silt loam, 0 to 2 percent slopes	81	IIw–2	12
OsB	Osseo silt loam, 2 to 6 percent slopes	81	IIIw–2	15
Pd	Peat and Muck, deep	82	IIIw–9	15
Pe	Peat and Muck, shallow	82	Vw–7	17
PfB2	Plainfield fine sand, 0 to 6 percent slopes, eroded	82	VIIs–3	20
PgA	Plainfield loamy fine sand, 0 to 2 percent slopes	83	IVs–3	17
PgB	Plainfield loamy fine sand, 2 to 6 percent slopes	83	IVs–3	17
Pm	Plainfield loamy fine sand, mottled substratum variant	83	IVs–3	17
Ps	Plainfield and Sparta fine sands and Dune land	83	VIIs–3	20
RcA	Richwood silt loam, 0 to 2 percent slopes	83	I–1	10
RcB	Richwood silt loam, 2 to 6 percent slopes	83	IIe–1	11
RcB2	Richwood silt loam, 2 to 6 percent slopes, moderately eroded	83	IIe–1	11
RcC	Richwood silt loam, 6 to 12 percent slopes	83	IIIe–1	13
RcC2	Richwood silt loam, 6 to 12 percent slopes, moderately eroded	83	IIIe–1	13
Re	Riverwash	83	VIIs–3	20
Ro	Rowley silt loam	84	IIw–1	12
RzB2	Rozetta silt loam, 2 to 6 percent slopes, moderately eroded	84	IIe–1	11
SoB	Sogn and Dodgeville silt loams, shallow, 2 to 6 percent slopes	85	IVe–3	16
SoB2	Sogn and Dodgeville silt loams, shallow, 2 to 6 percent slopes, moderately eroded	85	IVe–3	16
SoC	Sogn and Dodgeville silt loams, shallow, 6 to 12 percent slopes	85	VIe–3	18
SoC2	Sogn and Dodgeville silt loams, shallow, 6 to 12 percent slopes, moderately eroded	85	VIe–3	18
SoD	Sogn and Dodgeville silt loams, shallow, 12 to 20 percent slopes	85	VIIe–3	19
SoD2	Sogn and Dodgeville silt loams, shallow, 12 to 20 percent slopes, moderately eroded	85	VIIe–3	19
SoE	Sogn and Dodgeville silt loams, shallow, 20 to 30 percent slopes	85	VIIe–3	19
SoE2	Sogn and Dodgeville silt loams, shallow, 20 to 30 percent slopes, moderately eroded	85	VIIe–3	19
SpA	Sparta loamy fine sand, 0 to 2 percent slopes	85	IVs–3	17
SpA2	Sparta loamy fine sand, 0 to 2 percent slopes, eroded	85	IVs–3	17
SpB	Sparta loamy fine sand, 2 to 6 percent slopes	85	IVs–3	17
SpB2	Sparta loamy fine sand, 2 to 6 percent slopes, eroded	85	IVs–3	17
Sr	Sparta loamy fine sand, moderately well drained variant	85	IVs–3	17
Ss	Steep stony and rocky land	85	VIIs–6	20
St	Stony alluvial land	85	VIs–6	19
SuA	Stronghurst silt loam, 0 to 2 percent slopes	86	IIw–2	12
SuB	Stronghurst silt loam, 2 to 6 percent slopes	86	IIIw–2	15
SuB2	Stronghurst silt loam, 2 to 6 percent slopes, moderately eroded	86	IIIw–2	15
TaA	Tama silt loam, 0 to 2 percent slopes	87	I–1	10
TaB	Tama silt loam, 2 to 6 percent slopes	87	IIe–1	11
TaB2	Tama silt loam, 2 to 6 percent slopes, moderately eroded	87	IIe–1	11
TaC2	Tama silt loam, 6 to 12 percent slopes, moderately eroded	87	IIIe–1	13
TeA	Tell silt loam, 0 to 2 percent slopes	87	IIs–1	12
TeB	Tell silt loam, 2 to 6 percent slopes	87	IIe–2	11
TeB2	Tell silt loam, 2 to 6 percent slopes, moderately eroded	87	IIe–2	11
TeC2	Tell silt loam, 6 to 12 percent slopes, moderately eroded	87	IIIe–2	13
Tr	Terrace escarpments, loamy	88	VIe–7	19
Ts	Terrace escarpments, sandy	88	VIIe–7	19
TvA	Toddville silt loam, 0 to 2 percent slopes	88	I–1	10
TvB	Toddville silt loam, 2 to 6 percent slopes	88	IIe–1	11
Wa	Wallkill silt loam	89	IIIw–9	15

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