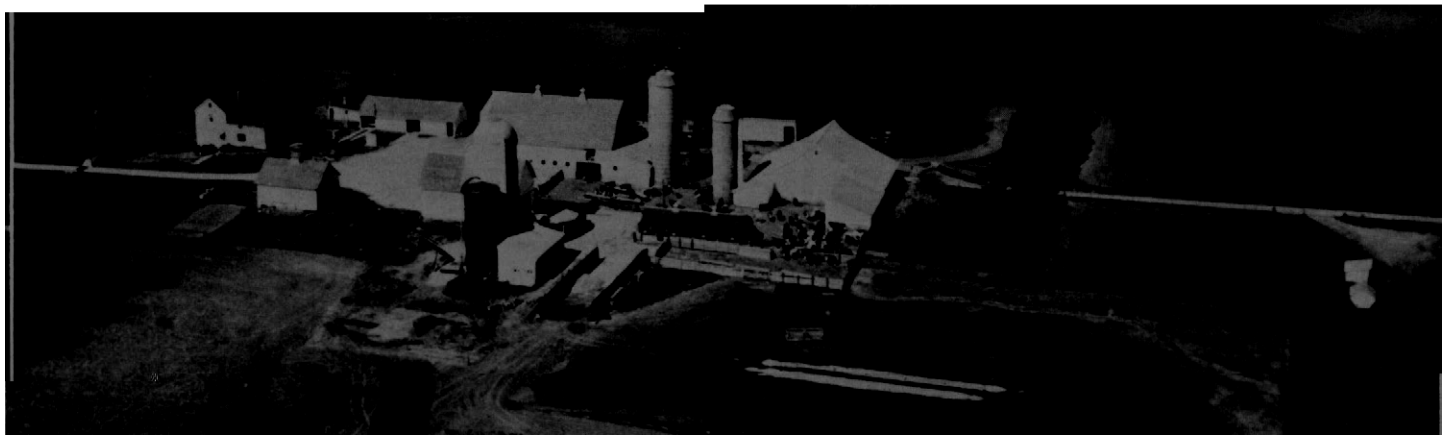
SOIL SURVEY OF

DeKalb County, Illinois



United States Department of Agriculture
Soil Conservation Service
In cooperation with
Illinois Agricultural Experiment Station

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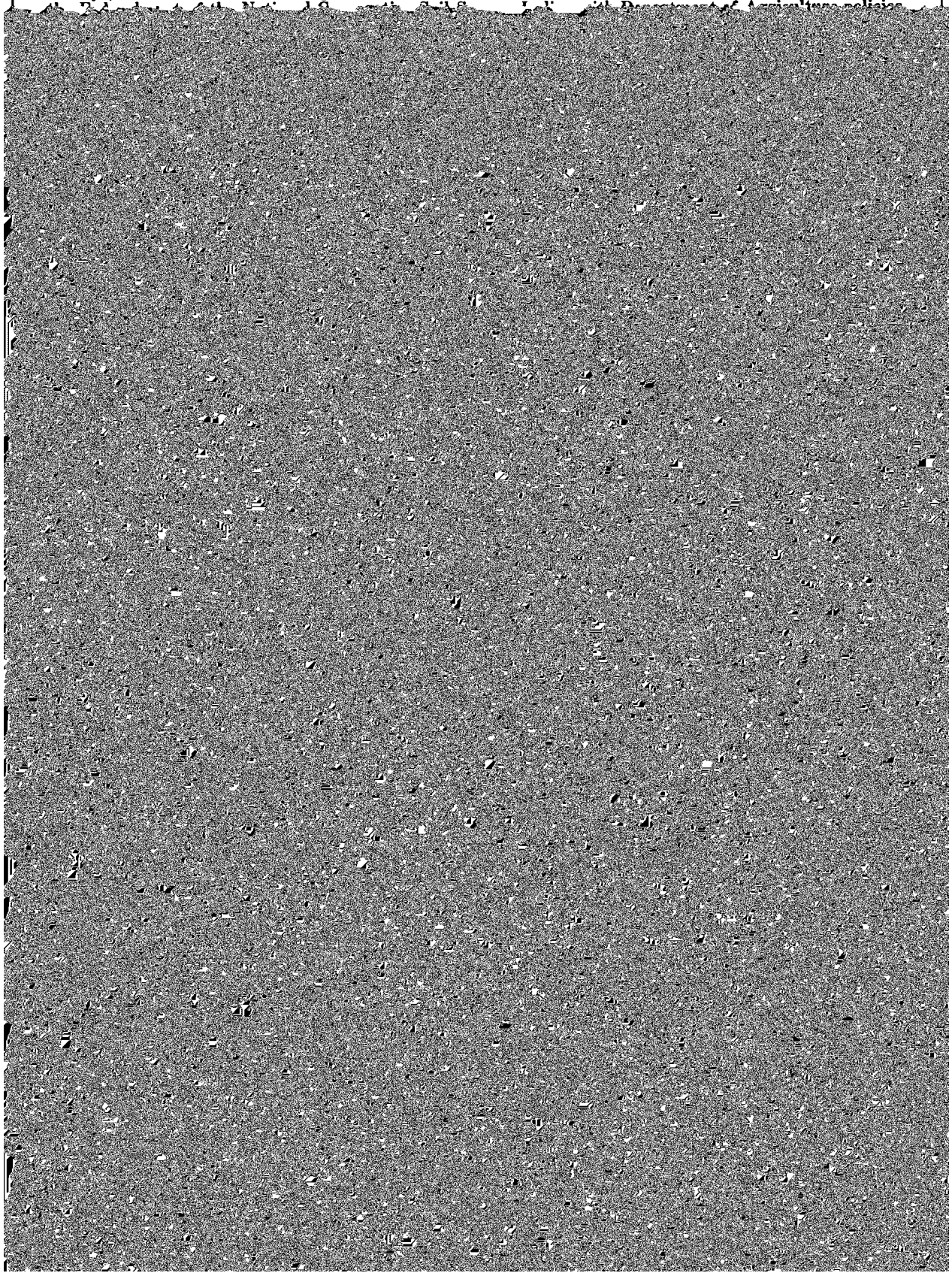

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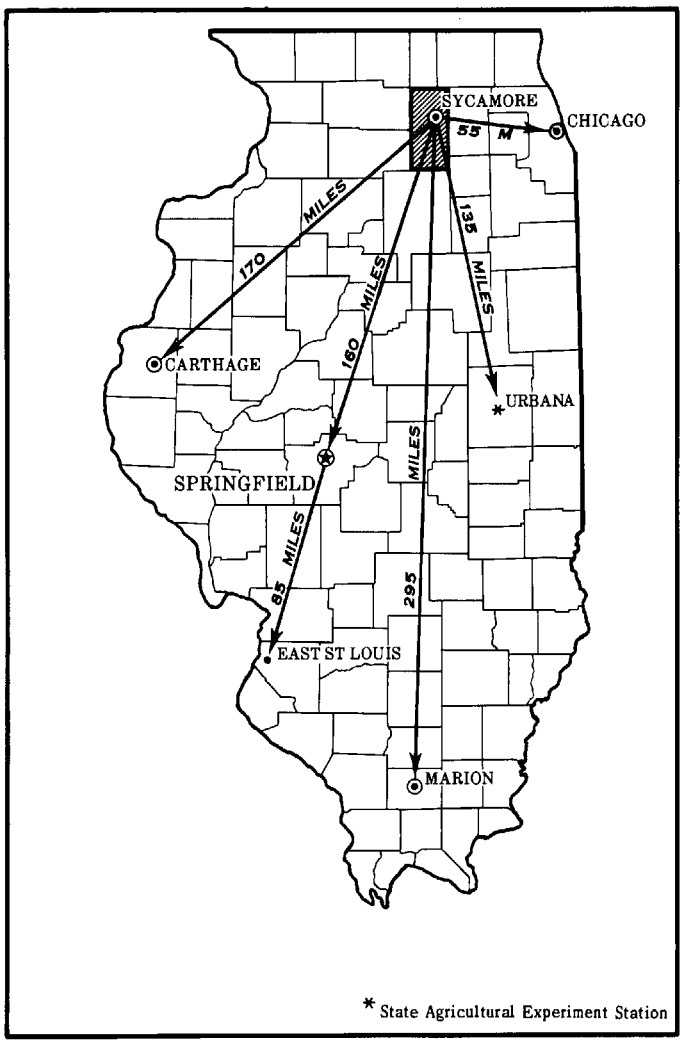


Location of DeKalb County in Illinois.

SOIL SURVEY OF DEKALB COUNTY, ILLINOIS

BY KENNETH C. HINKLEY, SOIL CONSERVATION SERVICE

SOILS SURVEYED BY R. J. HERMAN, K. C. HINKLEY, G. T. KELLER, B. G. STEWART, AND L. C. YOUNG, SOIL CONSERVATION SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH THE ILLINOIS AGRICULTURAL EXPERIMENT STATION

DEKALB COUNTY is in the northeastern part of Illinois. It occupies 636 square miles. Sycamore, the county seat, is northeast of the center of the county.

General Nature of the County

DeKalb County was established in 1835. Since settlement of the county, the population has been increasing to the present time. In 1970, the population of the county was 71,654 and that of DeKalb, the largest community, was about 33,000. DeKalb is the home of Northern Illinois University.

Farming has been the main enterprise in DeKalb County since its settlement. In 1969, according to the U.S. Census of Agriculture, there were 1,344 farms. The average farm was 287 acres. Slightly more than one-fourth of the farms have livestock.

Corn, soybeans, and oats are the main crops. Ac... cu...

miles north of Lee. Elevation in most of the county is between 700 and 950 feet.

Most soils in the county are on uplands, which consist mainly of a glacial till plain covered by loess. The loess varies in thickness, but it is thicker in the western part of the county, especially the southwestern part, than it is in the eastern part. The major bottom-land areas are along Somonauk Creek, Indian Creek, and the Kishwaukee River.

The northern two-thirds of the county is drained by the Kishwaukee River and its tributaries. The water from these streams flows into the Rock River. The southern third of the county is drained by several smaller tributaries that flow southward into the Fox River, which in turn discharges into the Illinois River. The principal source of water is wells.

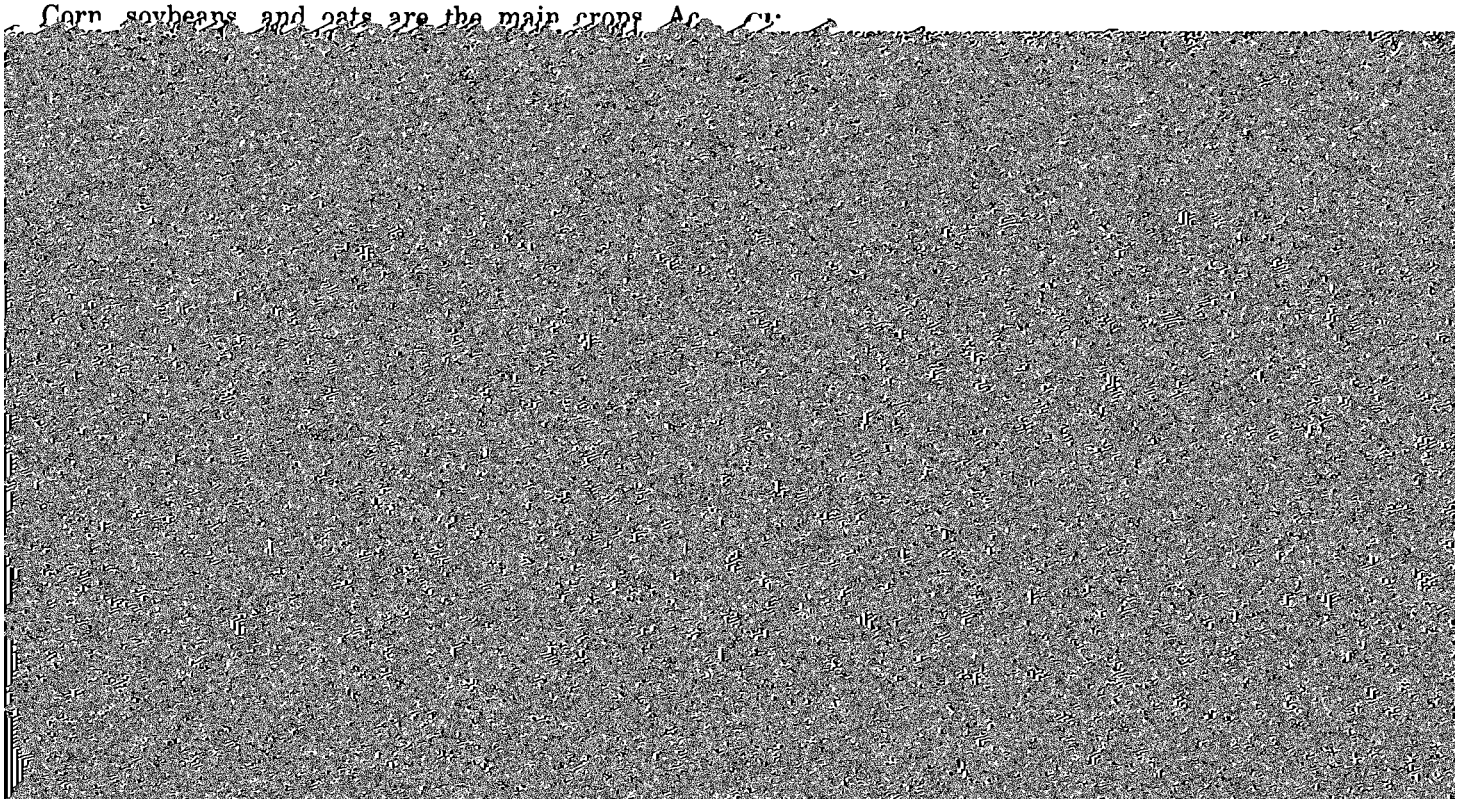


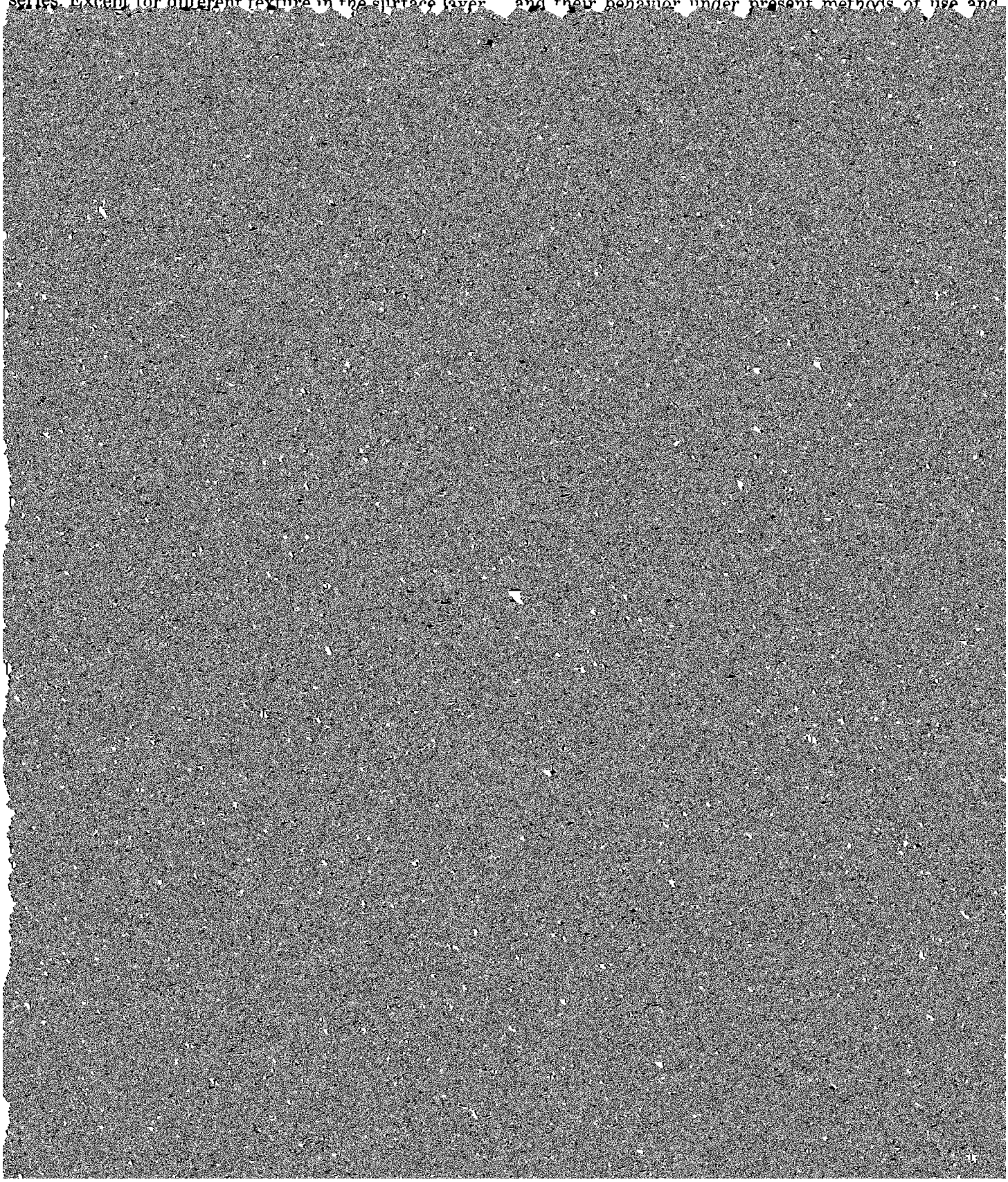
TABLE 1.—*Temperature and precipitation data for DeKalb County, Illinois*

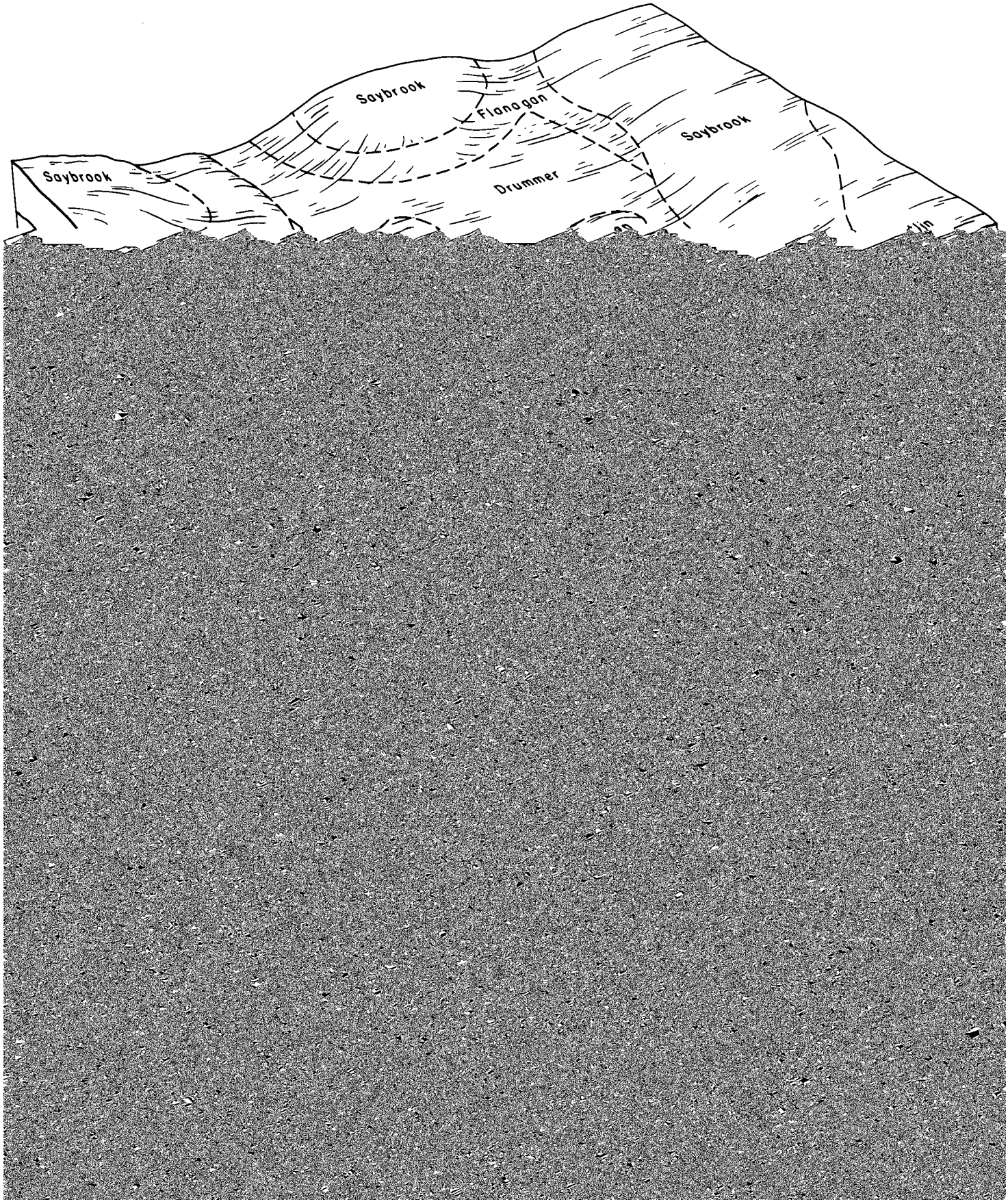
Month	Temperature				Precipitation	
	Average daily	Average daily				Average

critical growing period (*5*). Not all hailstorms have stones of sufficient size or quantity to produce extensive crop damage.

The number of days between the average date of the last freeze (32° F. or below) in spring and the first freeze in fall has been termed the "growing season." This is approximately 157 days in DeKalb

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, finally evolved reflect up-to-date knowledge of the soils and their behavior under present methods of use and




Saybrook
Flanagan
Saybrook
Saybrook
Drummer

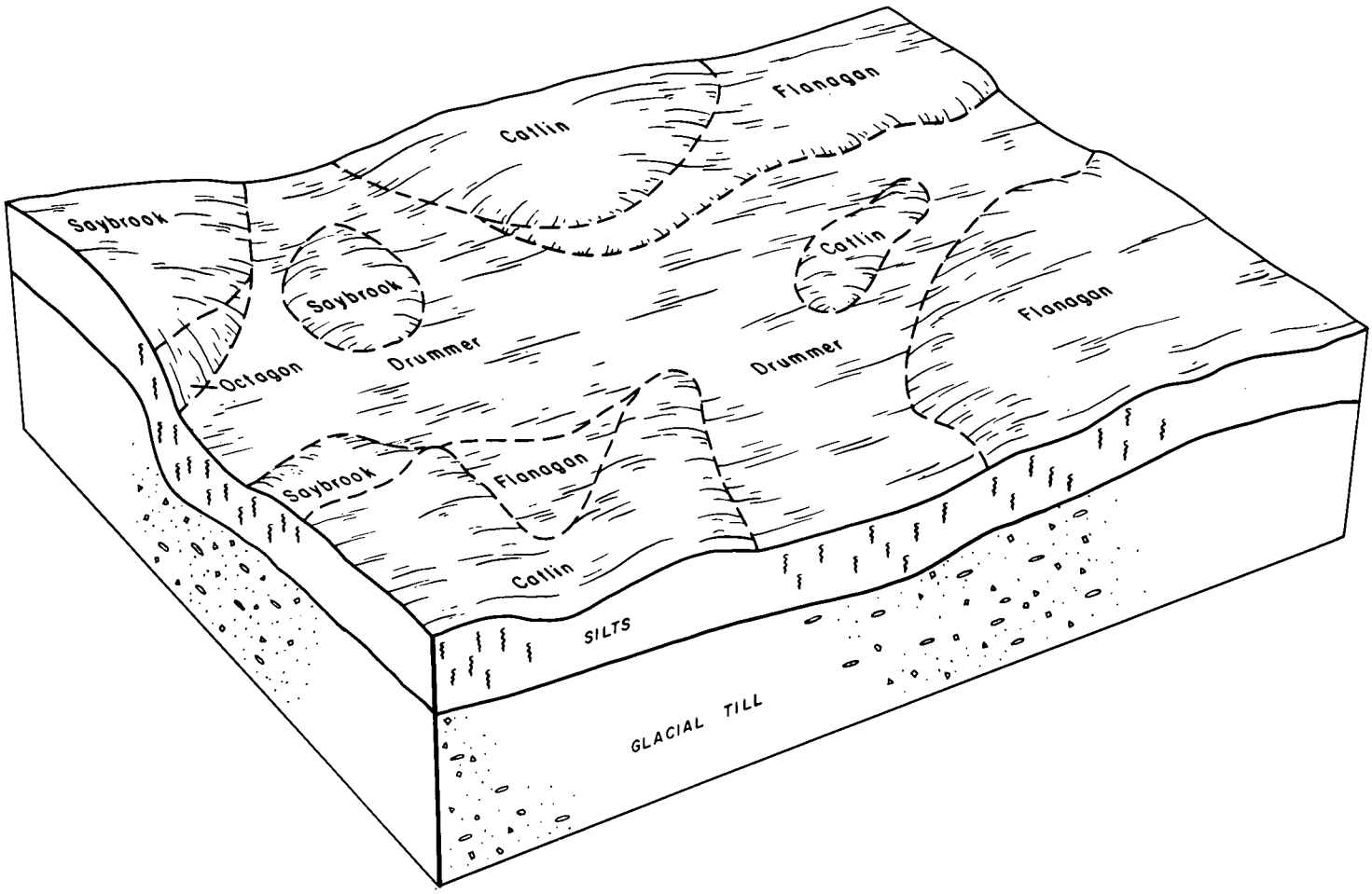


Figure 2.—**Pattern of soils in association 2 and their relationship to parent material.**

This association occupies about 24 percent of the county. It is about 40 percent Drummer soils, 25 percent Flanagan soils, 20 percent Catlin soils, and 15 percent minor soils.

Drummer soils are on large, somewhat flat areas and in drainageways. They are nearly level and poorly drained. The surface layer typically is black silty clay loam about 18 inches thick. The subsoil is olive-gray and gray silty clay loam. The underlying material is stratified silt loam and loam.

Flanagan soils are on the edges of gentle slopes. They are nearly level and somewhat poorly drained. The surface layer typically is black silt loam about 13 inches thick. The subsoil is mostly brown silty clay loam. The underlying material is loam till below a depth of 45 inches.

Catlin soils are on ridges. They are well drained and moderately well drained and gently sloping to sloping. The surface layer typically is very dark brown and dark-brown silt loam about 11 inches thick. The subsoil is mostly dark yellowish-brown silty clay loam. The underlying material is loam till below a depth of 65 inches.

Minor soils in this association are Saybrook and Octagon soils that are near the more sloping Catlin soils. The Saybrook and Octagon soils generally occur along small streams.

The soils in this association are well suited to all cultivated crops commonly grown in the county. All the soils have high available water capacity. The Drummer, Flanagan, Catlin, and Saybrook soils are high in organic-matter content, and the Octagon soil is medium in organic-matter content. The main concerns in managing these soils are controlling water erosion in the sloping areas, improving drainage, and maintaining tilth and fertility.

Nearly all of this association is used for cultivated crops. All the soils have a potential for farming enterprises.

3. *Drummer-Elburn-Batavia association*

Poorly drained to well-drained, nearly level to sloping soils that formed in silty material and the underlying outwash, stratified water deposited silts, or water-worked loam drift; on uplands

This soil association (fig. 3) consists of broad, nearly level and gently sloping or water-worked drift areas. The areas are mainly nearly level, but some of them are gently sloping and generally long. Differences in elevation are commonly less than 5 feet. Also in the association, in the vicinity of DeKalb and Malta, is an area of circular to elliptical, raised, flat-topped mounds. The mounds rise 5 to 15 feet above the adjacent gently

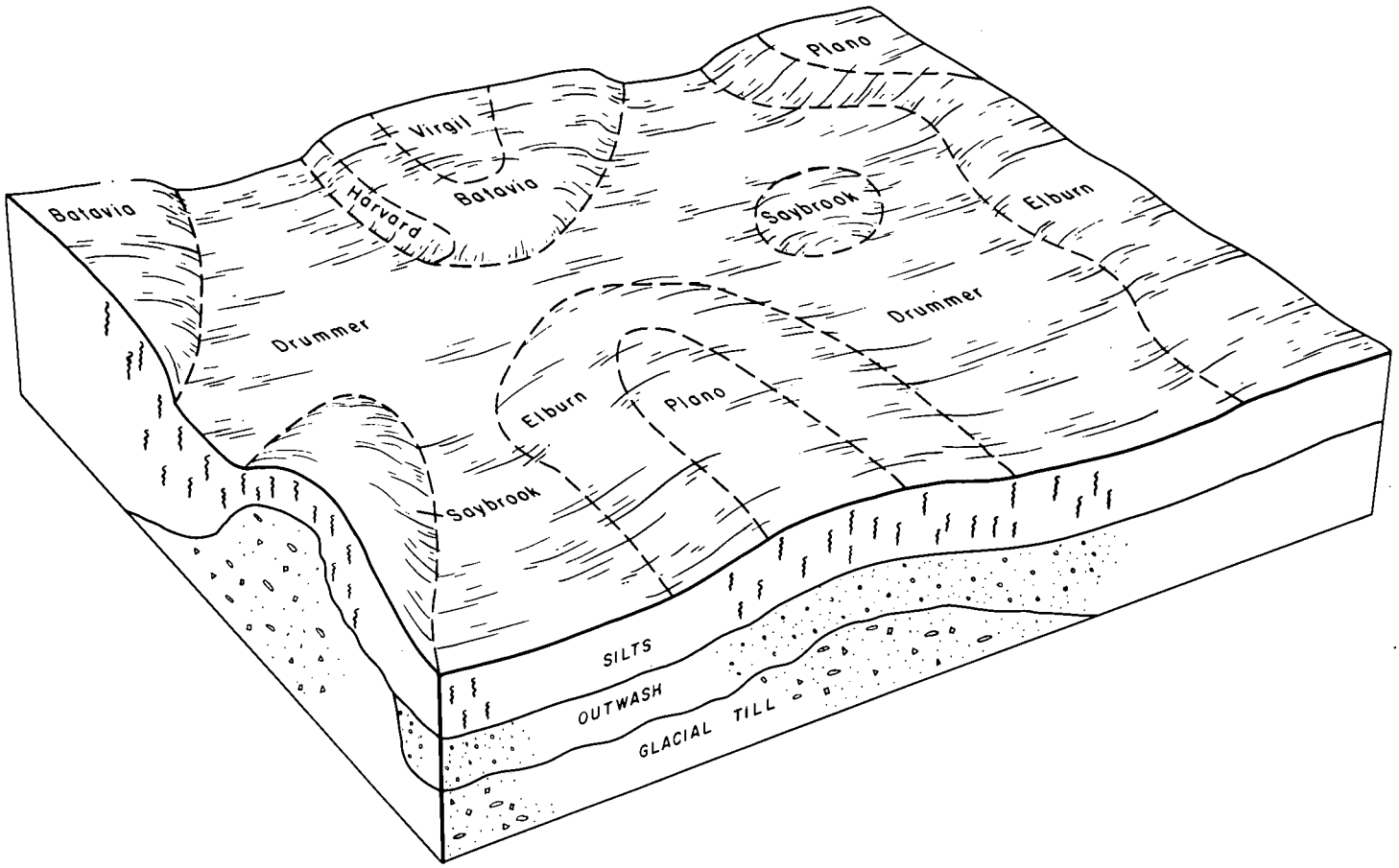


Figure 3.—**Pattern of soils in association 3 and their relationship to parent material.**

rolling areas and are commonly surrounded by low, poorly drained soils.

This association occupies about 15 percent of the county. It is about 40 percent Drummer soils, 20 percent Elburn soils, 15 percent Batavia soils, and 25 percent minor soils.

Drummer soils are nearly level and poorly drained. The surface layer typically is black silty clay loam about 18 inches thick. The subsoil is olive-gray silty clay loam. The underlying material is stratified silt loam and sandy clay loam.

Elburn soils are nearly level and somewhat poorly drained. The surface layer typically is very dark brown and very dark grayish-brown silt loam and light silty clay loam. The subsoil is dark grayish-brown and yellowish-brown silty clay loam. The underlying material is stratified loam and silt loam.

Batavia soils are on circular or elliptical mounds. They are nearly level on the tops of the mounds and gently sloping to sloping on the edges. They are well drained and moderately well drained. The surface layer typically is very dark gray silt loam about 10 inches thick. The subsoil is brown silty clay loam. The underlying material is stratified loam.

Minor soils in this association are the Plano, Virgil, Saybrook, and Harvard soils. The well drained and moderately well drained Plano soils are nearly level to gently sloping and occupy higher positions in the landscape. Nearly level, somewhat poorly drained Virgil soils are on the tops of some mounds. A few small knobs are occupied by the well drained and moderately well drained Saybrook soils. The well drained and moderately well drained Harvard soils commonly are on the more sloping rims or edges of mounds.

The soils in this association are well suited to all crops in the county. All the soils have high available water capacity. The Drummer and Elburn soils are high in organic-matter content. The Harvard soils are medium in organic-matter content. Improving drainage and maintaining tilth and fertility are the main concerns in managing the Drummer and Elburn soils. Controlling water erosion is the main concern of management on the Harvard soils.

Most of this association is used for cultivated crops. All but the more sloping soils have a high potential for farming enterprises.

4. *Sawmill-Camden-Harvard association*

Poorly drained, nearly level soils that formed in clay loam and silty clay loam alluvium on bottom lands and well drained and moderately well drained, sloping to nearly level soils that formed in silty material and the underlying outwash material; on terraces and uplands

Most of this association (fig. 4) is along the major streams and rivers. The association consists of nearly level Sawmill soils that border the streams and that commonly are between areas of the well-drained Camden and Harvard soils. Much of the area adjacent

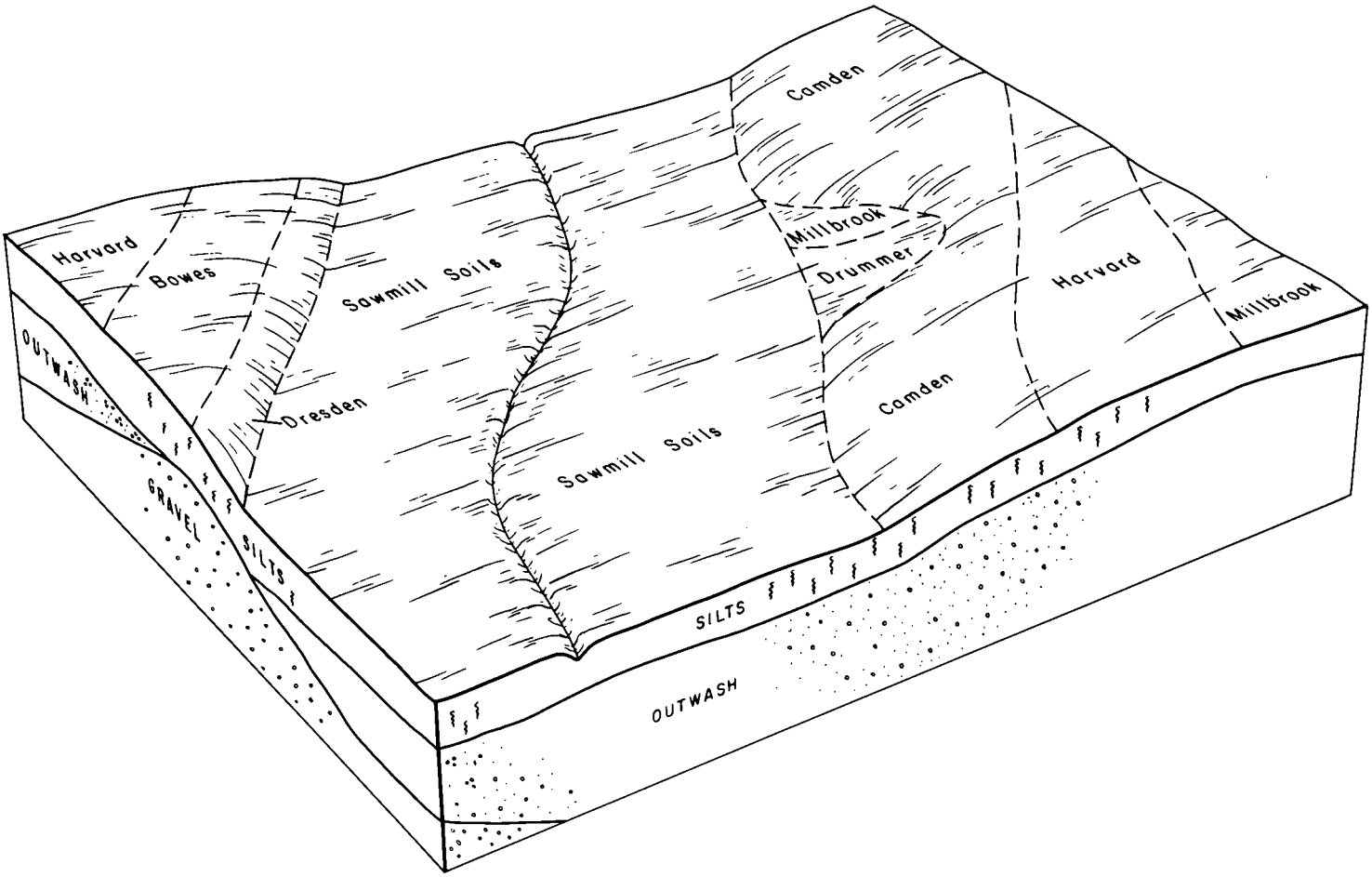


Figure 4.—**Pattern of soils in association 4 and their relationship to parent material.**

to the Sawmill soils is nearly level to gently sloping, but some areas are steeper and generally have short slopes. Some gravel pits occur throughout the association.

This association occupies about 7 percent of the county. It is about 45 percent Sawmill soils, 25 percent Camden soils, 15 percent Harvard soils, and 15 percent minor soils.

Sawmill soils are nearly level and poorly drained. They are low lying and subject to flooding. The surface layer typically is black silty clay loam about 31 inches thick. The subsoil is very dark gray and dark-gray silty clay loam. The underlying material is clay loam that has strata of sand and gravel.

Camden soils are nearly level to sloping and well drained and moderately well drained. The surface layer typically is very dark grayish-brown silt loam about 5 inches thick. The subsurface layer is dark grayish-brown silt loam. The subsoil is brown and dark-brown silty clay loam and clay loam. The underlying material is stratified sandy loam and silt loam.

Harvard soils are nearly level to sloping and well drained and moderately well drained. The surface layer typically is black silt loam about 12 inches thick. The subsoil is dark yellowish-brown silty clay loam and clay loam. The underlying material is loam.

Minor soils in this association are the Millbrook, St. Charles, Kendall, Drummer, Dresden, Bowes, and Rush soils. The somewhat poorly drained Millbrook soils occupy the upper end of drainageways or are on nearly level uplands. The well drained and moderately well drained St. Charles soils and the somewhat poorly drained Kendall soils are associated, and they occur mostly along Somonauk Creek in Sandwich Township. The poorly drained Drummer soils occupy the lower end of natural drainageways and small depressions. The well-drained Dresden, Bowes, and Rush soils occupy areas that are underlain by sand and gravel and occur mostly in the northern part of the county.

The soils of this association are suited to all cultivated crops commonly grown in the county. The Sawmill soils are high in organic-matter content and have high available water capacity. The Harvard soils have high available water capacity and are moderate in organic-matter content. The Camden soils have high available water capacity and are low in organic-matter content. The main concerns in managing these soils are improving drainage on the poorly drained and somewhat poorly drained soils, protecting soils on bottom lands from flooding, controlling water erosion on the sloping soils, and maintaining tilth and fertility.

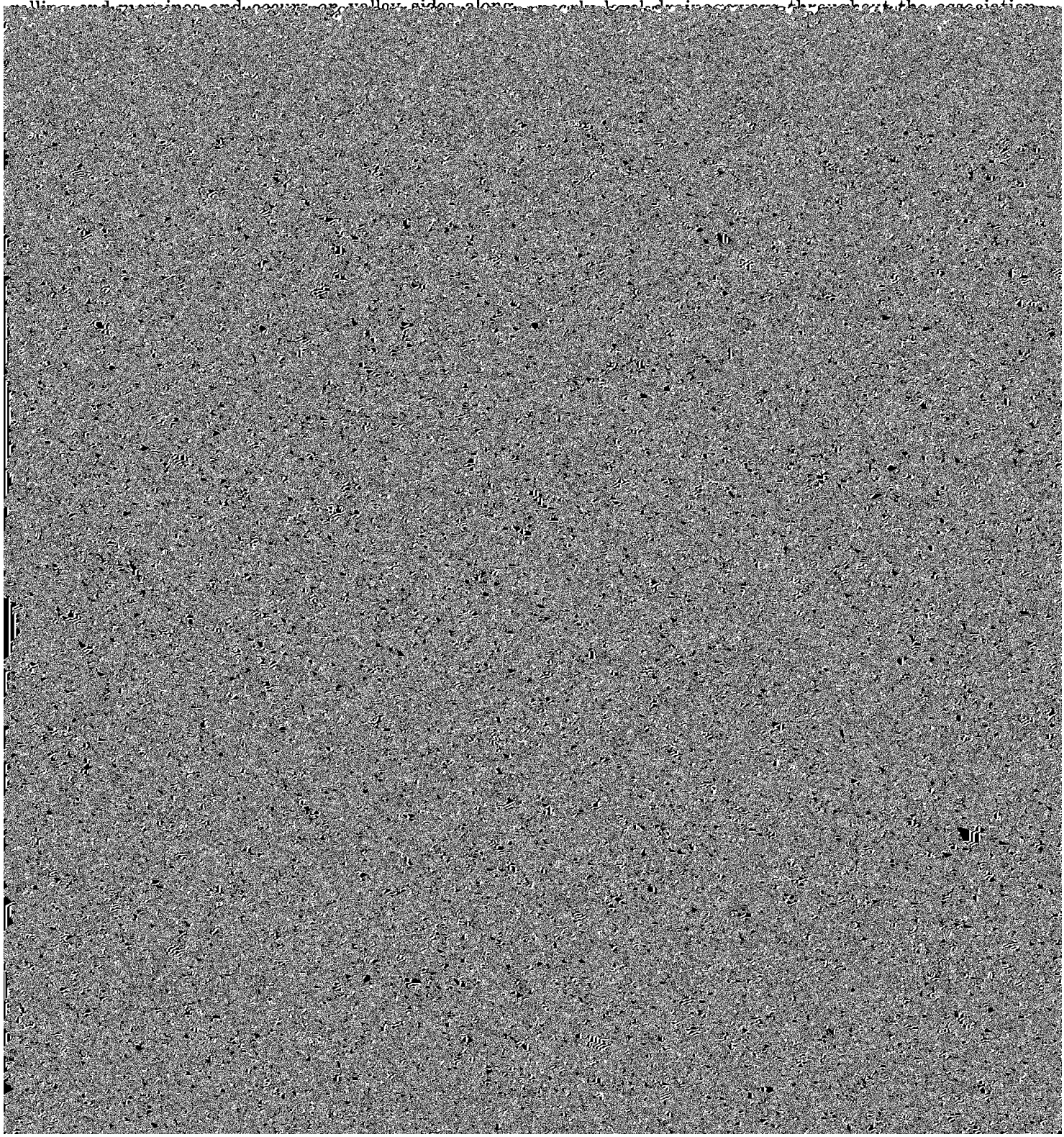
Most of this association is used for cultivated crops, although some areas are used for pasture and some remain in native woods. Most of the gravel pits in the county occur in this association.

5. *Dodge-Miami association*

Well drained and moderately well drained, nearly level to strongly sloping soils that formed in silty material and the underlying loam glacial till; on uplands

This soil association (fig. 5) occupies parts of the [illegible] is loam till below a depth of 31 inches.

Minor soils in this association are the Herbert and Drummer soils. Small areas of the somewhat poorly drained Herbert soils occur along the edges of areas of Dodge and Miami soils and as slight rises in the poorly drained areas. Drummer soils occur in lower lying, [illegible]



slopes are along some drainageways.

This association occupies less than 1 percent of the county. It is about 50 percent Muscatine soils, 25 percent Sable soils, 20 percent Catlin soils, and 5 percent minor soils.

Muscatine soils are nearly level and somewhat poorly drained. The surface layer typically is black silt loam about 14 inches thick. The subsoil is dark grayish-brown silty clay loam. The underlying material is silt loam.

Sable soils are nearly level and poorly drained. The surface layer typically is black and very dark gray silty clay loam about 17 inches thick. The subsoil is olive-gray silty clay loam. The underlying material is silt loam.

The Catlin soils, which occupy both the gently sloping rises and associated steeper areas, are well drained and moderately well drained and gently sloping to sloping. The surface layer typically is very dark brown and dark-brown silt loam. The subsoil is dark yellowish-brown to yellowish-brown silty clay loam and dark yellowish-brown clay loam. The underlying material is loam till below a depth of 65 inches.

Minor soils in this association are the Harpster and Drummer soils. The poorly drained Harpster soils occupy the rims of slight depressions that are within areas of Sable soils. The poorly drained Drummer soils occupy the lower lying drainageways along streams.

The soils of this association are well suited to all cultivated crops commonly grown in the county. All the soils have high available water capacity and high organic-matter content. The main concerns in managing these soils are controlling water erosion in the sloping areas, improving drainage, and maintaining tilth and fertility.

Nearly all of this association is used for cultivated crops. It has a high potential for farming enterprises.

Descriptions of the Soils

This section describes the soil series and mapping units in DeKalb County. Each soil series is described in considerable detail, and then, briefly, each mapping unit in that series is described. Unless it is specifically mentioned otherwise, it is to be assumed that what is stated about the soil series holds true for the mapping units in that series. Thus, to get full information about any one mapping unit, it is necessary to read both the description of the mapping unit and the description of the soil series to which it belongs.

An important part of the description of each soil

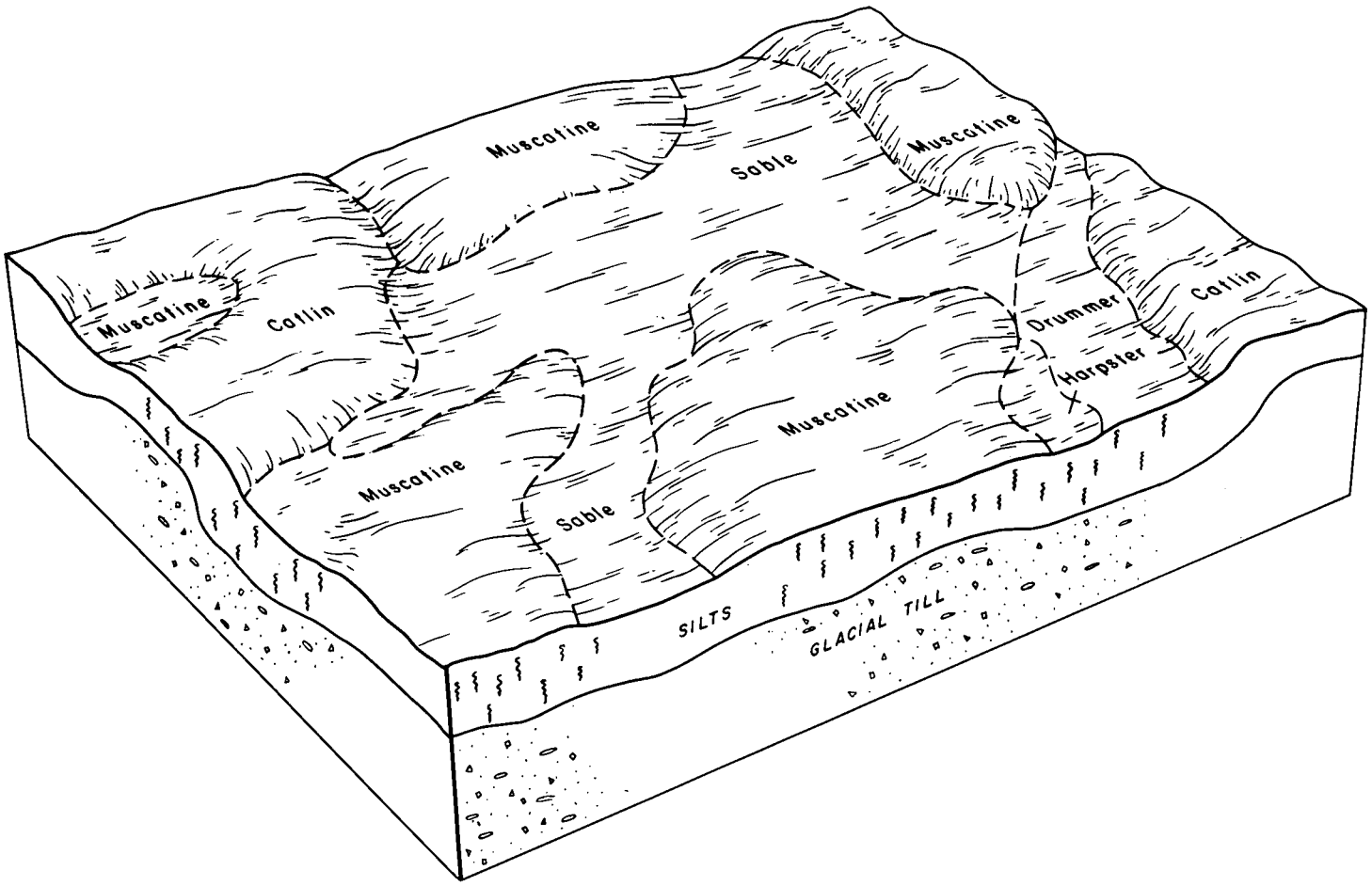


Figure 6.—**Pattern of soils in association 6 and their relationship to parent material.**

series is the soil profile, that is, the sequence of layers from the surface downward to rock or other underlying material. Each series contains two descriptions of this profile. The first is brief and in terms familiar to the layman. The second, detailed and in technical terms, is for scientists, engineers, and others who need to make thorough and precise studies of soils. Unless it is otherwise stated, the colors given in the descriptions are those of a dry soil.

As mentioned in the section "How This Survey Was Made," not all mapping units are members of a soil series. Cut and fill land, for example, does not belong to a soil series, but it is listed in alphabetic order along with the soil series.

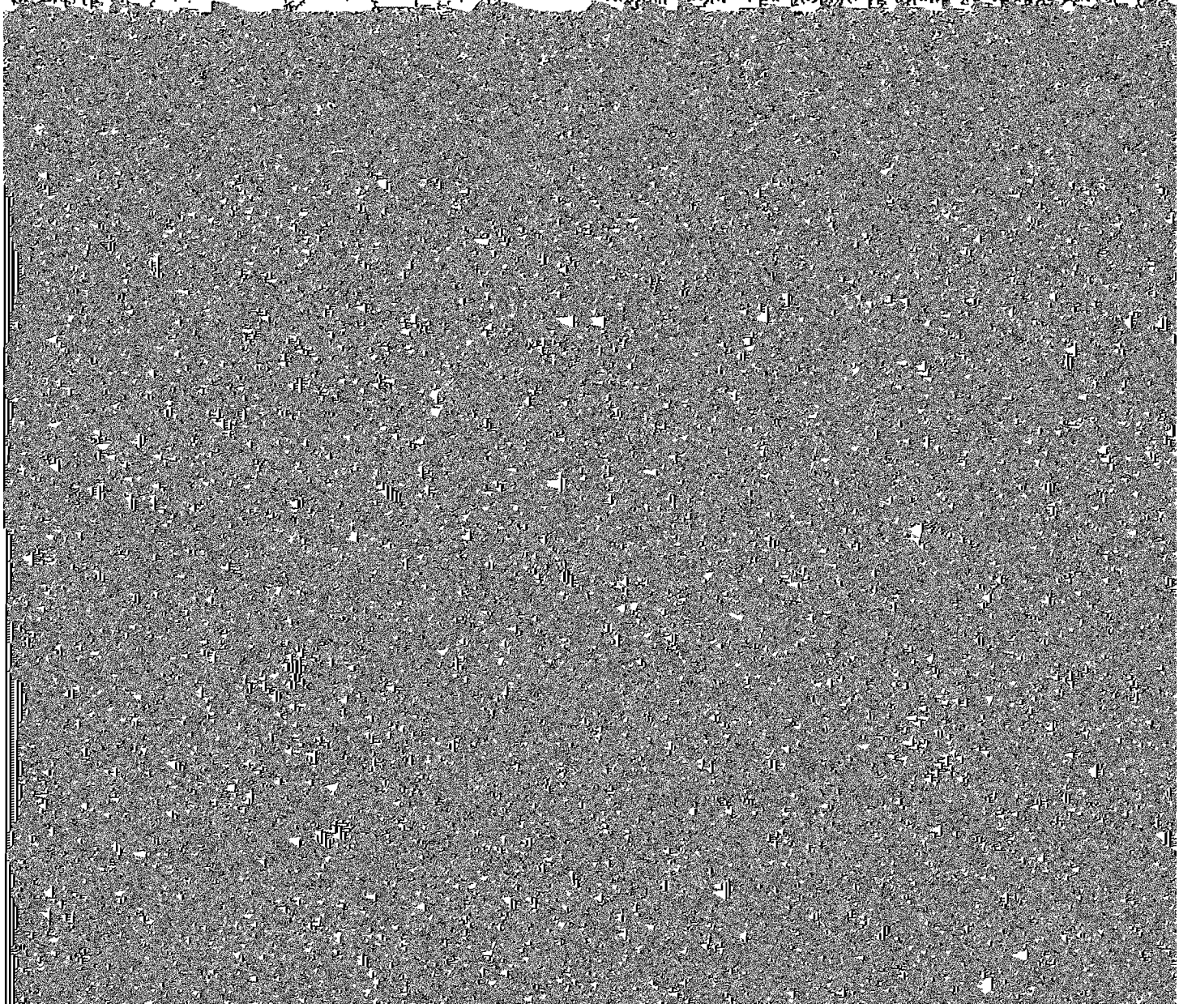
Following the name of each mapping unit is a symbol in parentheses. This symbol identifies the mapping unit on the detailed soil map. Listed at the end of each description of a mapping unit is the management group in which the [illegible] is placed. The

The acreage and proportionate extent of each mapping unit are shown in table 3. Many of the terms used in describing soils can be found in the Glossary at the back of this survey, and more detailed information about the terminology and methods of soil mapping can be obtained from the Soil Survey Manual (*7*).

Batavia Series

The Batavia series consists of deep, nearly level to sloping soils that are well drained and moderately well drained. These soils are in broad outwash areas or on unique circular, raised, flat-topped mounds. They formed in loess and in the underlying stratified fine sand and silt loam.

In a representative profile the surface layer is very dark gray silt loam about 8 inches thick. The subsurface layer is dark grayish-brown silt loam about 2 inches thick. The subsoil is about 45 inches thick. The



and the soils remain stable with changes in moisture content. The water table is more than 5 feet below the surface.

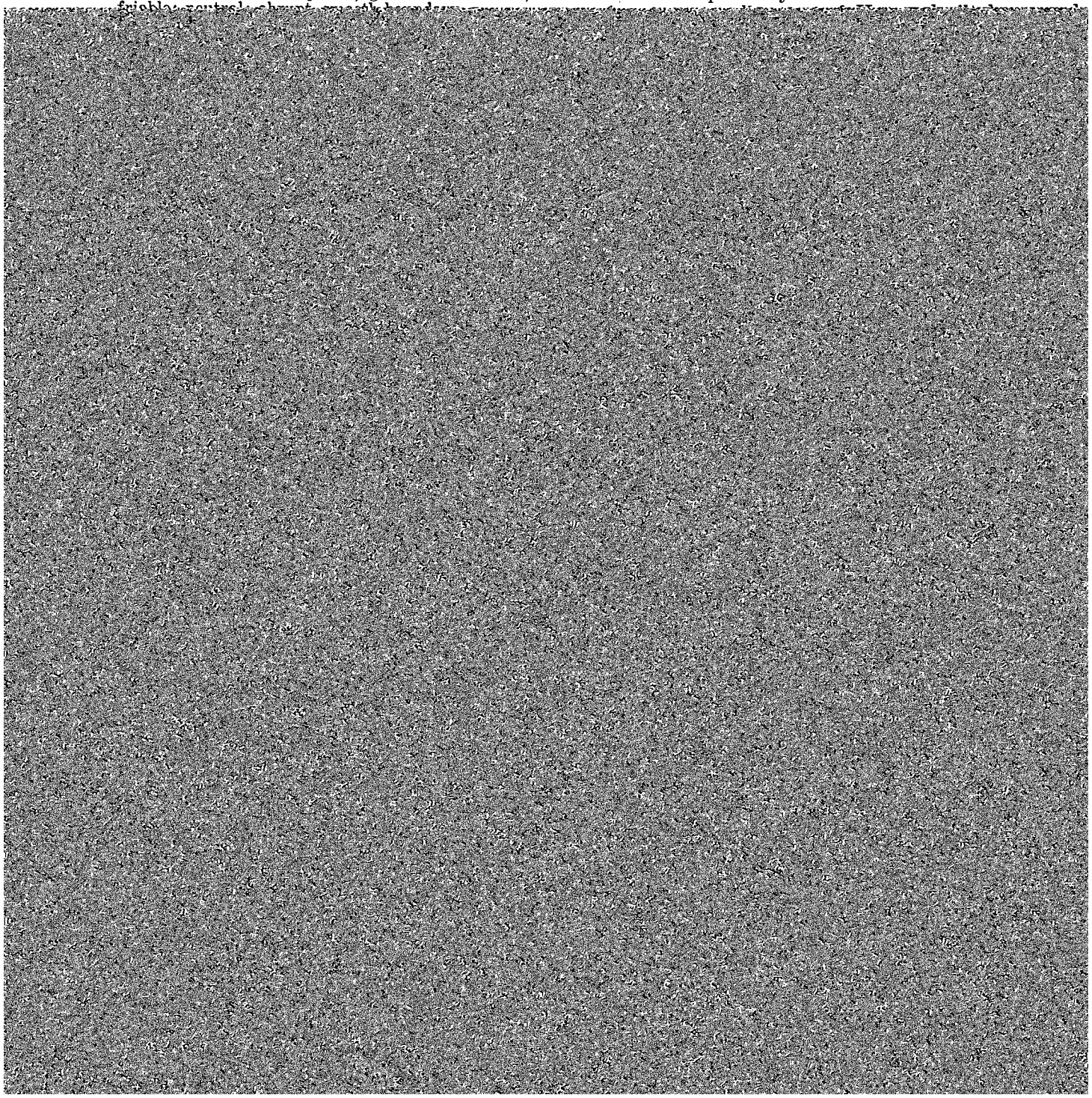
These soils are well suited to intensive use for row crops, and they have few limitations for other uses.

Representative profile of Batavia silt loam, 2 to 4 percent slopes, 660 feet north and 156 feet east of the SW. corner of NW¼ sec. 26, T. 40 N., R. 3 E.

Ap—0 to 8 inches, very dark gray (10YR 3/1) silt loam; moderate, fine and very fine, granular structure; friable, neutral, abrupt, fine [illegible]

This soil is intensively farmed and is well suited to row crops. Control of erosion is a necessary part of good management. This soil has few limitations for most other uses. Management group IIe–2.

Batavia silt loam, 4 to 7 percent slopes, eroded (105C2).—This soil is on rims and edges of raised circular mounds. It has a profile similar to the one described as representative of the series, but some of the brown to dark-brown, finer textured subsoil has been mixed into the plow layer. Included with this soil in



dark-brown (10YR 3/3) clay films; medium acid; clear, smooth boundary.

B24t—30 to 37 inches, brown to dark-brown (10YR 4/3) silty clay loam; weak, medium, subangular blocky structure; friable; slightly acid; clear, smooth boundary.

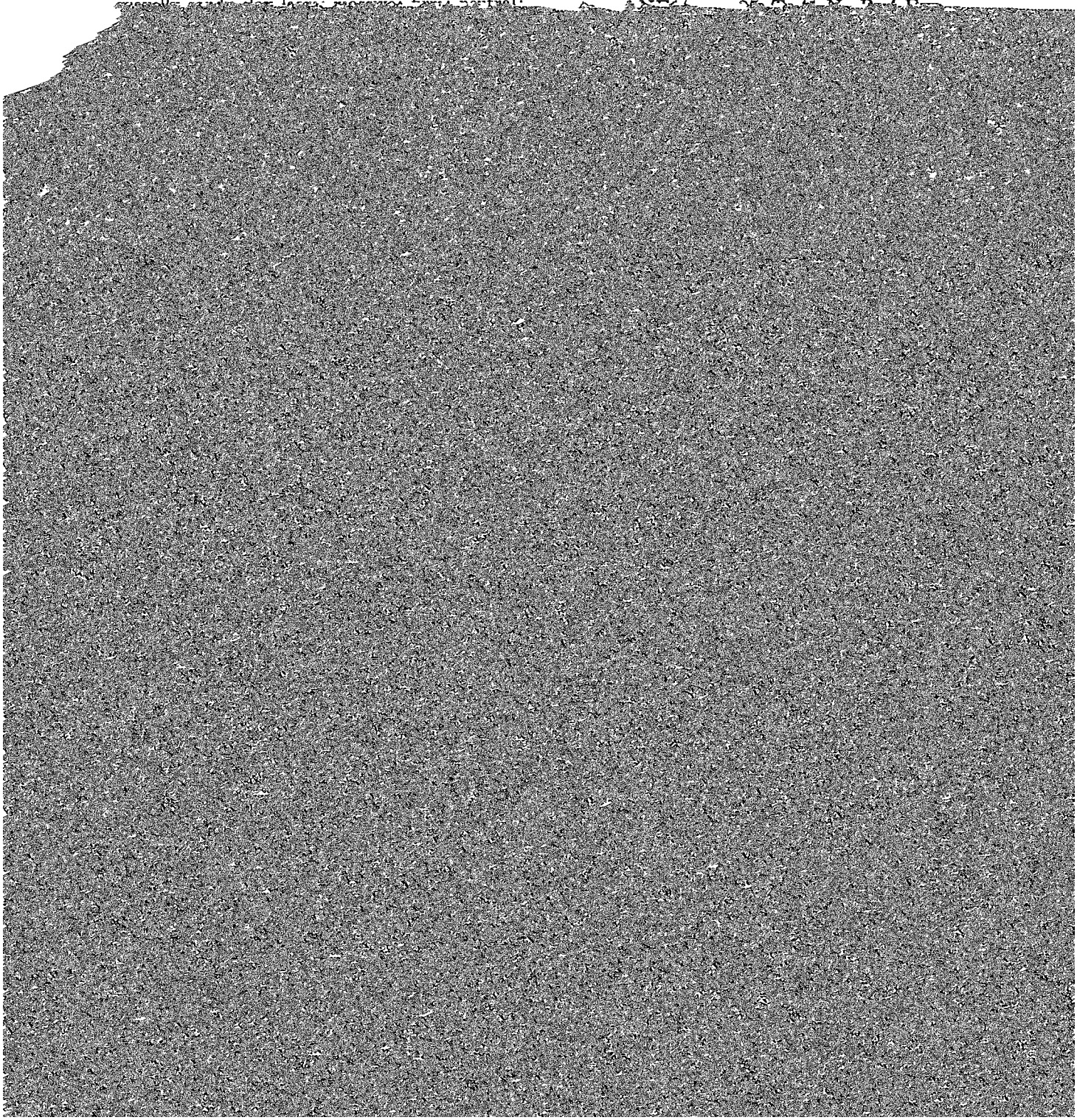
IIB31t—37 to 40 inches, brown to dark-brown (7.5YR 4/4) loam; weak, coarse, subangular blocky structure; firm; slightly acid; abrupt, smooth boundary.

IIB32t—40 to 47 inches, dark reddish-brown (5YR 3/4)

available water capacity. Internal drainage is medium, and the soils remain stable with changes in moisture content. The water table is generally more than 5 feet below the surface.

These soils are well suited to row crops, and they have few limitations for most uses.

Representative profile of Camden silt loam, 0 to 2 percent slopes, 220 feet east and 260 feet south of the



representative of the series, but the surface layer is thinner and lighter in color.

Included with this soil in mapping were small areas where the silty material is thicker than 40 inches and where the finer textured subsoil is mixed into the plow layer. Also included were small areas where sand or gravel is below a depth of 5 feet.

Surface runoff is medium, and the hazard of erosion is moderate.

This soil is intensively farmed and is well suited to row crops. Control of erosion is a necessary part of good management. This soil has few limitations for most other uses. Management group IIe-1.

Catlin Series

The Catlin series consists of deep, nearly level to sloping soils that are well drained and moderately well drained. These soils are in higher positions on the landscape on uplands. They formed in loess and in the underlying loam glacial till.

In a representative profile the surface layer is very friable; some brown to dark-brown (7.5YR 4/2) clay films; mildly alkaline; abrupt, smooth boundary.

IIC—65 to 70 inches, light yellowish-brown (10YR 6/4) loam till; massive; friable; moderately alkaline.

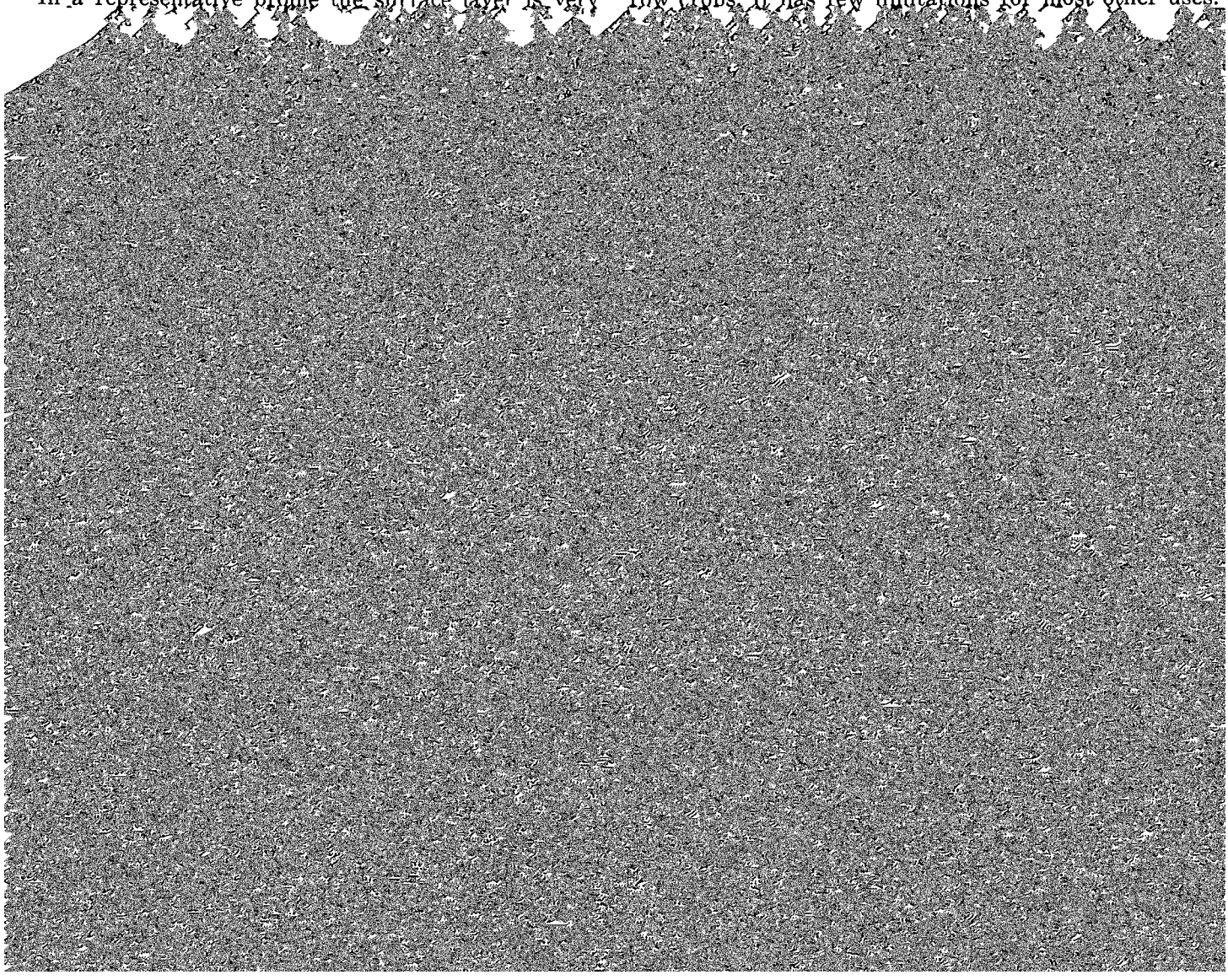
The A horizon ranges from 9 to 14 inches in thickness. The B horizon ranges from 30 to 55 inches in thickness. The IIB horizon is 10 to 25 inches thick. The B and IIB horizons range from medium acid to mildly alkaline.

Catlin soils are associated with Flanagan and Saybrook soils. They are better drained than Flanagan soils and have a thicker mantle of loess than Saybrook soils.

Catlin silt loam, 0 to 2 percent slopes (171A).—This soil is on uplands. Included with it in mapping were areas where the surface layer is less than 10 inches thick and small areas of somewhat poorly drained soils. Also included were areas where a layer of stratified sand and silt is between the loess and the underlying glacial till and small areas where more than 5 feet of loess is over the till.

Surface runoff is slow, and the hazard of erosion is slight.

This soil is intentsively farmed and is well suited to row crops. It has few limitations for most other uses.



low areas that have been covered with 1 to several feet of soil material. In many places the cuts and fills have been made during land leveling. Areas of this land are shown on the detailed soil map by an appropriate symbol.

The soil material is generally low in fertility and organic-matter content. Calcareous, compact glacial till is exposed in most places. This till, either in place or as fill material, supports little vegetation, and establishing a plant cover is difficult. Topdressing, special fertility practices, and other special management practices are necessary. Not placed in a management group.

Dodge Series

The Dodge series consists of deep, nearly level to sloping, well drained and moderately well drained soils. These soils are on uplands near the major streams. They formed in loess and in the underlying loam glacial till.

In a representative profile the surface layer is brown to dark-brown silt loam about 6 inches thick. The subsurface layer is dark grayish-brown silt loam about 3 inches thick. The subsoil is about 22 inches thick. The upper 16 inches of the subsoil is dark yellowish-brown, yellowish-brown, and pale-brown silty clay loam. The lower 6 inches is brown to dark-brown clay loam. The underlying material is brown to dark-brown loam.

These soils are moderately permeable and have high available water capacity. Internal drainage is medium, and the soils remain stable with changes in moisture content. The water table is generally more than 5 feet below the surface.

These soils are well suited to row crops, and they have moderate limitations for some other uses.

Representative profile of Dodge silt loam, 2 to 4 percent slopes, 40 feet south and 150 feet east of the NE. corner of SE¼SW¼ sec. 18, T. 41 N., R. 5 E.

Ap—0 to 6 inches, brown to dark-brown (10YR 4/3) silt loam; weak, fine, granular structure; very friable; neutral; abrupt, smooth boundary.

A2—6 to 9 inches, dark grayish-brown (10YR 4/2) silt [illegible]

The A horizon ranges from 7 to 12 inches in thickness. In many places the A2 horizon has been mixed into the plow layer. The B horizon is 15 to 30 inches thick and is strongly acid to neutral. The IIB horizon ranges from 4 to 10 inches in thickness. In some places mottles are in the lower part of the B horizon.

Dodge soils are associated with Octagon and Miami soils. They have a lighter colored A horizon than Octagon soils and a thicker mantle of loess than Octagon and Miami soils.

Dodge silt loam, 0 to 2 percent slopes (24A).—This soil is on uplands above the gently sloping Dodge soils. Included with this soil in mapping were small areas of somewhat poorly drained soils and some areas where the silty material is more than 40 inches thick.

Surface runoff is slow, and the hazard of erosion is slight.

Most areas of this soil are intensively farmed and are well suited to row crops, but some areas remain in native woods. This soil has moderate limitations for some other uses. Management group I-1.

Dodge silt loam, 2 to 4 percent slopes (24B).—This soil is on uplands along the major streams and is generally associated with Miami soils. It has the profile described as representative of the series. Included with this soil in mapping were some areas where the silty material is more than 40 inches thick.

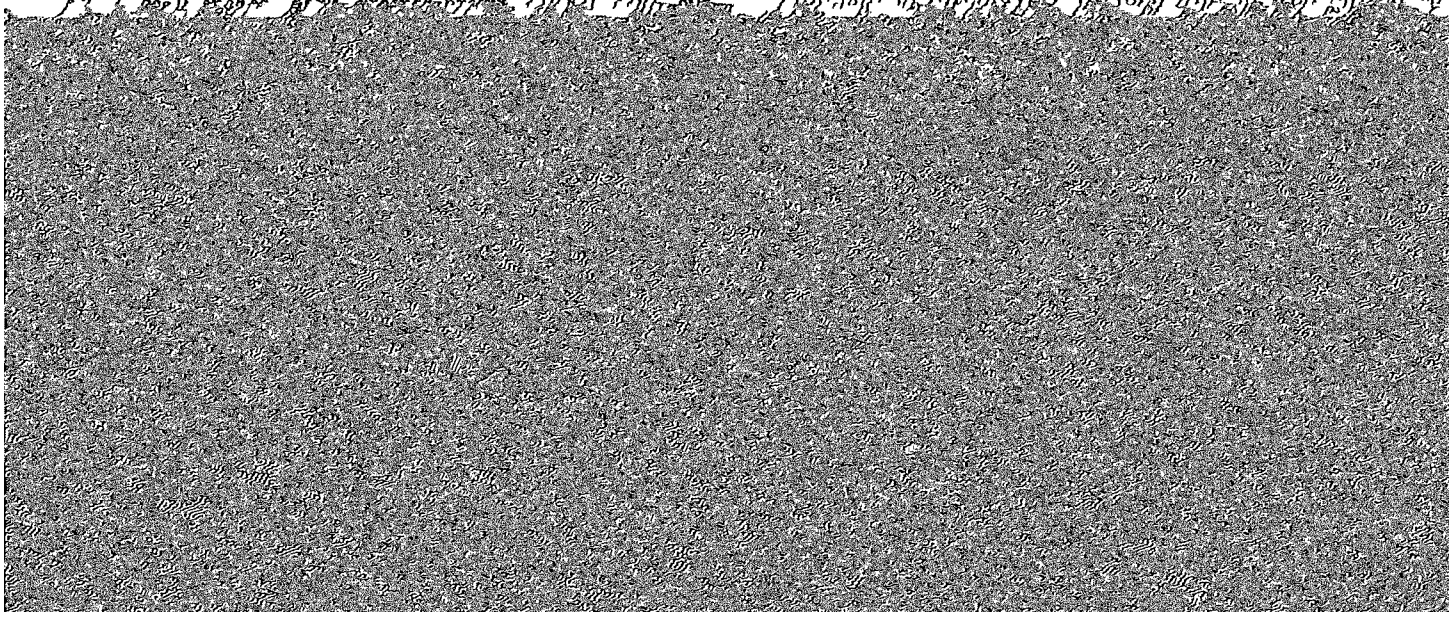
Surface runoff is medium, and the hazard of erosion is moderate.

This soil is intensively farmed and is well suited to row crops, but some areas remain in native woods. This soil has moderate limitations for some other uses. Management group IIe-1.

Dodge silt loam, 4 to 7 percent slopes, eroded (24C2).—This soil is on uplands near the other Dodge soils. It has a profile similar to the one described as representative of the series, but the dark yellowish-brown, finer textured subsoil has been mixed into the plow layer. Included with this soil in mapping were small areas of Miami soils and some areas where none of the subsoil has been mixed into the surface layer.

Surface runoff is rapid, and the hazard of erosion is moderate.

This soil is intensively farmed and is well suited to [illegible]



is rapid, and the soils remain stable with changes in moisture content. The water table is more than 5 feet below the surface.

These soils are suited to row crops. They have few limitations for most other uses. Because of the shallowness to sand and gravel, pollution is a risk for some uses.

Representative profile of Dresden silt loam, 2 to 4 percent slopes, 348 feet east and 60 feet north of the SW. corner of SW¼ sec. 33, T. 40 N., R. 5 E.

Ap—0 to 7 inches, very dark grayish-brown (10YR 3/2) and dark-brown (10YR 3/3) silt loam; moderate, fine and very fine, granular structure; friable; neutral; abrupt, smooth boundary.

B1t—7 to 14 inches, dark yellowish-brown (10YR 4/4) silty clay loam; moderate, medium, subangular blocky structure parting to weak, fine, granular; friable; dark-brown (10YR 3/3) clay films; neutral; gradual, smooth boundary.

B2t—14 to 29 inches, yellowish-brown (10YR 5/4) clay loam; moderate, medium, subangular blocky structure; friable; dark yellowish-brown (10YR 3/4) clay films; slightly acid; gradual, smooth boundary.

IIB3—29 to 38 inches, brown to dark-brown (7.5YR 4/4) gravelly clay loam; weak, coarse, subangular blocky structure, but tending toward single grained; friable; slightly acid; clear, smooth boundary.

IIC—38 to 60 inches, mixed brown to dark-brown (7.5YR 4/4), yellowish-brown (10YR 5/4), and light yellowish-brown (10YR 6/4) gravelly sand; single

Drummer Series

The Drummer series consists of deep, nearly level, poorly drained soils. These soils are in drainageways and in broad, flat areas on uplands. They formed in silty material and in the underlying stratified loamy material.

In a representative profile the surface layer is black and very dark gray silty clay loam about 18 inches thick. The subsoil, about 32 inches thick, is olive-gray and gray to light-gray silty clay loam mottled with strong brown. The underlying material is gray and strong-brown sandy clay loam and silt loam.

These soils are moderately permeable and have high available water capacity. Surface drainage and internal drainage are very slow, and when wet, the soils have low stability. The soils are subject to frequent waterlogging and flooding or ponding during periods of runoff (fig. 7). Seasonally the water table is at a depth of less than 2 feet.

These soils are well suited to row crops if they are adequately tile drained. Frequent waterlogging and potential for flooding or ponding are severe limitations for most other uses.

Representative profile of Drummer silty clay loam, 480 feet south and 75 feet west of the NE. corner of

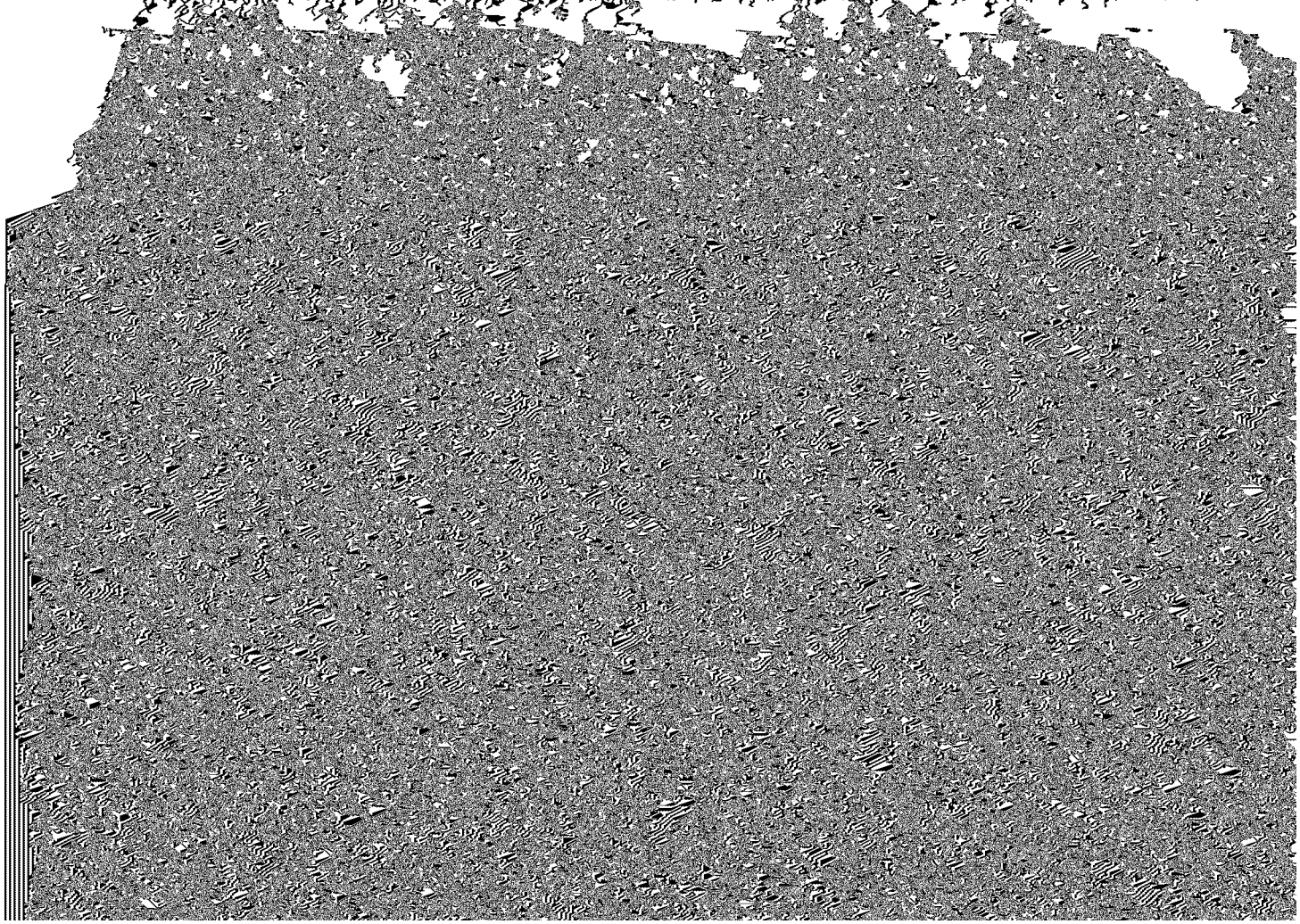


Figure 7.—**An area of Drummer soils after heavy rains.**

farmed and is well suited to row crops. It has severe limitations for most other uses. Management group IIw-1.

Elburn Series

The Elburn series consists of deep, nearly level, somewhat poorly drained soils in broad outwash areas or on unique, circular, raised, flat-topped mounds. These soils formed in silty material and in the underlying stratified loamy material.

In a representative profile the surface layer is very dark brown to very dark grayish-brown silt loam and silty clay loam about 14 inches thick. The subsoil is about 46 inches thick. The upper 34 inches is dark grayish-brown to yellowish-brown and light brownish-gray silty clay loam mottled with yellowish brown, and the lower 12 inches is yellowish-brown and strong-

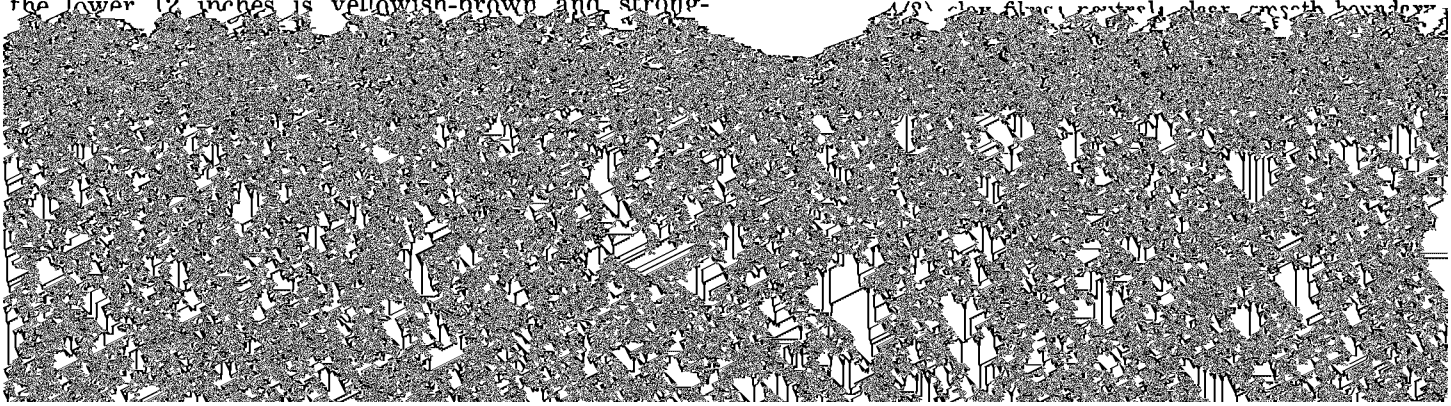
Ap—0 to 10 inches, very dark brown (10YR 2/2) silt loam; moderate, fine, granular structure; friable; neutral; abrupt, smooth boundary.

A3—10 to 14 inches, very dark grayish-brown (10YR 3/2) light silty clay loam; weak, very fine, subangular blocky structure; friable; slightly acid; clear, smooth boundary.

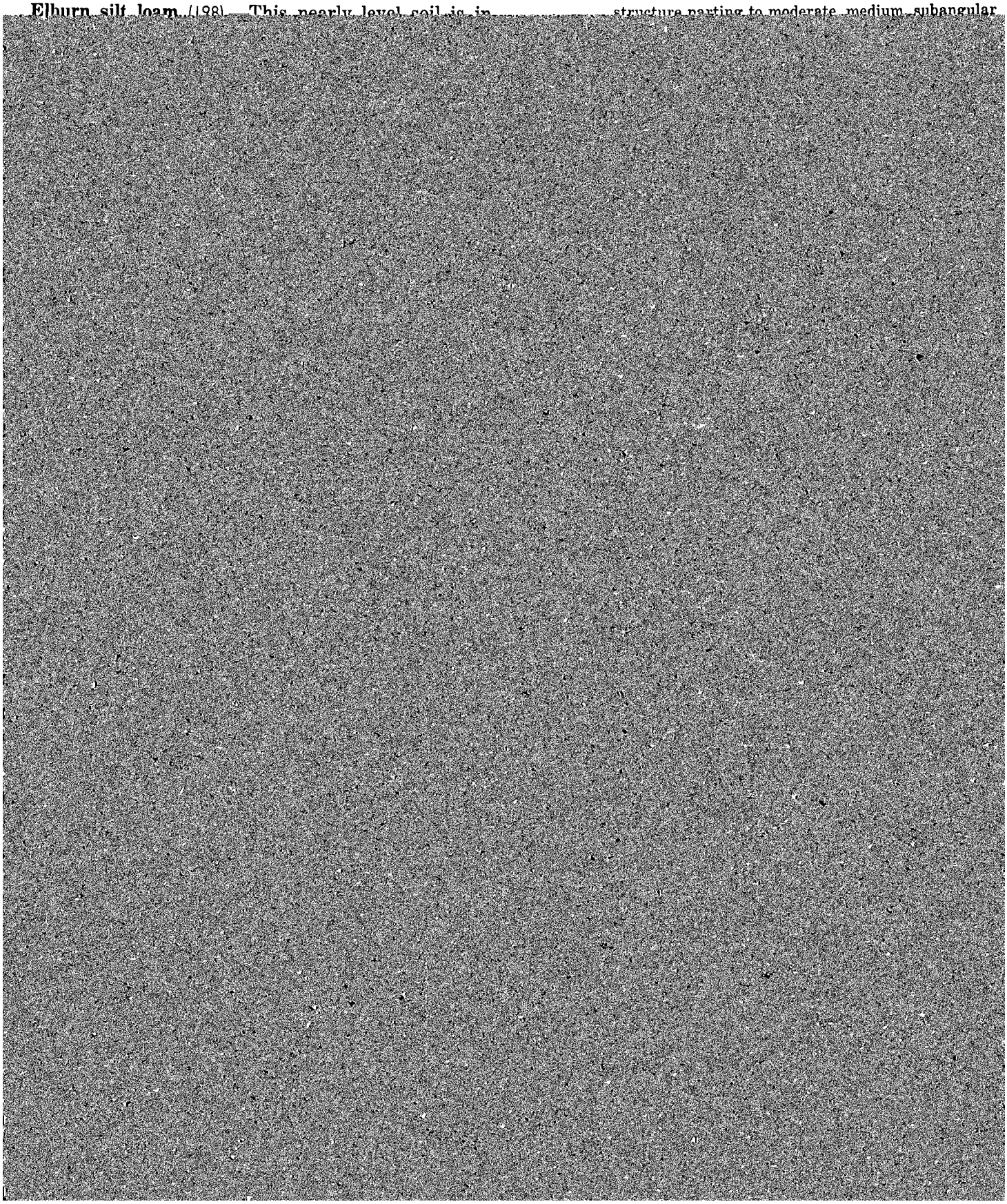
B21t—14 to 21 inches, dark grayish-brown (10YR 4/2) silty clay loam; few, fine, faint, yellowish-brown (10YR 5/8) mottles; medium, very fine and fine, subangular blocky structure; firm; slightly acid; gradual, smooth boundary.

B22t—21 to 30 inches, yellowish-brown (10YR 5/4) silty clay loam; few, fine, faint, yellowish-brown (10YR 5/8) mottles; moderate, fine and medium, subangular blocky structure; firm; discontinuous dark grayish-brown (10YR 4/2) clay films; slightly acid; gradual, smooth boundary.

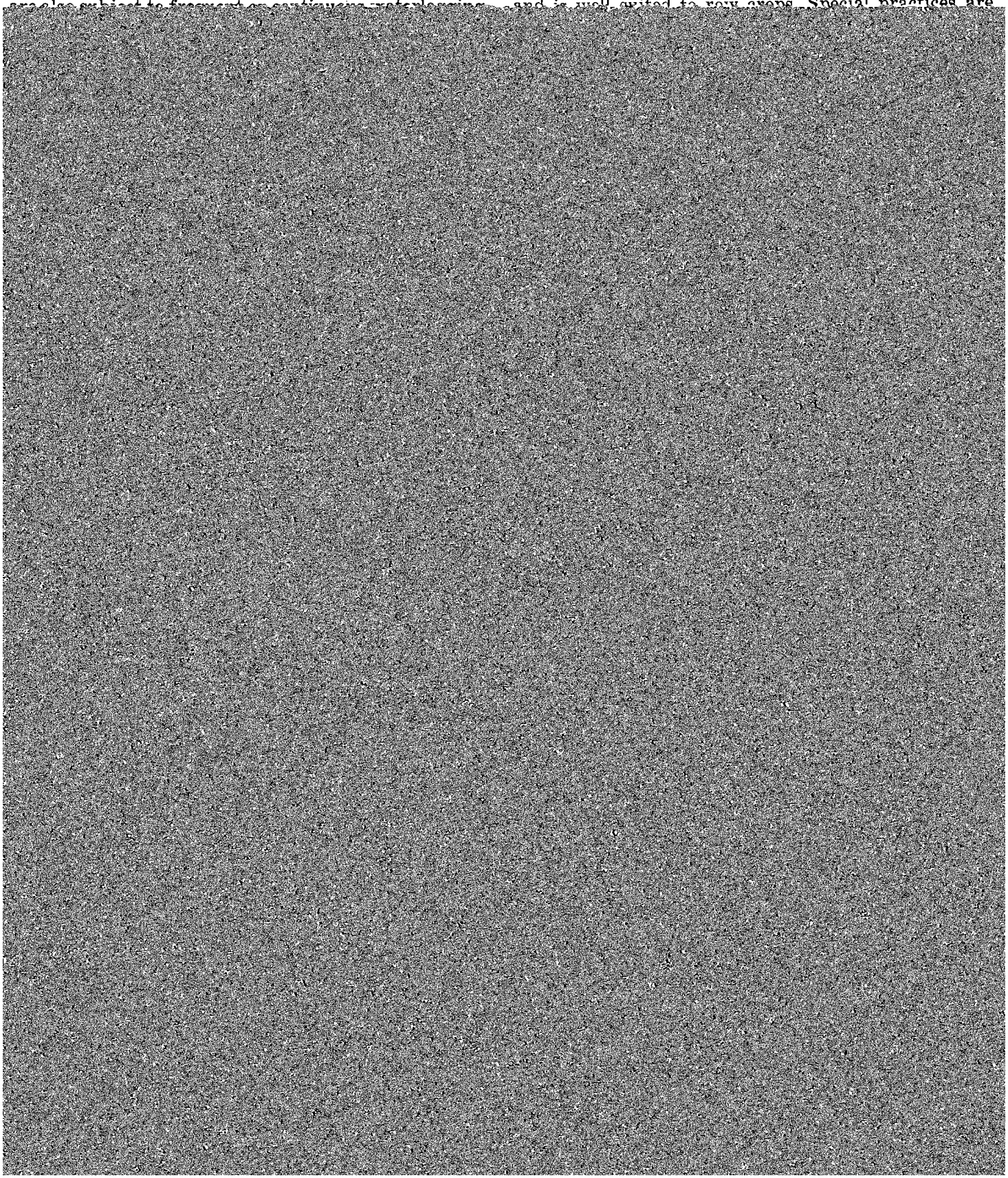
B23t—30 to 38 inches, yellowish-brown (10YR 5/8) and light brownish-gray (2.5Y 6/2) light silty clay loam; moderate, coarse, subangular blocky structure; friable; patchy dark grayish-brown (10YR 4/2) clay films; neutral; clear, smooth boundary;



Elburn silt loam (198)—This nearly level soil is in structure parting to moderate medium subangular



centrations of water during periods of runoff, and they are also subject to frequent or continuous waterlogging [illegible] and is well suited to row crops. Special practices are



IIC3—63 to 68 inches, dark-gray (10YR 4/1) and gray (10YR 5/1) clay loam; massive; friable; moderately alkaline.

The A horizon ranges from 7 to 12 inches in thickness. In some places an A2 horizon occurs, but in many places it has been mixed with the A1 horizon in plowing. The B horizon ranges from 15 to 40 inches in thickness and from strongly acid to neutral. The IIB horizon is 10 to 20 inches thick and is clay loam, loam, or sandy clay loam.

Harvard soils are associated with Batavia and Millbrook soils. They are better drained than Millbrook soils, and they have a thinner silty layer over the stratified sediment than Batavia soils.

Harvard silt loam, 0 to 2 percent slopes (344A).—This soil is in outwash areas. Included with it in mapping were small areas of somewhat poorly drained soils and areas of soils that are calcareous at a depth of less than 40 inches. Also included were small areas in which sand or gravel is below a depth of 5 feet.

Surface runoff is slow, and the hazard of erosion is slight.

This soil is intensively farmed and is well suited to row crops. It has few limitations for most other uses. Management group I-2.

Harvard silt loam, 2 to 4 percent slopes (344B).—This soil is in outwash areas that are associated with the nearly level Harvard soils. This soil has the profile described as representative of the series.

Included with this soil in mapping were small areas of soils that are calcareous at a depth of less than 40 inches. Also included were small areas where sand or gravel is below a depth of 5 feet.

Surface runoff is medium, and the erosion hazard to dark-brown, firm silty clay loam. The next 6 inches is multicolored, firm silty clay loam. The lower 10 inches is multicolored, firm clay loam. The underlying material is brown heavy loam.

These soils are moderately permeable and have high available water capacity. Surface drainage and internal drainage are slow. The soils are subject to concentrations of water during periods of high runoff, and they are also subject to periodic waterlogging. When they are wet, their stability decreases. In spring, the water table is generally 1 foot to 3 feet below the surface.

These soils are well suited to intensive use for row crops. The periodic waterlogging is a limitation for most other uses.

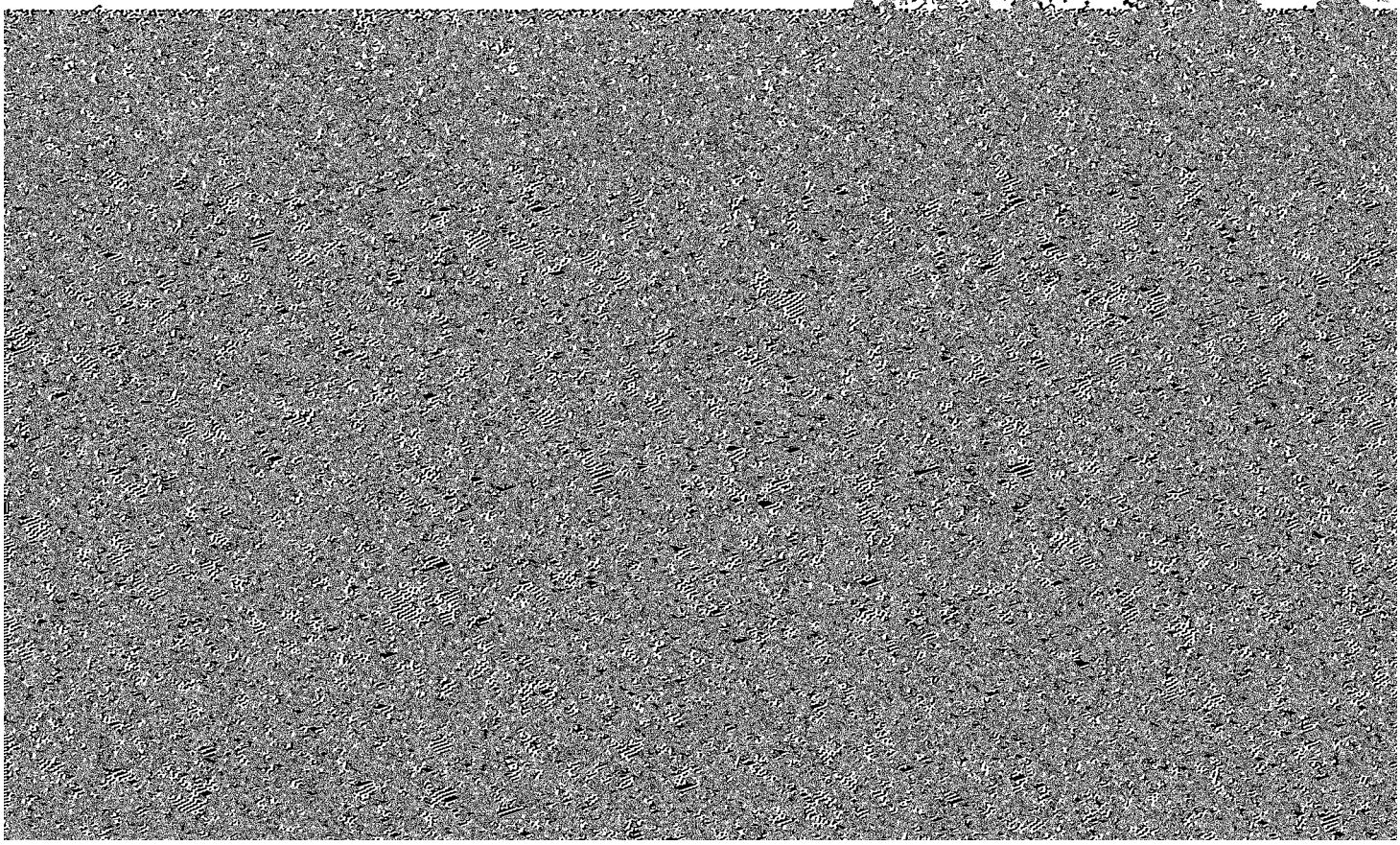
Representative profile of Herbert silt loam, 147 feet north of center of blacktop road and 306 feet east of section line, in the NW¼NW¼ sec. 14, T. 42 N., R. 4 E.

Ap—0 to 8 inches, very dark brown (10YR 2/2) silt loam; moderate, very fine, granular structure; friable; many roots; slightly acid; abrupt, smooth boundary.

A2—8 to 12 inches, dark grayish-brown (10YR 4/2) silt loam; few, fine, faint, brown (10YR 5/3) mottles; weak, medium and thick, platy structure parting to moderate, fine, granular; friable; many roots; slightly acid; clear, smooth boundary.

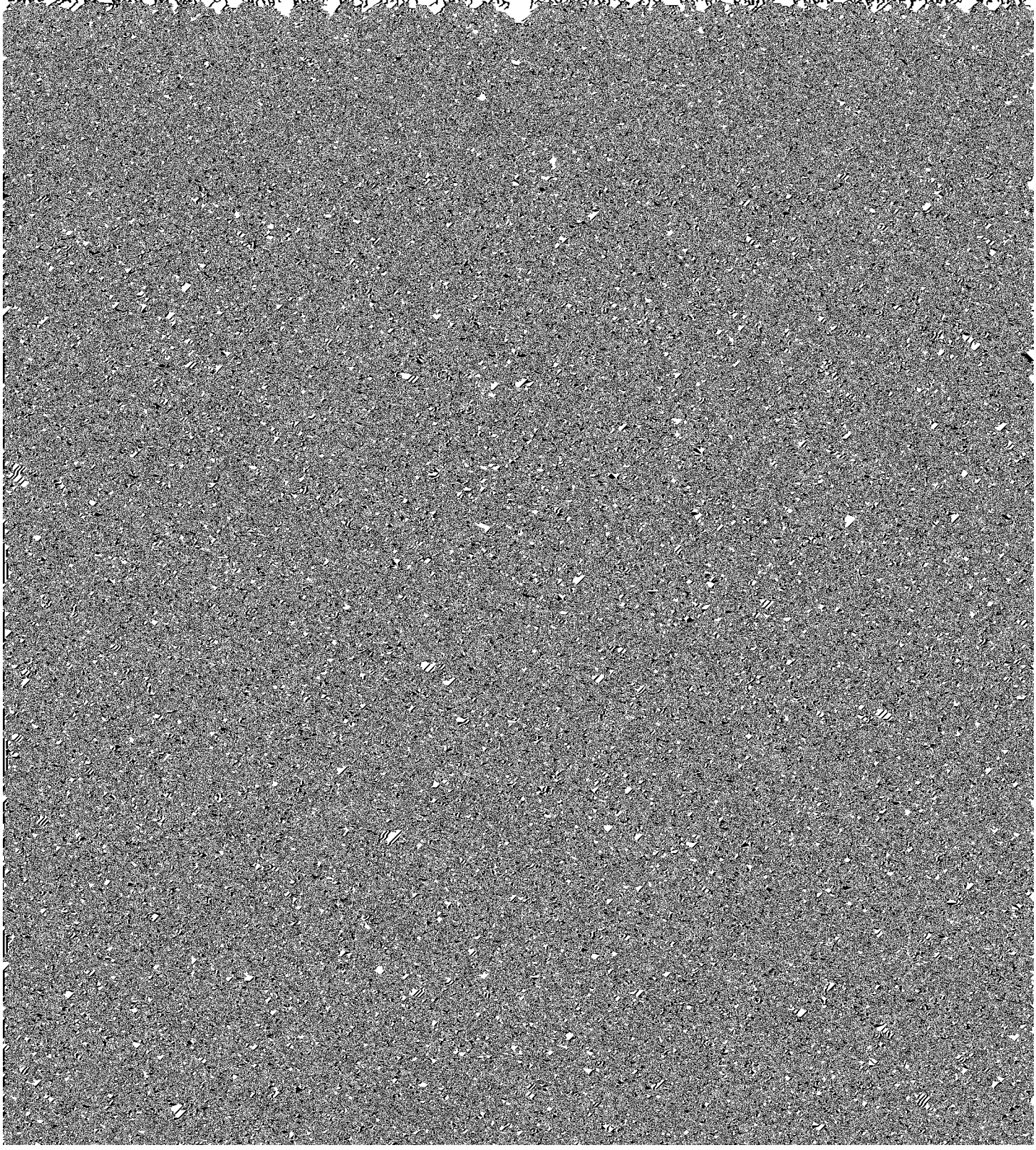
B21t—12 to 16 inches, brown to dark-brown (10YR 4/3) silty clay loam; few, fine, faint, brown (10YR 5/3) mottles; moderate, very fine, subangular blocky structure; firm; thin, discontinuous, dark grayish-brown (10YR 4/2) clay films; many roots; slightly acid; clear, smooth boundary.

B22t—16 to 20 inches, brown to dark-brown (10YR 4/3) silty clay loam; few, fine, faint, yellowish-brown (10YR 5/6) mottles; moderate, fine, subangular blocky structure; firm; thin, continuous, grayish-



Herbert silt loam (62).—This nearly level soil is in the uplands at the upper end of drainageways near poorly drained soils. Included with this soil in mapping were areas of soils that have a thinner, lighter colored surface layer and areas of soils that are more than 40

If artificially drained, this soil is commonly farmed along with associated soils. Drainage systems are generally a maintenance concern. Special practices that increase fertility are needed. This soil has very severe limitations for most other uses. Management group



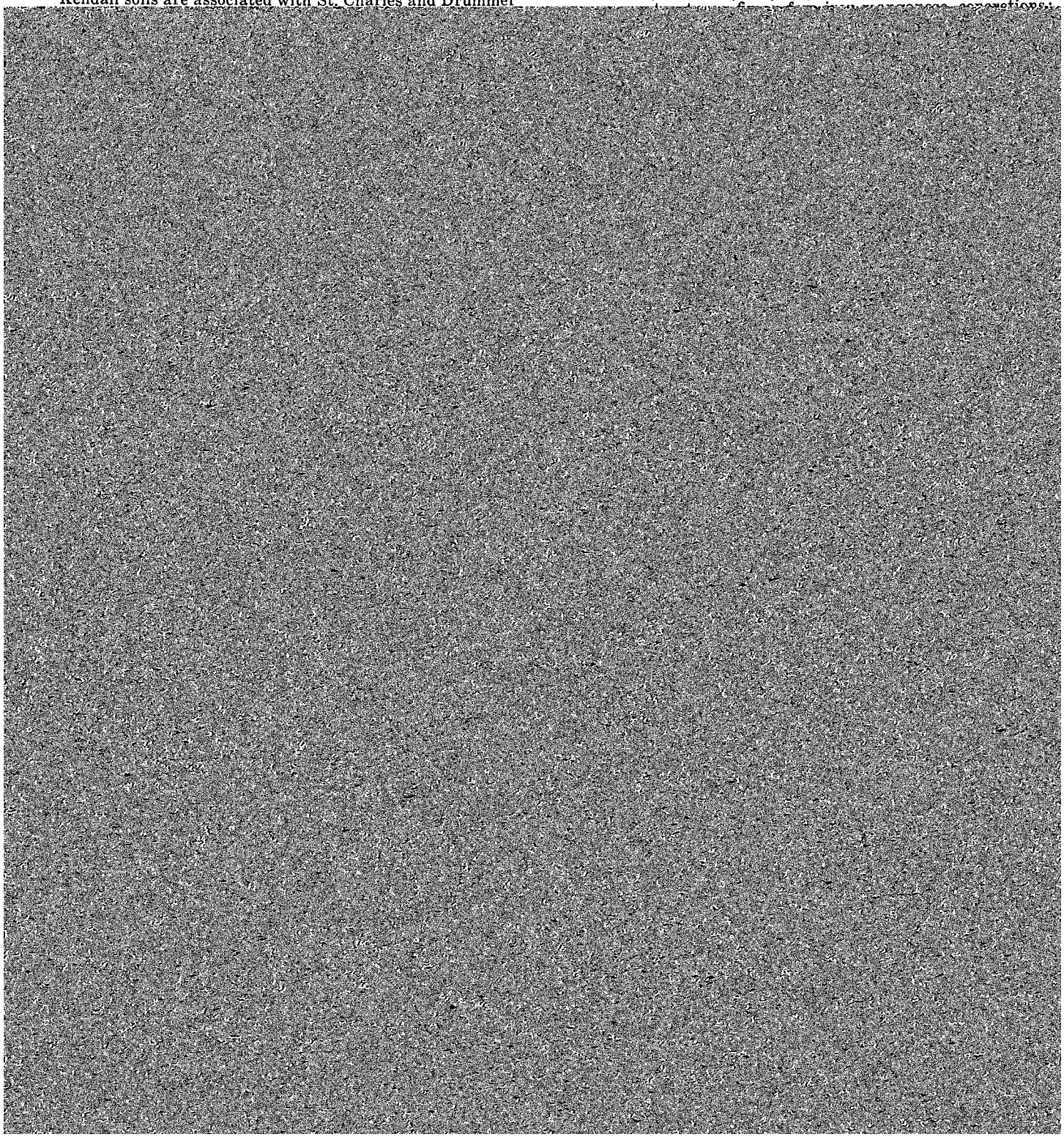
IIC—57 to 65 inches, strata of mixed stratified yellowish-brown (10YR 5/4 and 5/6) and light brownish-gray (2.5Y 6/2) loam and silt loam; massive; friable; moderately alkaline.

The A horizon ranges from 7 to 14 inches in thickness. The B horizon ranges from 20 to 45 inches in thickness and from medium to neutral. The IIB horizon is 5 to 15 inches thick and is loam, clay loam, or sandy loam.

Kendall soils are associated with St. Charles and Drummer

B21t—35 to 44 inches, light-gray to gray (5Y 6/1) silty clay loam; common, fine, distinct, yellowish-brown (10YR 5/8) mottles; moderate, coarse, subangular blocky structure; firm; brown to dark-brown (10YR 4/3) clay films in root channels; medium acid; clear, smooth boundary.

B22t—44 to 54 inches, mixed light brownish-gray (2.5Y 6/2), light olive-gray (5Y 6/2), and yellowish-brown (10YR 5/8) silty clay loam; weak, coarse, prismatic



structure; firm; mildly alkaline; abrupt, smooth boundary.

B3—14 to 20 inches, yellowish-brown (10YR 5/4) and pale-brown (10YR 6/3) heavy loam; moderate, fine, subangular blocky structure; friable; mildly alkaline; clear, smooth boundary.

C—20 to 60 inches, yellowish-brown (10YR 5/4) and some strong-brown (7.5YR 5/6) loam; massive; friable;

Lisbon Series

The Lisbon series consists of deep, nearly level, somewhat poorly drained soils. These soils are on uplands near drainageways. They formed in loess and in the underlying loam glacial till.

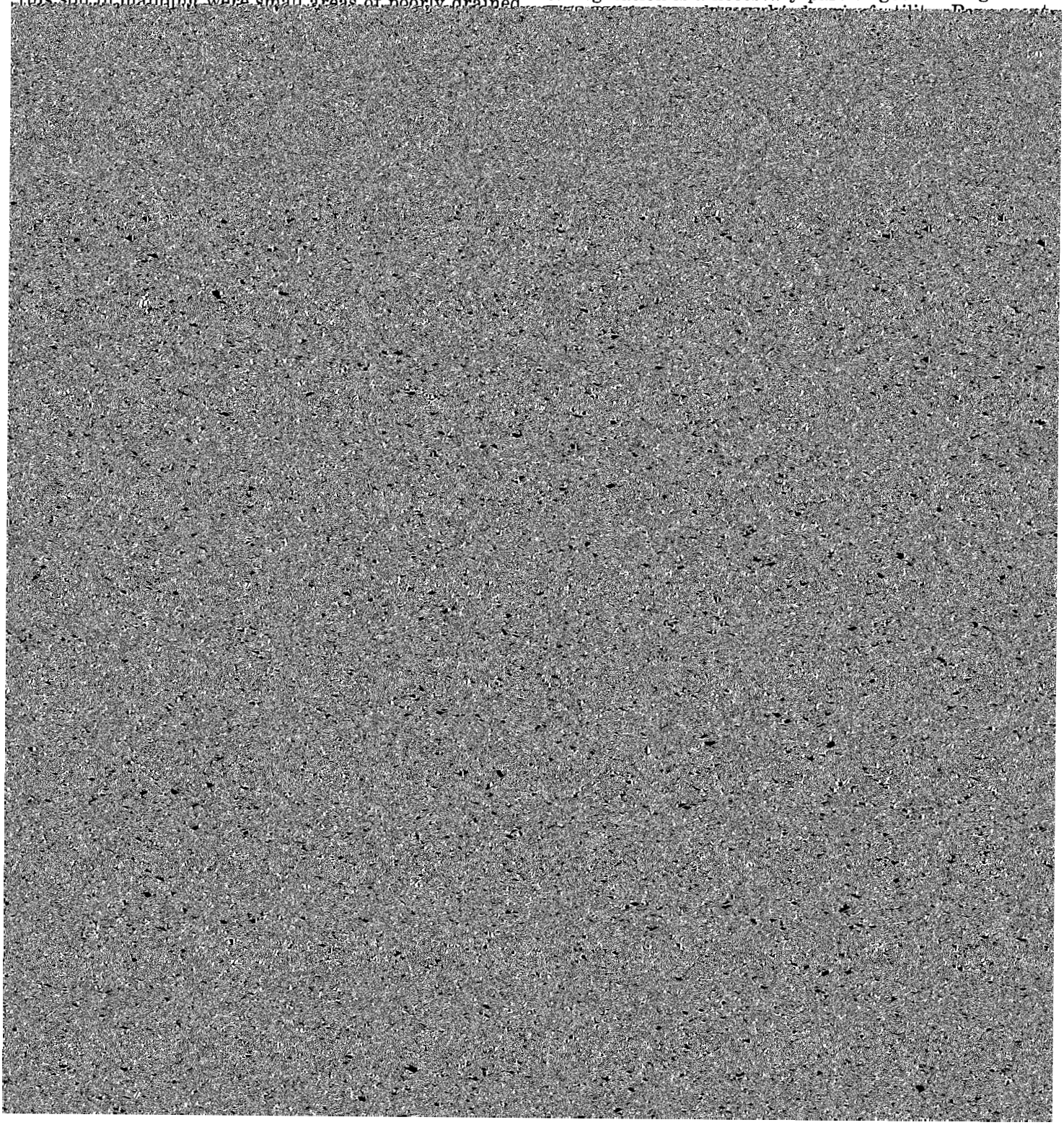
Lisbon soils are associated with Saybrook and Drummer soils. They have a thicker, darker colored A horizon and are more poorly drained than Saybrook soils, and they are better drained than Drummer soils.

Lisbon silt loam (59).—This nearly level soil is on slight rises surrounded by poorly drained soils or at the upper end of upland drainageways. Included with this soil in mapping were small areas of poorly drained

ly substratum is exposed at the surface.

Surface runoff is rapid, and the hazard of erosion is severe.

This soil is commonly farmed along with associated soils, but it has severe limitations for intensive cropping. Control of erosion by either mechanical means or vegetation is a necessary part of good management.



resentative of the series. Included with this soil in mapping were small areas of Dodge silt loam.

Surface runoff is medium, and the hazard of erosion is moderate.

This soil is suited to row crops. Most areas are intensively farmed, but some areas remain in native hardwoods. Control of erosion is a necessary part of good management. This soil has moderate limitations for some other uses. Management group IIe-1.

Miami silt loam, 4 to 7 percent slopes, eroded (27C2).—This soil is in the uplands on the glacial moraines. It has a profile similar to the one described as representative of the series, but some of the dark yellowish-brown, finer textured subsoil has been mixed into the plow layer. Included with this soil in mapping were small areas where none of the subsoil has been mixed into the surface layer.

Surface runoff is rapid, and the hazard of erosion is moderate.

This soil is suited to row crops. Most of it is farmed, but some areas remain in native hardwoods. Control of erosion is a necessary part of good management. This soil has moderate limitations for some other uses. Management group IIe-4.

Miami silt loam, 7 to 12 percent slopes, eroded (27D2).—This soil is on the glacial moraines. It has a profile similar to the one described as representative of the series, but some of the dark yellowish-brown, finer textured subsoil has been mixed into the plow layer. Included with this soil in mapping were small areas where none of the subsoil has been mixed into the surface layer and small areas of Strawn soils.

Surface runoff is rapid, and the hazard of erosion is severe.

This soil is farmed, but it has limitations for intensive cropping. Control of erosion by either mechanical means or vegetation is a necessary part of good management. This soil has moderate limitations for some other uses. Management group IIIe-1.

Millbrook Series

The Millbrook series consists of deep, nearly level, somewhat poorly drained soils on uplands near drainageways. These soils formed in silty material and in the underlying stratified loamy outwash. In some areas sand and gravel are below a depth of 5 feet.

In a representative profile the surface layer is black silt loam about 8 inches thick. The subsurface layer is dark grayish-brown and brown to dark-brown silt loam about 4 inches thick. The subsoil is about 29 inches thick. The upper 14 inches of the subsoil is brown to dark-brown and dark grayish-brown silty clay loam mottled with yellowish brown, and the lower 15 inches is dark grayish-brown and yellowish-brown loam and sandy loam mottled with yellowish brown. The underlying material is gray, light brownish-gray and yellowish-brown, stratified loam, sandy loam, and silt loam.

These soils have a moderately permeable subsoil and have high available water capacity. Surface drainage off, and they are subject to periodic waterlogging. Where the soils are wet, their stability decreases. In spring the water table is generally 1 foot to 3 feet below the surface.

These soils are well suited to intensive use for row crops. The periodic waterlogging is a limitation for most other uses.

Representative profile of Millbrook silt loam, 40 feet east and 150 feet south of the NW. corner of the NE¼-NW¼ sec. 12, T. 42 N., R. 5 E.

Ap—0 to 8 inches, black (10YR 2/1) silt loam; moderate, fine, granular structure; friable; strongly acid; abrupt, smooth boundary.

A2—8 to 12 inches, dark grayish-brown (10YR 4/2) and some brown to dark-brown (10YR 4/3) silt loam; weak, thin, platy structure parting to moderate, fine, crumb; friable; strongly acid; clear, smooth boundary.

B21t—12 to 18 inches, brown to dark-brown (10YR 4/3) silty clay loam; few, fine, distinct, yellowish-brown (10YR 5/6) mottles; moderate, fine, subangular blocky structure; friable; few, patchy, dark grayish-brown (10YR 4/2) clay films; medium acid; clear, smooth boundary.

B22t—18 to 26 inches, mixed dark grayish-brown (10YR 4/2) and brown to dark-brown (10YR 4/3) silty clay loam; common, fine, prominent, yellowish-brown (10YR 5/6) mottles; weak, fine and medium, prismatic structure parting to moderate, fine and medium, subangular blocky; firm; few very dark brown (10YR 2/2) fillings in root channels and wormholes; few very dark grayish-brown (10YR 3/2) iron-manganese concretions; discontinuous grayish-brown (2.5Y 5/2) clay films; slightly acid; clear, smooth boundary.

IIB23t—26 to 34 inches, mixed dark grayish-brown (10YR 4/2) and yellowish-brown (10YR 5/6 and 5/8) loam; weak, medium, prismatic structure parting to moderate, medium, subangular blocky; firm; few very dark brown iron-manganese concretions; discontinuous grayish-brown (2.5Y 5/2) clay films; neutral; clear, smooth boundary.

IIB3—34 to 41 inches, dark grayish-brown (10YR 4/2) sandy loam; few, fine, distinct, yellowish-brown (10YR 5/6) mottles; weak, coarse, subangular blocky structure; very friable; few, discontinuous, grayish-brown (10YR 5/2) clay films; neutral; clear, smooth boundary.

IIC—41 to 68 inches, stratified gray (5Y 6/1) silt loam and mixed light brownish-gray (2.5Y 6/2) and yellowish-brown (10YR 5/6 and 5/8) loam and sandy loam; massive; very friable; very dark brown (10YR 2/2) iron-manganese concretions; moderately alkaline.

The A horizon ranges from 9 to 14 inches in thickness. In places the A2 horizon has been mixed with the A1 horizon by plowing. The B horizon ranges from medium acid to neutral. The IIB horizon ranges from 5 to 15 inches in thickness and from clay loam to sandy loam or loam in texture.

Millbrook soils are associated with Harvard and Drummer soils. They are more poorly drained than Harvard soils and better drained than Drummer soils.

Millbrook silt loam (219).—This nearly level soil is in broad outwash areas or on terraces along the major streams. Included with it in mapping were areas where the silty material is more than 40 inches thick. Also included were areas where the surface layer is thinner than in this soil and small areas of poorly drained soils. In some places the depth to carbonates is less than 40 inches.

Surface runoff is slow, and the hazard of erosion is

row crops. Artificial drainage is beneficial in some places. It has moderate to severe limitations for most other uses. Management group I-3.

Muscatine Series

The Muscatine series consists of deep, nearly level, somewhat poorly drained soils. These soils are in the uplands or near drainageways. They formed in more than 5 feet of loess.

In a representative profile the surface layer is black silt loam about 14 inches thick. The subsoil, about 28 inches thick, is multicolored silty clay loam mottled with yellowish brown. The underlying material is multicolored silt loam.

These soils have a moderately permeable subsoil and have high available water capacity. Surface drainage and internal drainage are slow. The soils are subject to concentrations of water during periods of high runoff, and they are also subject to periodic waterlogging. Where they are wet, their stability decreases. In spring the water table is generally 1 foot to 3 feet below the surface.

These soils are well suited to intensive use for row crops. The periodic waterlogging is a limitation for most other uses.

Representative profile of Muscatine silt loam, 200 feet north and 15 feet west of the SE. corner of the SW¼SE¼ sec. 30, T. 37 N., R. 3 E.

Ap—0 to 9 inches, black (10YR 2/1) silt loam; weak, very fine, granular structure; friable; slightly acid; abrupt, smooth boundary.

A3—9 to 14 inches, black (10YR 2/1) silt loam that has some very dark grayish brown (10YR 3/2) in the lower part; weak, very fine, subangular blocky structure parting to weak, very fine, granular; friable; slightly acid; clear, smooth boundary.

B1—14 to 17 inches, dark grayish-brown (10YR 4/2) silty clay loam; medium, very fine and fine, subangular blocky structure; firm; medium acid; clear, smooth boundary.

B21t—17 to 22 inches, brown to dark-brown (10YR 4/3) silty clay loam; few, fine, faint, yellowish-brown (10YR 5/6) mottles; medium, fine, subangular blocky structure; firm; dark grayish-brown (10YR 4/2) clay films; slightly acid; clear, smooth boundary.

B22t—22 to 29 inches, mixed dark grayish-brown (10YR 4/2 and 2.5Y 4/2) and grayish-brown (2.5Y 5/2) silty clay loam; common, fine, faint, yellowish-brown (10YR 5/6) mottles; moderate, medium, subangular blocky structure; firm; slightly acid; clear, smooth boundary.

B23t—29 to 36 inches, mixed dark grayish-brown (2.5Y 4/2) and olive-gray (5Y 5/2) silty clay loam; common, medium, distinct, yellowish-brown (10YR 5/6) mottles; weak, coarse, subangular blocky structure; friable; neutral; clear, smooth boundary.

B3—36 to 42 inches, mixed grayish-brown (2.5Y 5/2), yellowish-brown (10YR 5/6), and light olive-gray (5Y 6/2) silty clay loam; weak, coarse, prismatic

poorly drained and have a thicker mantle of loess than Catlin soils.

Muscatine silt loam (41).—This nearly level soil is in areas downslope from the well drained and moderately well drained Catlin soils. Included with this soil in mapping were small areas where the underlying glacial till is less than 5 feet deep. Also included were small areas of poorly drained Sable soils.

Surface runoff is slow, and the hazard of erosion is slight.

This soil is intensively farmed and is very well suited to row crops. Artificial drainage is beneficial in some places. The soil has moderate to severe limitations for many other uses. Management group I-3.

Octagon Series

This series consists of deep, gently sloping to sloping, well drained and moderately well drained soils. These soils are on the rolling uplands of the major glacial moraines. They formed in less than 2 feet of loess and in the underlying loam glacial till.

In a representative profile the surface layer is mainly very dark grayish-brown silt loam about 7 inches thick. The subsoil is brown, dark-brown, dark yellowish-brown, and yellowish-brown clay loam about 21 inches thick. The underlying material is multicolored loam.

These soils are moderately permeable and have high available water capacity. The internal drainage is medium, and the soils remain stable with changes in moisture content. The water table is generally more than 5 feet below the surface.

These soils are suited to row crops and have moderate limitations for some other uses.

Representative profile of Octagon silt loam, 4 to 7 percent slopes, eroded, 474 feet west and 151 feet north of the SE. corner of sec. 7, T. 39 N., R. 5 E.

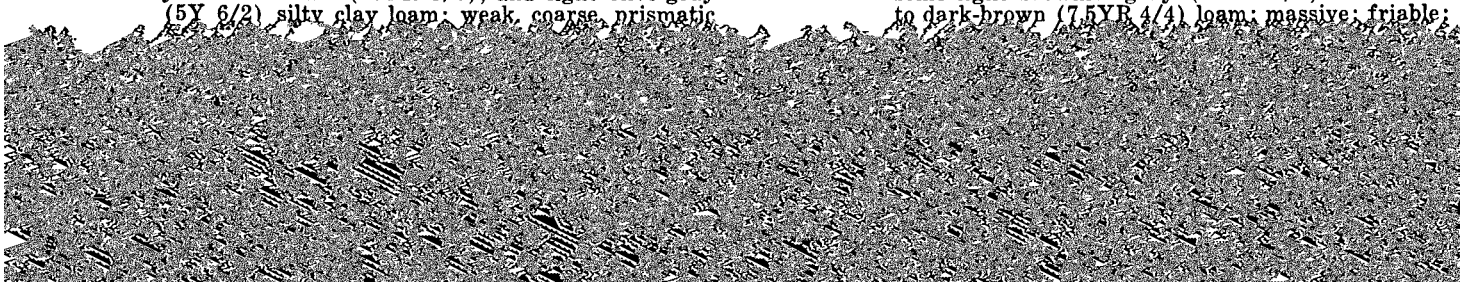
Ap—0 to 7 inches, very dark grayish-brown (10YR 3/2) and some brown to dark-brown (10YR 4/3) silt loam; weak, very fine, granular structure; very friable; strongly acid; abrupt, smooth boundary.

IIB21t—7 to 14 inches, brown to dark-brown (10YR 4/3) clay loam; weak, prismatic structure parting to moderate, fine, subangular blocky; firm; dark-brown (10YR 3/3) patchy clay films; medium acid; clear, smooth boundary.

IIB22t—14 to 20 inches, dark yellowish-brown (10YR 4/4) clay loam; few, fine, faint, yellowish-brown (10YR 5/6) mottles; weak, prismatic structure parting to weak, fine, angular blocky; friable; medium acid; clear, smooth boundary.

IIB3t—20 to 28 inches, yellowish-brown (10YR 5/4 and 5/6) and brownish-yellow (10YR 6/6) clay loam; weak, medium, subangular blocky structure; friable; mildly alkaline; abrupt, smooth boundary.

IIC—28 to 60 inches, yellowish-brown (10YR 5/4) and some light brownish-gray (10YR 6/2) and brown to dark-brown (7.5YR 4/4) loam; massive; friable;



Octagon silt loam, 2 to 4 percent slopes (656B).—This soil is on uplands on the glacial moraines. It has the profile described as representative of the series. Included with this soil in mapping were small areas of La Rose soils.

Surface runoff is medium, and the hazard of erosion is moderate.

This soil is intensively farmed and is suited to row crops. Control of erosion is a necessary part of good management. This soil has moderate limitations for some other uses. Management group IIe-2.

Octagon silt loam, 4 to 7 percent slopes, eroded (656C2).—This soil is on uplands on the glacial moraines downslope from less sloping Octagon soils. This soil has a profile similar to the one described as representative of the series, but the brown to dark-brown, finer-textured subsoil has been mixed into the plow layer. Included with this soil in mapping were small areas where all of the original surface layer has been removed through erosion and small areas where the subsoil is thinner than is typical for this soil.

Surface runoff is rapid, and the hazard of erosion is moderate.

This soil is farmed and is suited to row crops. Control of erosion is a necessary part of good management. This soil has moderate limitations for some other uses. Management group IIe-4.

Peotone Series

The Peotone series consists of deep, nearly level, very poorly drained soils in upland depressions. These soils formed in silty material that is more than 5 feet thick over stratified sand and silt.

In a representative profile the surface layer is black silty clay loam about 20 inches thick. The subsoil is

B21g—20 to 26 inches, black (10YR 2/1) and some dark-gray (10YR 4/1) heavy silty clay loam; weak, fine, prismatic structure parting to moderate, fine and medium, subangular blocky; friable; neutral; clear, smooth boundary.

B22g—26 to 38 inches, gray (5Y 5/1), dark-gray (5Y 4/1), and olive-yellow (5Y 6/6) silty clay loam; few, fine, faint, yellowish-brown (10YR 5/8) mottles; weak, medium, prismatic structure parting to moderate, fine, prismatic; friable; neutral; gradual, smooth boundary.

C—38 to 60 inches, gray (5Y 5/1), olive-gray (5Y 5/2), and strong-brown (7.5YR 5/6) silty clay loam; massive; friable; neutral.

The A horizon ranges from 20 to 35 inches in thickness. The B horizon is 10 to 20 inches thick. It ranges from neutral to mildly alkaline.

Peotone soils are associated with Drummer soils. They have a thicker A horizon than Drummer soils.

Peotone silty clay loam (330).—This nearly level soil is in depressions that are generally surrounded by other poorly drained soils. Included with this soil in mapping were small areas that have recently deposited material on the surface and small areas where the surface layer is thinner than typical.

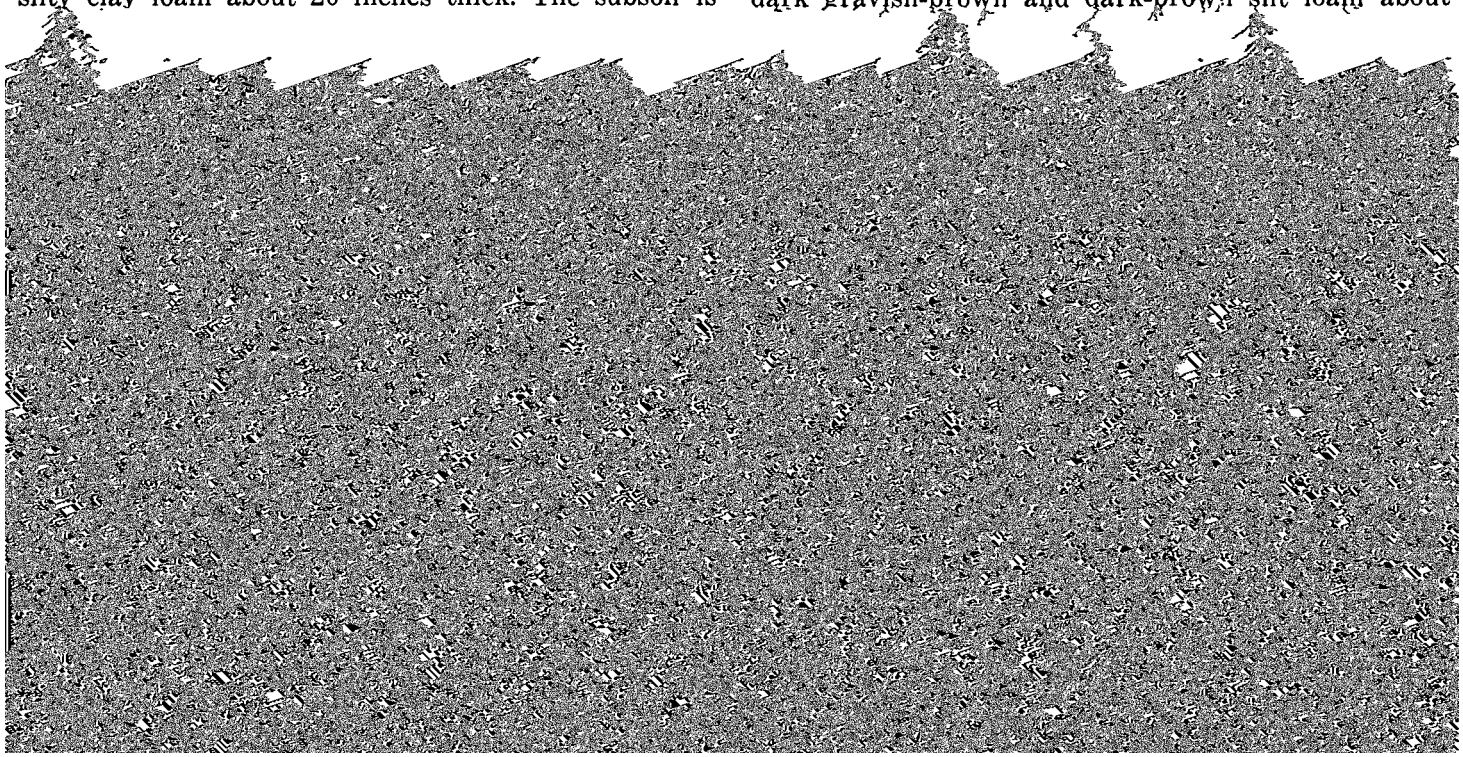
Surface runoff is ponded, and the hazard of erosion is slight.

If artificially drained, this soil is intensively farmed and is suited to row crops. It has severe limitations for most other uses. Management group IIIw-1.

Plano Series

The Plano series consists of deep, nearly level to gently sloping, well drained and moderately well drained soils. These soils are in broad areas in the uplands. They formed in silty material and in the underlying stratified loamy material.

In a representative profile the surface layer is very dark grayish-brown and dark-brown silt loam about

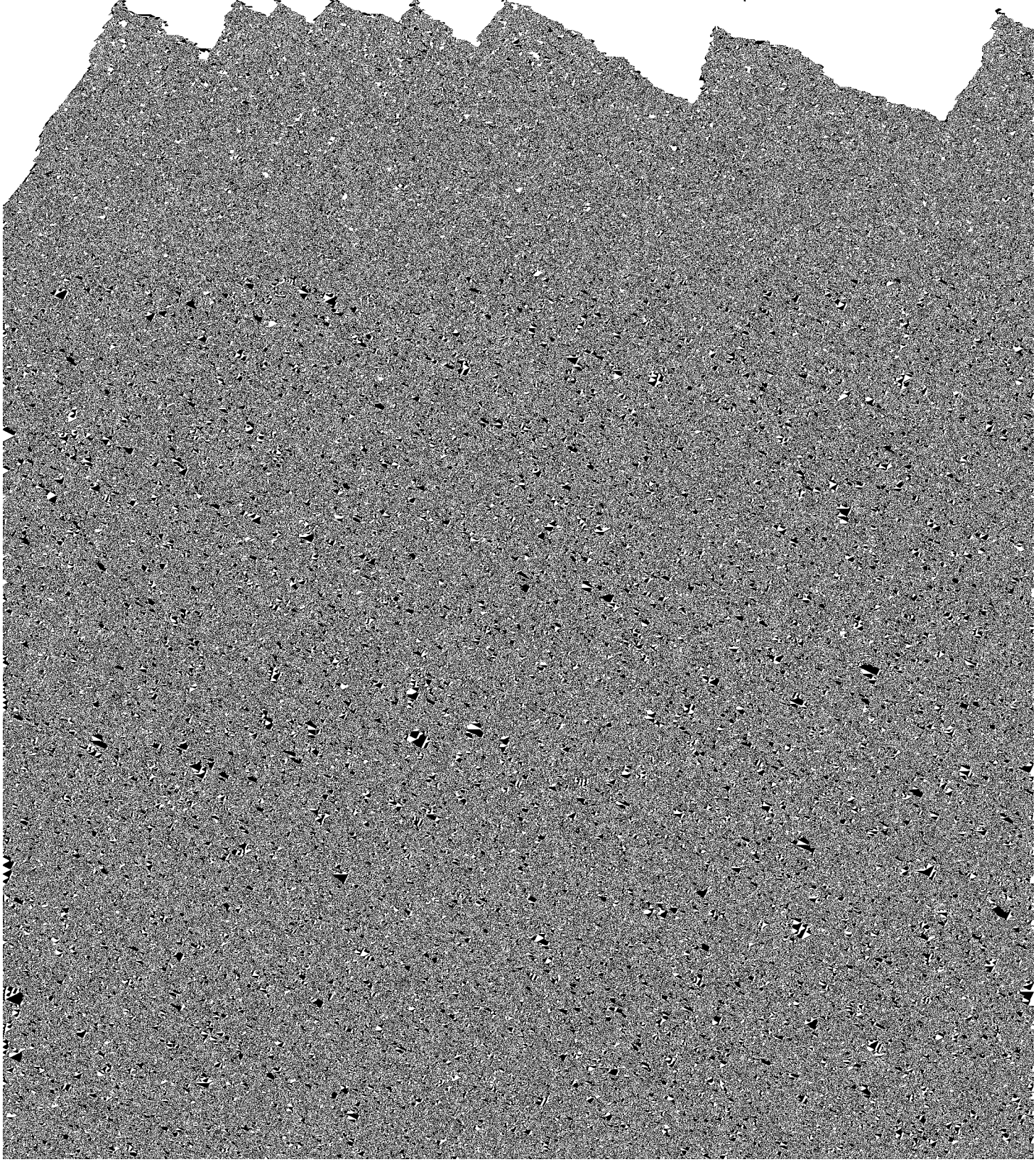


fine and very fine, granular; friable; slightly acid; clear, smooth boundary.

B21t—13 to 23 inches, brown to dark-brown (10YR 4/3) and dark yellowish-brown (10YR 4/4) silty clay loam; moderate, fine, subangular blocky structure;

wash. In some areas sand and gravel are below a depth of 5 feet.

In a representative profile the surface layer is very dark brown silt loam about 12 inches thick. The sub-



where sand and gravel are below a depth of 5 feet.

Surface runoff is slow, and the hazard of erosion is slight.

This soil is intensively farmed and is well suited to

medium acid; clear, smooth boundary.

B22t—26 to 37 inches, dark yellowish-brown (10YR 4/4) silty clay loam; moderate, fine, subangular blocky structure; firm; thin, continuous, brown to dark-brown (10YR 4/3) clay films; medium acid; clear

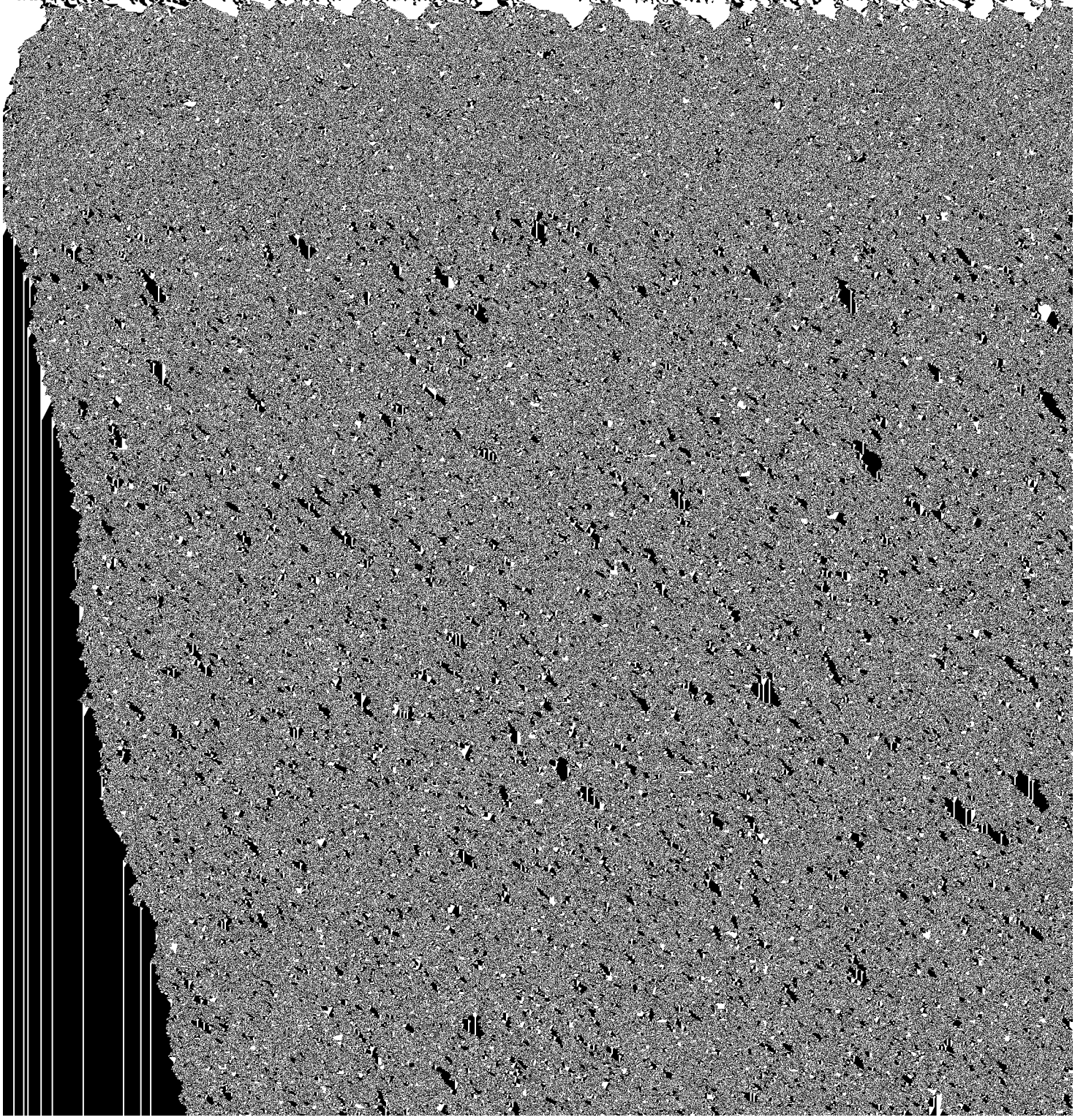
available water capacity. Surface drainage is very slow to ponded, and the internal drainage is very slow. The soils have low stability when wet. They are subject to frequent waterlogging and flooding or ponding during periods of runoff. Seasonally the water table is less than 2 feet from the surface.

These soils are well suited to row crops if they are adequately drained. The frequent waterlogging and

brown and some light olive-gray, stratified loam and silt loam.

These soils are moderately permeable and have high available water capacity. The internal drainage is medium, and the soils remain stable with changes in moisture content. The water table is generally more than 5 feet below the surface.

These soils are well suited to intensive use for row



Included with this soil in mapping were areas where glacial till is below a thin layer of outwash material and small areas of somewhat poorly drained soils. Also included were small areas of Dodge soils.

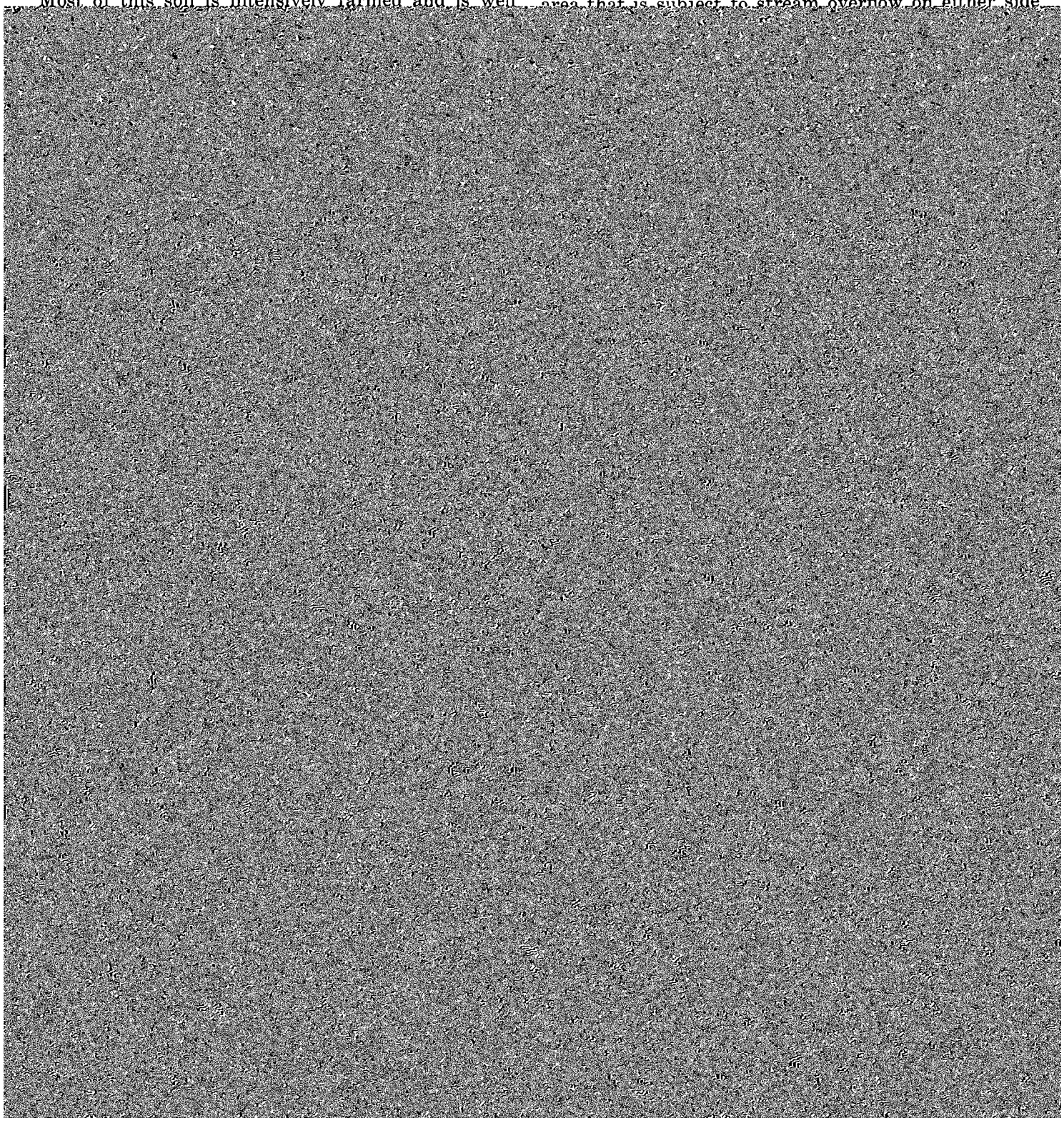
Surface runoff is medium, and the hazard of erosion is moderate.

Most of this soil is intensively farmed and is well

loam, or silt loam. The C horizon is clay loam or silty clay loam that generally contains strata of sand, loam, sandy loam, or silt loam.

Sawmill soils are associated with Drummer soils. They have a thicker A horizon than Drummer soils.

Sawmill soils (V107).—This nearly level soil is on the flood plains of the major streams. It is in the low-lying area that is subject to stream overflow on either side



fine, subangular blocky; firm; discontinuous dark-brown (10YR 3/3) clay films; neutral; clear, smooth boundary.

IIB31t—32 to 38 inches, brown to dark-brown (7.5YR 4/4) clay loam; weak, medium, prismatic structure parting to moderate, fine and medium, subangular blocky; firm; patchy very dark grayish-brown (10YR 3/2) clay films; many fine pores; mildly alkaline; clear, smooth boundary.

IIB32—38 to 44 inches, brown to dark-brown (7.5YR 4/4) heavy loam; weak, medium and coarse, prismatic structure; friable; mildly alkaline; clear, smooth boundary.

IIC—44 to 60 inches, brown (7.5YR 5/4) loam till; common, fine, faint, strong-brown (7.5YR 5/6 and 5/8) mottles; massive; friable; moderately alkaline.

The A horizon ranges from 9 to 14 inches in thickness. The B horizon ranges from 13 to 35 inches in thickness and from slightly acid to mildly alkaline. In some places the lower part is mottled. The IIB horizon is 10 to 20 inches thick.

Saybrook soils are associated with Flanagan and Catlin soils. They have a thinner mantle of loess over glacial till than Catlin and Flanagan soils; and they are better drained than Flanagan soils.

moisture content. The water table is generally more than 5 feet below the surface.

These soils have low productivity and are poorly suited to row crops. Slope is the main limitation for other uses.

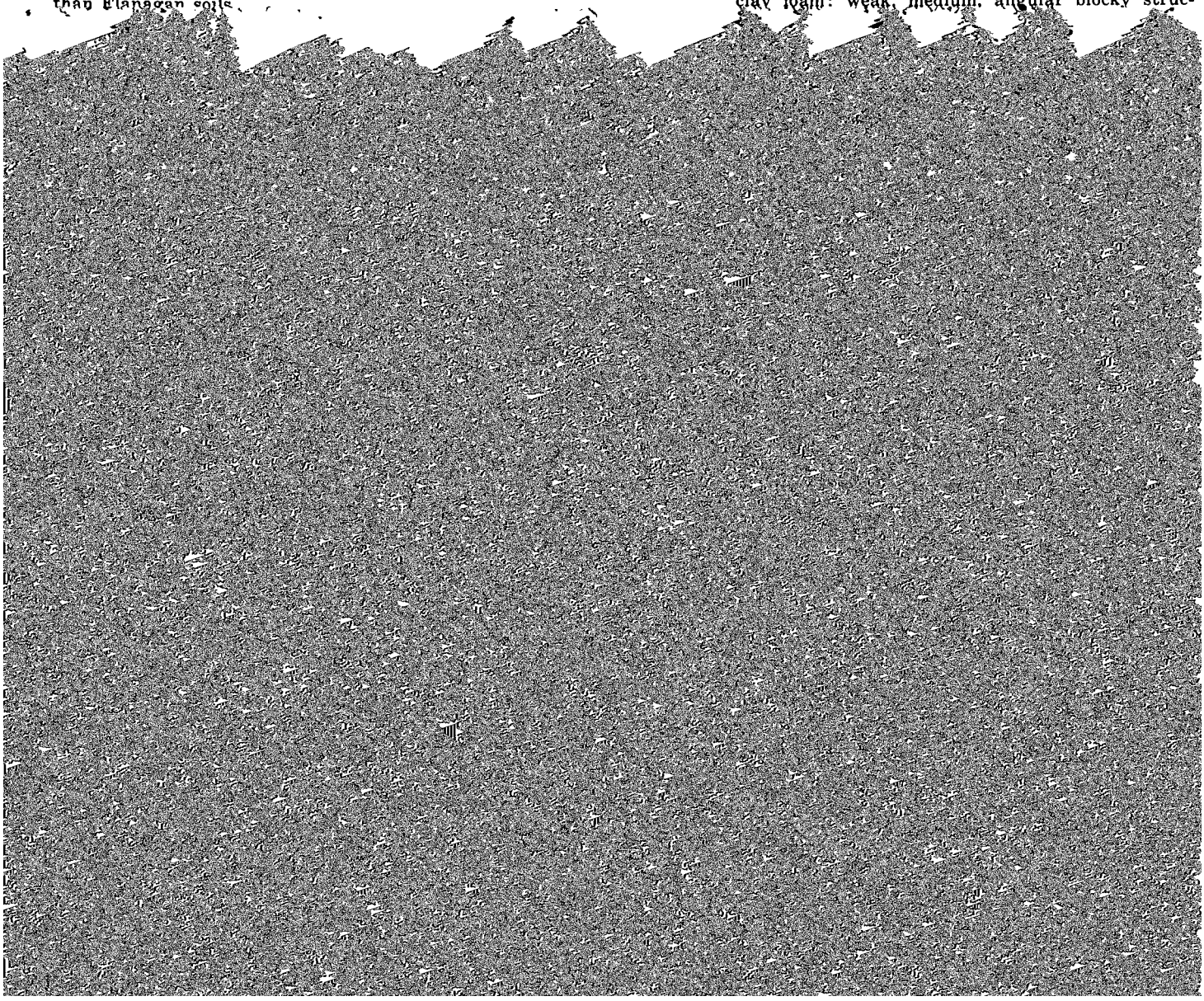
Representative profile of Strawn silt loam in an area of Strawn soils, 10 to 20 percent slopes, eroded, 120 feet north and 120 feet west of the NE. corner of the SE¼SE¼ sec. 34, T. 37 N., R. 5 E.

Ap—0 to 4 inches, dark grayish-brown (10YR 4/2) silt loam; weak, very fine, granular structure; friable; neutral; abrupt, smooth boundary.

B1—4 to 8 inches, brown to dark-brown (10YR 4/3) heavy loam; weak, very fine, subangular block structure; friable; neutral; clear, smooth boundary.

B21t—8 to 14 inches, brown to dark-brown (10YR 4/3) clay loam; moderate, very fine and fine, angular blocky structure; firm; discontinuous brown to dark-brown (7.5YR 4/2) clay films; neutral; clear, smooth boundary.

B22t—14 to 19 inches, brown to dark-brown (10YR 4/3) clay loam; weak, medium, angular blocky struc-



available water capacity. Surface drainage and internal drainage are slow. The soils are subject to concentrations of water during periods of high runoff, and they are subject to periodic waterlogging. Where these soils are wet, their stability decreases. In spring the water table is generally 1 foot to 3 feet below the surface.

These soils are well suited to intensive use for row crops. The periodic waterlogging is a limitation for other uses.

Representative profile of Virgil silt loam, 70 feet north and 50 feet east of the SW. corner of the NW¼ sec. 26, T. 40 N., R. 3 E.

Ap—0 to 8 inches, very dark gray (10YR 3/1) silt loam; moderate, very fine, granular structure; friable; neutral; abrupt, smooth boundary.

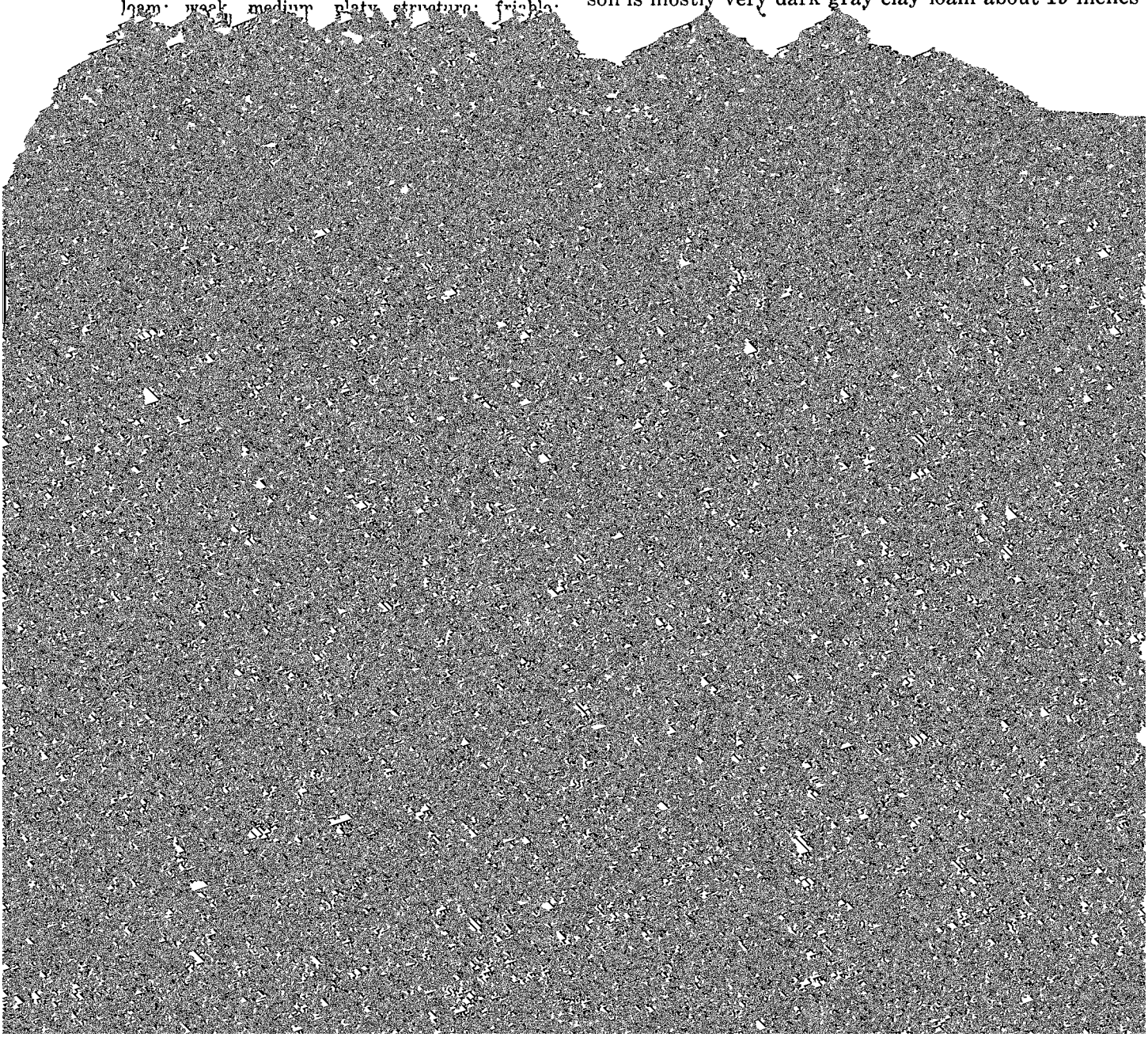
A2—8 to 11 inches, dark grayish-brown (10YR 4/2) silt loam; weak, medium, platy structure; friable;

This soil is intensively farmed and is well suited to row crops. Artificial drainage is beneficial in some areas. The soil has moderate to severe limitations for many other uses. Management group I–3.

Will Series

The Will series consists of nearly level, poorly drained soils that are moderately deep over sand and gravel. These soils are in broad flat outwash areas in the northeastern corner of the county. They formed in loamy outwash material over calcareous sand and gravel.

In a representative profile the surface layer is very dark brown clay loam about 9 inches thick. The subsoil is mostly very dark gray clay loam about 19 inches



Surface runoff is very slow to ponded, and the hazard of erosion is slight.

If artificially drained, this soil is intensively farmed and is well suited to row crops. It has severe limitations for most other uses. Because of the shallowness to sand and gravel, pollution is a risk for some uses. Management group IIw–1.

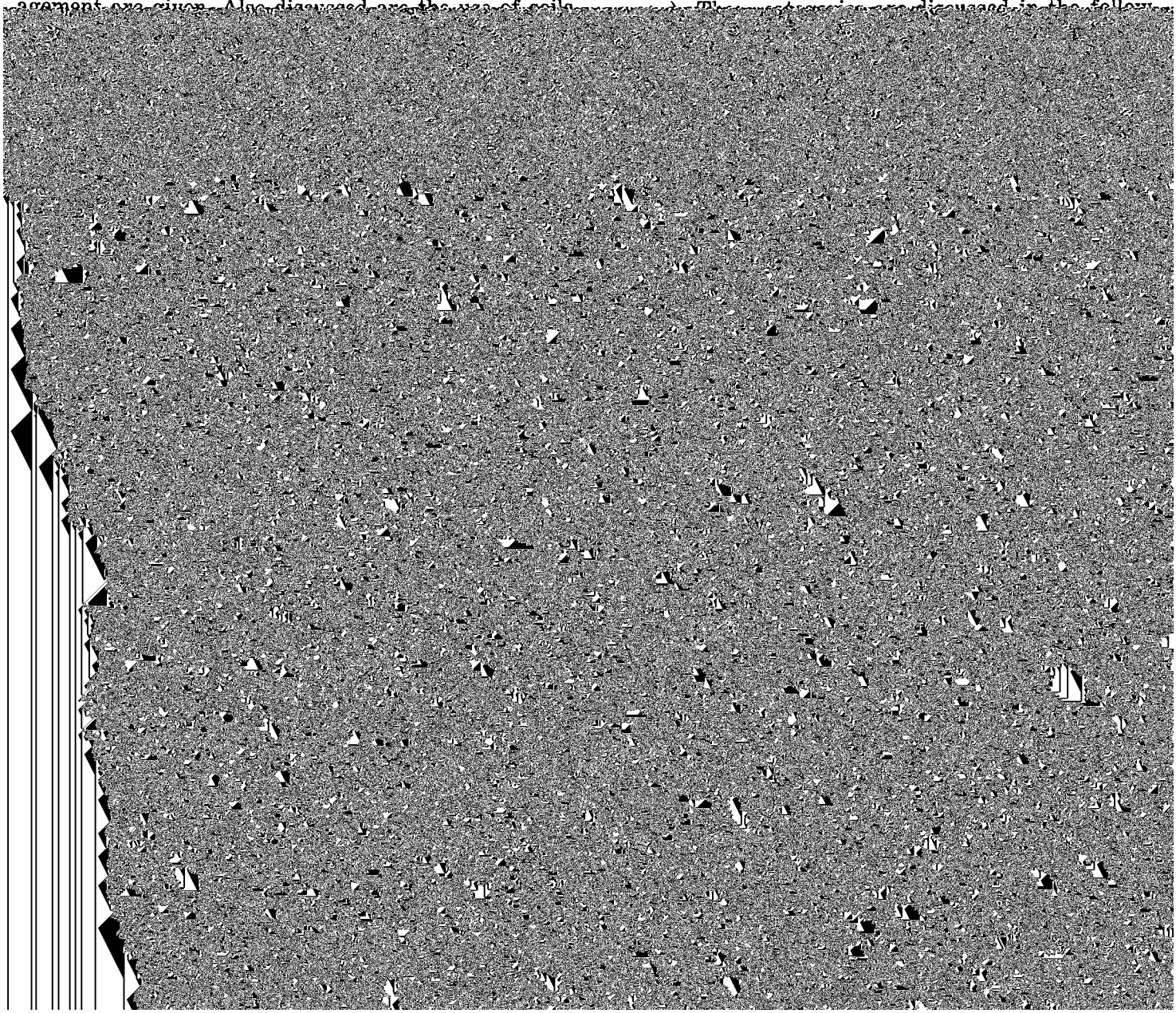
Use and Management of the Soils

This section discusses the general management of crops, explains the capability grouping used by the Soil Conservation Service, and discusses the management of the soils in DeKalb County by management (capability) groups. Predicted yields of the principal crops grown in the county under a high level of management are given. Also discussed are the use of soils [illegible] The [illegible] used in the follow-

when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, cranberries, horticultural crops, or other crops that require special management.

Those familiar with the capability classification can infer from it much about the behavior of soils when used for other purposes, but this classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for engineering.

In the capability system, all kinds of soils are grouped at three levels, the capability class, the subclass, and the unit (management group in this soil



that the main limitation is climate that is too cold or too dry.

Class I contains no subclasses, because the soils of this class have few limitations. Class V can contain, at the most, only the subclasses indicated by *w*, *s*, and *c*, because the soils in class V are subject to little or no erosion, although they have other limitations that restrict their use largely to pasture, range, woodland, wildlife, habitat, or recreation.

MANAGEMENT GROUPS are soil groups within the subclass. The soils in one group are 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. Management groups are generally designated by adding an Arabic numeral to the subclass symbol; for example, IIw-1 or IIe-1.

The capability classification of the soils in DeKalb County is shown in the Guide to Mapping Units at the back of this survey.

Management groups

In the following pages the management groups in DeKalb County are described, and suggestions for use and management for all the soils of each group are given. On soils used for cultivated crops, applications of lime and fertilizer are generally needed. The amounts to apply on any given soil should be determined by soil tests. The names of soil series represented are mentioned in the description of each management group, but this does not mean that all soils of a given series appear in the group. To find the names of all the soils in any given management group, refer to the "Guide to Mapping Units" at the back of this survey.

MANAGEMENT GROUP I-1

This group consists of deep, well-drained soils of the Camden, Dodge, Rush, and St. Charles series. These soils are nearly level and uneroded. They have a surface layer of silt loam and a subsoil of silty clay loam.

Permeability is moderate, and the available water capacity is high. The organic-matter content is low.

Maintaining the organic-matter content and maintaining good tilth and fertility are the main management needs. Returning crop residue to the soil and capacity is high. The organic-matter content is medium to high.

Maintaining the organic-matter content and maintaining good tilth and fertility are slight management concerns. Returning crop residue to the soil and plowing under a green-manure catch crop about every fourth year are ways to maintain the organic-matter content and good tilth. Minimum tillage reduces compaction and increases infiltration. Winter cover crops or crop residue left on the surface help to control soil blowing.

The soils in this group are used mainly for cash-grain crops. They are well suited to the commonly grown crops, which are mainly corn, soybeans, oats, and alfalfa. They are also well suited to grasses.

MANAGEMENT GROUP I-3

This group consists of deep, somewhat poorly drained soils of the Elburn, Flanagan, Herbert, Lisbon, Kendall, Millbrook, Muscatine, and Virgil series. These soils are nearly level and uneroded. They have a surface layer of silt loam and a subsoil of silty clay loam.

Permeability is moderate, and the available water capacity is high. The organic-matter content is medium to high.

Maintaining the organic-matter content and maintaining good tilth and fertility are a necessary part of good management. In some areas artificial drainage is needed. Minimum tillage reduces compaction and increases water infiltration. Winter cover crops or crop residue left on the surface help to control soil blowing.

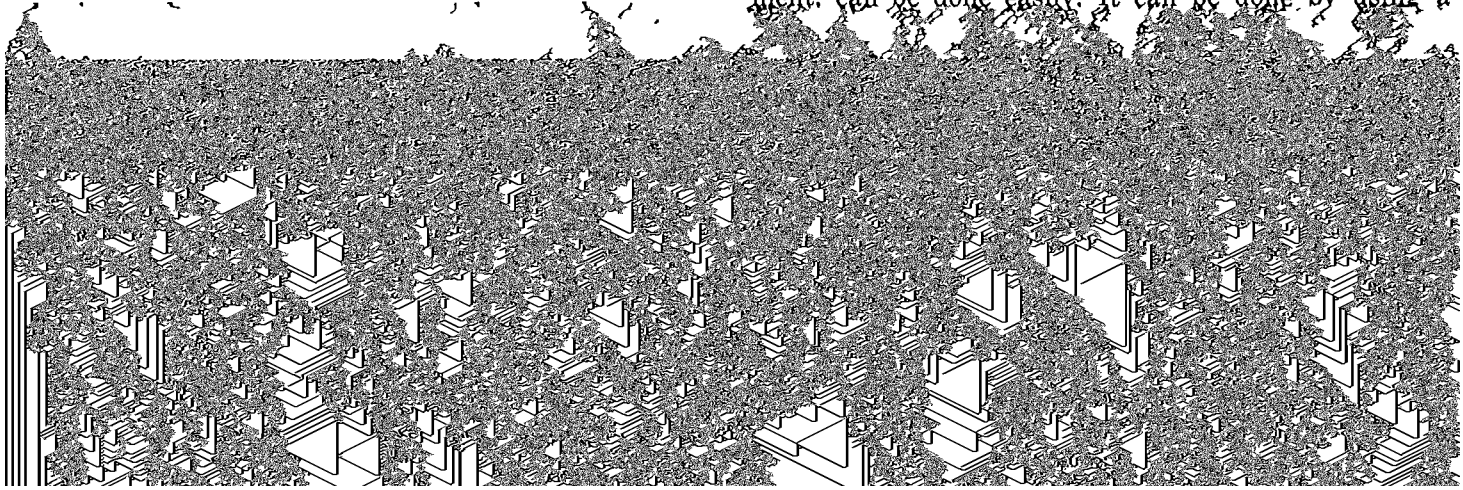
The soils in this group are used mainly for cash-grain crops. They are well suited to the commonly grown crops. Corn and soybeans are the main crops, but oats and alfalfa are also suited.

MANAGEMENT GROUP IIe-1

This group consists of deep, moderately well drained and well drained soils of the Camden, Dodge, Miami, Rush, and St. Charles series. These soils are gently sloping and uneroded. They have a surface layer of silt loam and a subsoil of silty clay loam.

Permeability is moderate, and the available water capacity is high. The organic-matter content is low.

Control of erosion, the major concern of management, can be done easily. It can be done by using a



except for the La Rose soil, a subsoil of silty clay loam. The La Rose soil has a subsoil of clay loam.

Permeability is moderate, surface runoff is medium, and the available water capacity is high. The organic-matter content is medium to high.

Control of erosion, the major concern of management, can be done easily. It can be done by using a suitable cropping system or by such mechanical practices as contouring and terracing. Minimum tillage reduces compaction, increases water infiltration, and helps to control runoff and erosion. Winter cover crops or crop residue left on the surface help to control soil blowing.

The soils in this group are suited to crops commonly grown in the county. Corn and soybeans are the main crops, but oats and alfalfa or grasses are also suited.

MANAGEMENT GROUP IIe–3

Dresden silt loam, 2 to 4 percent slopes, the only soil in this group, is a well-drained, gently sloping, uneroded soil that is moderately deep over sand and gravel. It has a surface layer of silt loam and a subsoil of clay loam.

Permeability is moderate in the subsoil and rapid to very rapid in the underlying sand and gravel. The available water capacity is moderate. The organic-matter content is medium. This soil is medium acid to slightly acid in the subsoil.

Controlling erosion is the main concern of management. Maintaining the organic-matter content and good tilth is a slight concern. If such conservation practices as terracing and contouring are not used, erosion should be controlled by the cropping system. The return of all crop residue to the soil maintains the organic-matter content and good tilth. Winter cover crops, manure, and crop residue left on the surface help to maintain the organic-matter content and good tilth. These practices along with minimum tillage, grassed waterways, and contouring help to control erosion and runoff.

Most areas of this soil are used for cultivated crops. This soil is suited to the commonly grown crops, such as corn and soybeans, but it is also suited to oats and grasses or legumes.

MANAGEMENT GROUP IIe–4

This group consists of deep, moderately well drained and well drained soils of the Batavia, Catlin, Dodge, Harvard, La Rose, Miami, Octagon, and Saybrook series. These soils are moderately sloping and eroded. They have a thin surface layer of silt loam and a subsoil of silty clay loam or clay loam.

Permeability is moderate, and surface runoff is rapid. The available water capacity is mainly high but is less than that of the soils in management groups IIe-1 and IIe-2 because of increased runoff and removal of the original surface layer by erosion. The organic-matter content is low to medium.

Controlling erosion is the major concern of management. The hazard of erosion is greater because of past erosion. Erosion can be controlled by using a suitable cropping system or such mechanical practices as contouring and terracing. Tilth is poor and is difficult to maintain, especially where tillage extends into the subsoil. Minimum tillage reduces compaction, increases water infiltration, and helps to control runoff and erosion. Winter cover crops or crop residue left on the surface help to control soil blowing.

The soils in this group are suited to crops commonly grown in the county. Corn and soybeans are the main crops, but oats and alfalfa or grasses are also suited.

MANAGEMENT GROUP IIw–1

This group consists of mostly deep, poorly drained soils of the Drummer, Harpster, Knight, Sable, Sawmill, and Will series. These soils are nearly level. Except for the Will soil, they have a surface layer and subsoil of silty clay loam. The moderately deep Will soil has a surface layer and subsoil of clay loam.

Permeability is moderately slow in the Knight soil and moderate in the other soils. The available water capacity is moderate in the Will soil and high in the others. The organic-matter content is high. All of these soils are medium acid to moderately alkaline in the subsoil. The Harpster and Will soils are calcareous.

Providing drainage is the main management needed. Tile drains are effective where adequate outlets are available. Flooding is a hazard annually in most areas of the Sawmill soils, and ponding and slow surface runoff are limitations in some areas of the other soils. Shallow surface drains are beneficial in some of these areas. Winter cover crops or crop residue left on the surface help to control soil blowing.

Where drained, the soils in this group are well suited to crops grown in the county. Corn and soybeans are the main crops, but oats and grasses or legumes are also suited.

MANAGEMENT GROUP IIIe–1

This group consists of deep, well drained and moderately well drained soils of the La Rose and Miami series. These soils are strongly sloping and eroded. They have a surface layer of silt loam and a subsoil of clay loam. In some areas the present plow layer consists of material from the clay loam subsoil.

Permeability is moderate in both soils. The available water capacity is high in the Miami soil and moderate in the La Rose soil. The organic-matter content is low in the Miami soil and medium in the La Rose soil. These soils are medium acid to mildly alkaline in the subsoil.

Water erosion, the main hazard on these soils in cultivated areas, can be controlled by suitable cropping practices or such mechanical practices as contouring or terracing. Tilth is poor and is difficult to maintain, especially where tillage extends into the clay loam subsoil. Minimum tillage maintains the organic-matter content and tilth and helps to control erosion.

The soils in this group are not well suited to intensive row cropping, but they are suited to crops grown in the county. Corn and soybeans should be grown in rotation with grasses and legumes. These soils are suited to use for woodland.

MANAGEMENT GROUP IIIe–2

Dresden silt loam, 4 to 7 percent slopes, eroded, the only soil in this group, is a well-drained soil that is

moderately deep to sand and gravel. This soil is moderately sloping and eroded. It has a surface layer of silt loam and a subsoil of clay loam. In some areas the present plow layer consists of material from the clay loam subsoil.

Permeability and the available water capacity are moderate. The organic-matter content is medium. This soil is medium acid to neutral.

Water erosion, the main hazard on this soil in cultivated areas, can be controlled by suitable cropping practices or such mechanical practices as contouring or terracing. Tilth is poor and is difficult to maintain, especially where tillage extends into the clay loam subsoil. This soil has a hazard of droughtiness because the depth to sand and gravel is only moderate and because of the increased runoff caused by slope. Minimum tillage maintains the organic-matter content and the tilth, reduces runoff, and helps to control erosion.

This soil is not well suited to intensive row cropping. It is suited to the crops grown in the county. Corn and soybeans should be grown in rotation with grasses and legumes. This soil is suited to use for woodland.

MANAGEMENT GROUP IIIw–1

Peotone silty clay loam, the only soil in this group, is a very poorly drained, nearly level to depressional soil. It has a surface layer and subsoil of silty clay loam.

Permeability is moderately slow, and the available water capacity is high. The organic-matter content is high. This soil is neutral to mildly alkaline in the subsoil.

Water [illegible]

soil is suited to vegetables and other specialty crops. It is not well suited to oats or hay.

MANAGEMENT GROUP IVe–1

Lorenzo loam, 6 to 15 percent slopes, eroded, the only soil in this group, is an excessively drained, strongly sloping, eroded soil that is shallow over sand and gravel. This soil has a surface layer of loam and a subsoil of clay loam or gravelly clay loam. In some areas the present plow layer consists mainly of subsoil material.

Permeability is moderately rapid, and the available water capacity is low. The organic-matter content is low. This soil is medium acid to neutral in the subsoil.

Water erosion is a hazard and the low available water capacity is a limitation in cultivated areas. Tilth is difficult to maintain, especially where tillage extends into the subsoil. Moisture frequently is insufficient for good crop growth.

This soil is poorly suited to cultivated crops because of droughtiness and the hazard of erosion. Where erosion is controlled and fertility and tilth are maintained, most crops common to the county can be grown. This soil is suited to trees, and some areas remain in native woods.

MANAGEMENT GROUP VIe–1

Strawn soils, 10 to 20 percent slopes, eroded, the only soil in this group, are deep, well drained and moderately well drained soils. They are moderately steep and eroded. They have a surface layer of silt loam and a subsoil of clay loam. In some areas the present plow layer consists mainly of subsoil material.

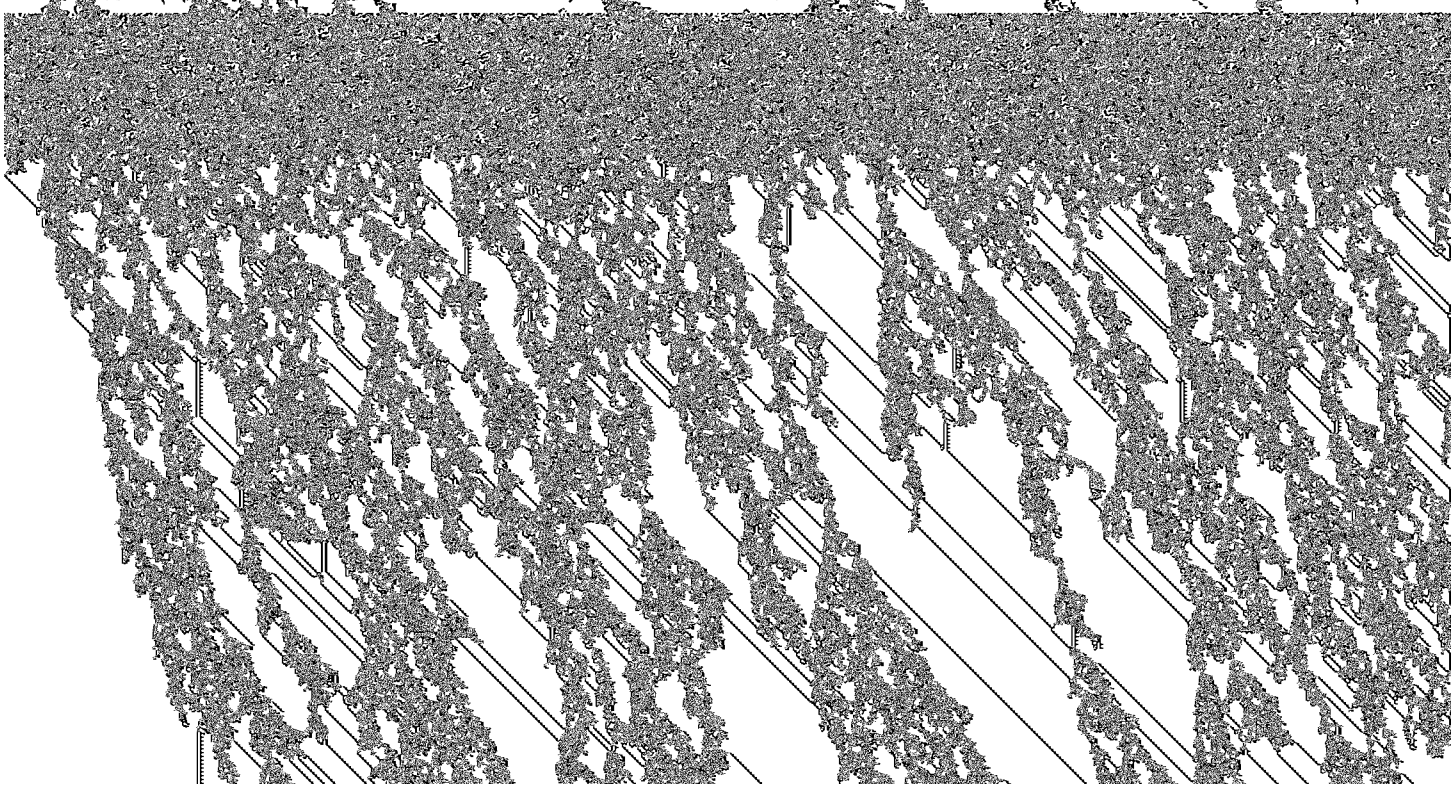
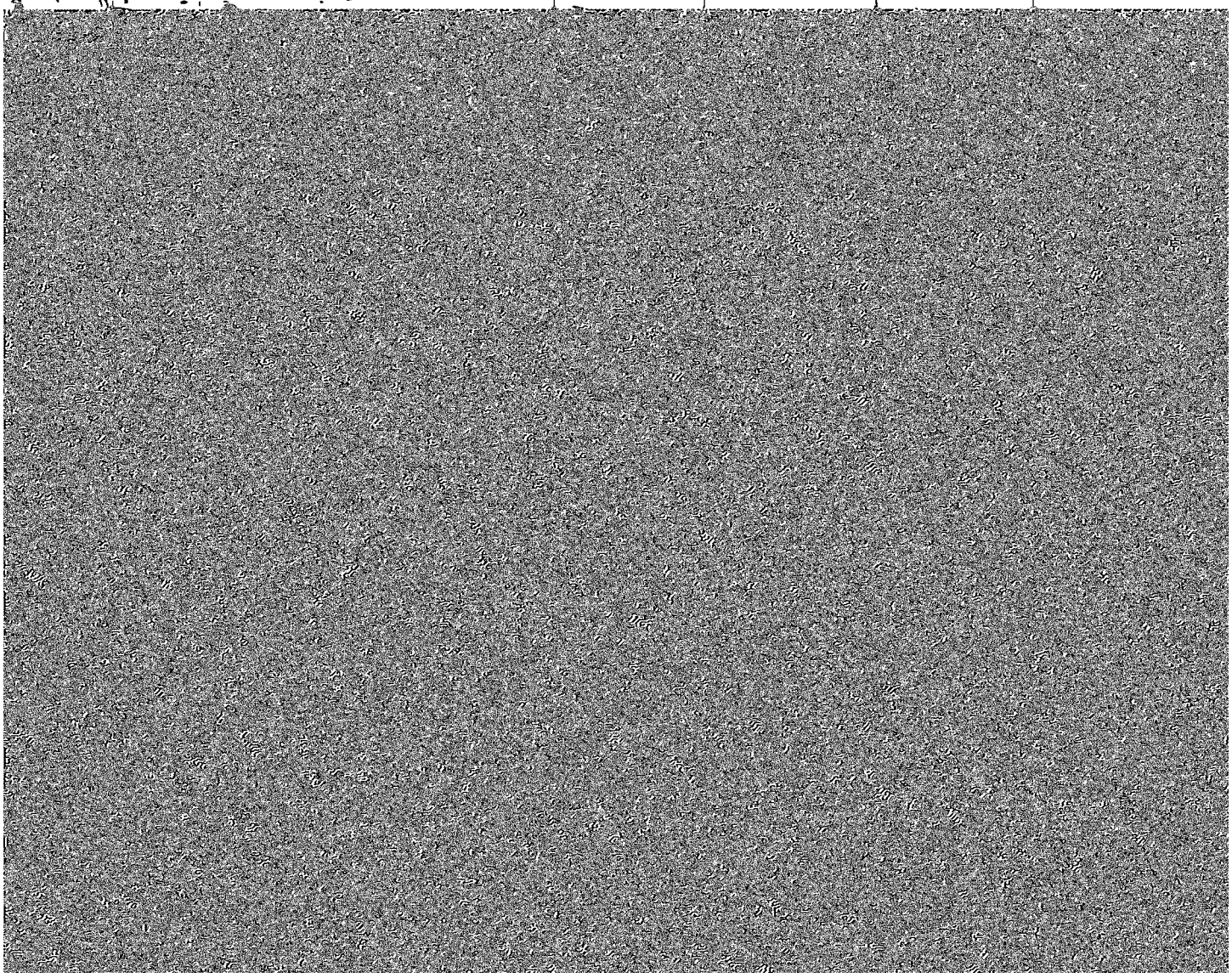


TABLE 4.—*Predicted average acre yields of principal crops*

[Yields are those to be expected under a high level of management. Absence of a yield figure indicates that the crop is not suited to the soil or is not commonly grown on it]

Soil	Corn	Soybeans	Alfalfa	Pasture
	Bu	*Bu*	*Tons*	*AUD* [1]
Batavia silt loam, 0 to 2 percent slopes	120	42	5.2	260
Batavia silt loam, 2 to 4 percent slopes	120	42	5.2	260
Batavia silt loam, 4 to 7 percent slopes, eroded	110	38	4.8	240
Bowes silt loam, 0 to 2 percent slopes	120	40	5.0	250
Bowes silt loam, 2 to 4 percent slopes	120	40	5.0	250
Camden silt loam, 0 to 2 percent slopes	110	38	5.0	250



used in 1968. Differences in weather from year to year may result in annual yields that range 20 percent above or below those shown in the table. Hay and pasture yields are predicted for varieties of legumes adapted to the soil.

Under a high level of management, adequate drainage, control of flooding, and control of erosion are provided; the proper number of plants is grown; high-quality seed is used; tillage is kept to a minimum and is done when soil moisture is favorable; weeds, plant diseases, and harmful insects are controlled; favorable soil reaction and near-optimum levels of nitrogen, phosphorus, and potassium are maintained; efficient use is made of available crop residue, barnyard manure, and green-manure crops; crops are harvested with the smallest possible loss; the combination of practices used is efficient; and all operations are timely.

Use of the Soils for Ornamental Trees and Shrubs

Use of the soils for woodland is not important in DeKalb County. Most trees are planted for their ornamental, shade, or esthetic value. Not all trees grow equally well on all soils. Many trees cannot survive on certain kinds of soil, for example, wet soils. To get optimum value from plantings and to increase their survival rate, a planting guide for trees and shrubs has

TABLE 5.—*Guide for tree and shrub plantings*

Tree and shrub planting group, soil series, and map symbols	Tree species	Shrub species
Group 1. Silt loams; well drained and moderately well drained; moderate permeability in the subsoil; reaction ranges from medium acid to neutral. Roots penetrate these soils easily. Batavia: 105A, 105B, 105C2 Bowes: 792A, 792B Camden: 134A, 134B Catlin: 171A, 171B, 171C2 Dodge: 24A, 24B, 24C2 Dresden: 325B, 325C2 Harvard: 344A, 344B, 344C2 Plano: 199A, 199B Proctor: 148A, 148B Rush: 791A, 791B St. Charles: 243A, 243B Saybrook: 145B, 145C2	Yellow-poplar, black walnut, white pine, white oak, red oak, Austrian pine, sugar maple, white ash, hackberry, Kentucky coffeetree, Norway spruce, Douglas-fir, red pine, Scotch pine.	Witchhazel, aromatic sumac, winged sumac, smooth sumac, staghorn sumac, hazel, Amur maple, autumn-olive, gray dogwood.
Group 2. Silt loams; well drained and moderately well drained; generally moderately well drained; generally moderate permeability in the subsoil, but the Lorenzo soil has moderately rapid permeability; reaction ranges from medium acid to neutral. Free carbonates occur at a depth of less than 40 inches, commonly at a depth of 15 to 30 inches; root development may be restricted to the zone above the carbonates. La Rose: 60B, 60C2, 60D2 Lorenzo: 318D2 Miami: 27B, 27C2, 27D2 Octagon: 656B, 656C2 Strawn: 224E2	Black walnut, white oak, red oak, black maple or sugar maple, white pine, Austrian pine, American basswood, white ash, Kentucky coffeetree, hackberry, bur oak, shingle oak, Scotch pine.	Witchhazel, aromatic sumac, winged sumac, smooth sumac, staghorn sumac, hazel, Amur maple, autumn-olive, gray dogwood.
Group 3. Silt loams; somewhat poorly drained; moderate permeability in the subsoil; reaction ranges from slightly acid to neutral. These soils are subject to periodic waterlogging; water table seasonally at a depth of 1 to 3 feet. Elburn: 198 Flanagan: 154 Herbert: 62 Kendall: 242 Lisbon: 59 Millbrook: 219 Muscatine: 41 Virgil: 104	Red maple, green ash, white pine, bur oak, shingle oak, swamp white oak, American hornbeam, American basswood, redcedar, Austrian pine, northern red oak, pin oak.	Silky dogwood, indigobush, autumn-olive, wild plum, gray dogwood, coralberry, black haw.

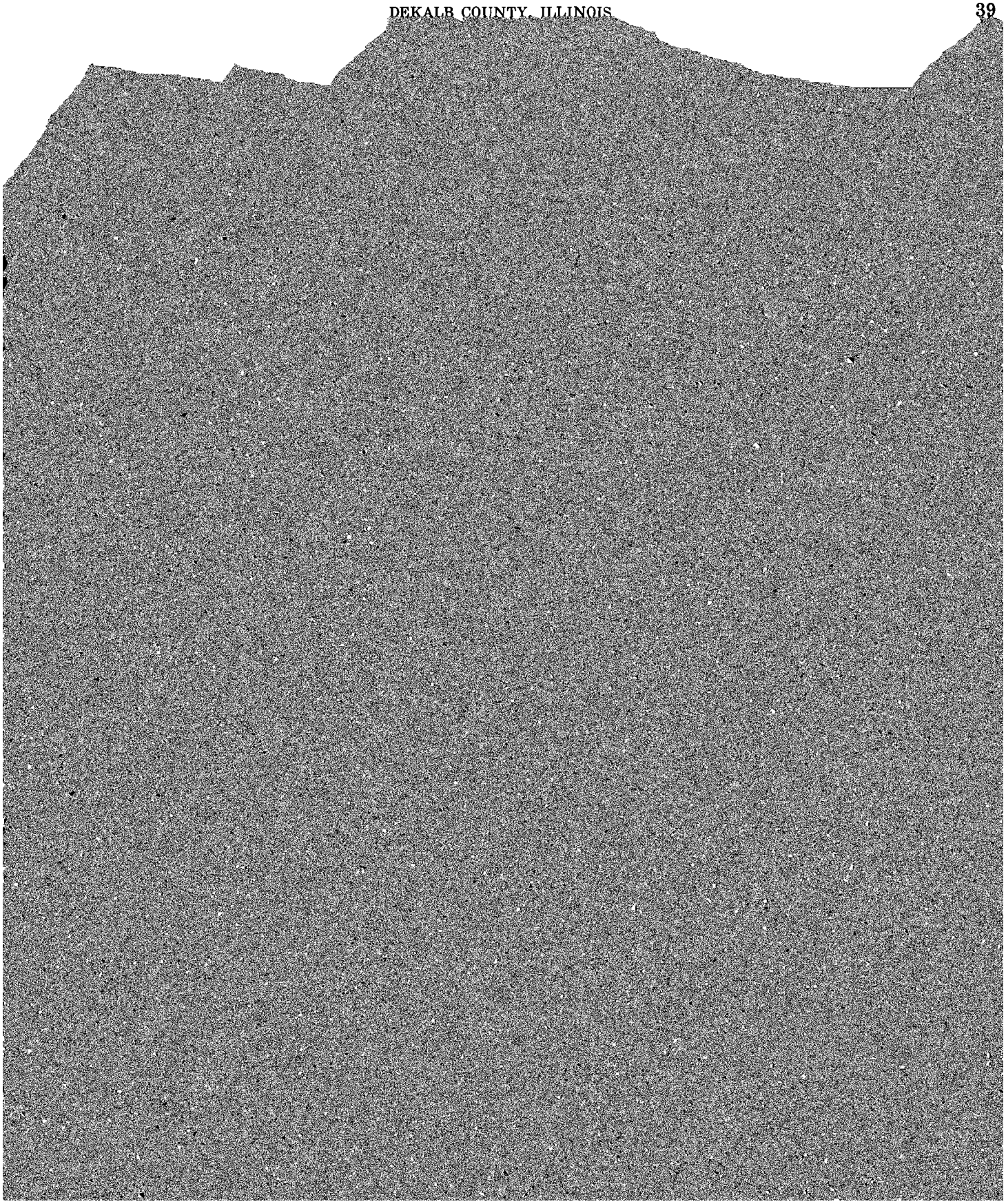
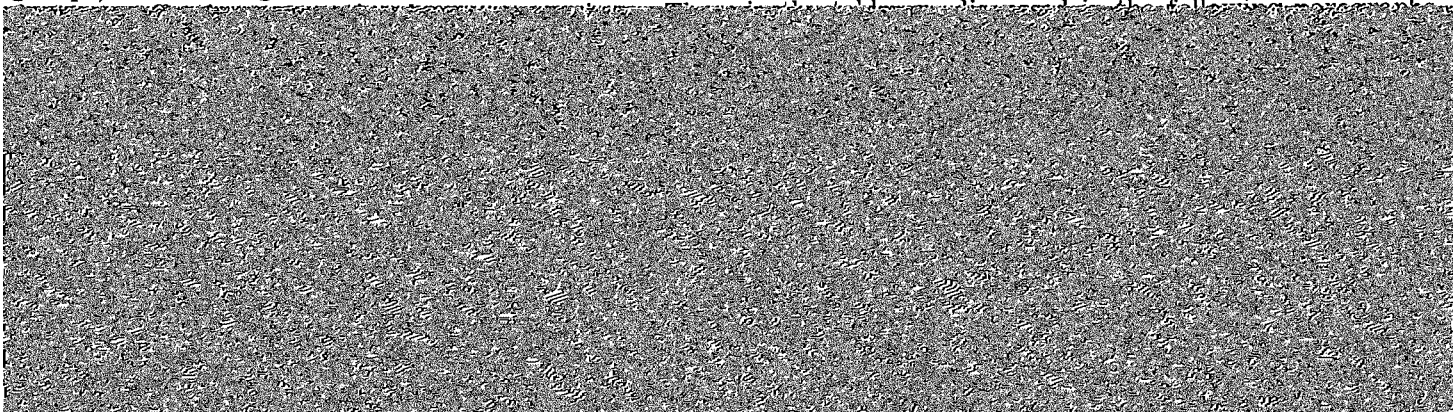


TABLE 6.—*Suitability of the soils for elements*

Wildlife groups, soil series, and map symbols	Elements of wildlife habitat		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants
Group 1. Well drained and moderately well drained, nearly level to moderately steep soils on uplands and terraces. Batavia: 105A, 105B, 105C2. Bowes: 792A, 792B. Camden: 134A, 134B. Catlin: 171A, 171B, 171C2. Dodge: 24A, 24B, 24C2. Dresden: 325B, 325C2. Harvard: 344A, 344B, 344C2. La Rose: 60B, 60C2, 60D2. Lorenzo: 318D2. Miami: 27B, 27C2, 27D2. Octagon: 656B, 656C2. Plano: 199A, 199B. Proctor: 148A, 148B. Rush: 791A, 791B. St. Charles: 243A, 243B. Saybrook: 145B, 145C2. Strawn: 224E2.	Good where slopes are 0 to 7 percent. Fair where slopes are more than 7 percent.	Good, except the Strawn soil is fair where slopes are more than 12 percent.	Good
Group 2. Somewhat poorly drained, nearly level soils on uplands and terraces. Elburn: 198. Flanagan: 154. Herbert: 62. Kendall: 242. Lisbon: 59. Millbrook: 219. Muscatine: 41. Virgil: 104.	Good	Good	Good
Group 3. Poorly drained and very poorly drained, nearly level to depressional soils on uplands, terraces, and bottom lands. Drummer: 152. Harpster: 67. Houghton: 103. Knight: 191. Peotone: 330. Sable: 68. Sawmill: V107. Will: 329.	Good where the soils are drained. Poor where the soils are not drained: wetness hazard; flooding or ponding limits growth. Very poor for the Houghton soil.	Good where the soils are drained. Poor where the soils are not drained: wetness hazard; flooding or ponding limits growth. Very poor for the Houghton soil.	Good where the soils are drained. Fair where the soils are not drained: wetness hazard; flooding or ponding limits growth. Poor for the Houghton soil.

Recreational Uses of the Soils

In table 7 the soils of DeKalb County are placed in groups, and the degree of limitation for and the soil use specified or that the limitations can be overcome only by intensive, costly engineering practices. The soil properties that determine moderate and severe limitations are shown in table 7. The recreational uses given



of wildlife habitat and kinds of wildlife

Elements of wildlife habitat—Continued			Kinds of wildlife		
Hardwood plants	Wetland plants	Shallow-water developments	Openland	Woodland	Wetland
Good	Very poor: no suitable plant species for food and cover.	Very poor: water table too deep.	Good, except the Strawn soil is fair.	Good, except the Lorenzo and Strawn soils are fair.	Very poor: no suitable wetland food and cover plants; water supply limited.
Good	Fair	Fair	Good	Good	Fair

TABLE 7.—*Recreational*

Recreational group, soil series, and map symbols	Degree of limitation and soil features affecting use for—	
	Utility buildings	Campsites
Group 1. Well drained and moderately well drained, nearly level to sloping soils on uplands. Batavia: 105A, 105B, 105C2. Bowes: 792A, 792B. Camden: 134A, 134B. Catlin: 171A, 171B, 171C2. Dodge: 24A, 24B, 24C2. Dresden: 325B, 325C2. Harvard: 344A, 344B, 344C2. La Rose: 60B, 60C2. Miami: 27B, 27C2. Octagon: 656B, 656C2. Plano: 199A, 199B. Proctor: 148A, 148B. Rush: 791A, 791B. St. Charles: 243A, 243B. Saybrook: 145B, 145C2.	Slight	Slight
Group 2. Well drained and moderately well drained, strongly sloping to steep soils on uplands. La Rose: 60D2. Lorenzo: 318D2. Miami: 27D2. Strawn: 224E2.	Moderate for 60D2, 318D2, and 27D2: slope. Severe for 224E2: slope	Moderate where slopes are 7 to 12 percent. Severe where slopes are more than 12 percent: bare soil is slippery and sticky when wet.
Group 3. Somewhat poorly drained, nearly level soils on uplands. Elburn: 198. Flanagan: 154. Herbert: 62. Kendall: 242. Lisbon: 59. Millbrook: 219. Muscatine: 41. Virgil: 104.	Moderate: seasonal water table at a depth of 1 foot to 3 feet.	Moderate: seasonal water table at a depth of 1 foot to 3 feet.
Group 4. Poorly drained, nearly level and depressional soils on uplands and bottom lands. Drummer: 152. Harpster: 67. Knight: 191. Peotone: 330. Sable: 68. Sawmill: V107. Will: 329.	Severe: seasonal water table near surface; subject to ponding; soils dry slowly; V107 subject to flooding.	Severe: seasonal water table near surface; subject to ponding; soils dry slowly; bare soils are slippery and sticky when wet; V107 subject to flooding.
Group 5. Very poorly drained, nearly level to depressional, organic soils. Houghton: 103.	Very severe: seasonal water table at or near the surface; subject to ponding; unstable; high compressibility; subject to subsidence when drained.	Very severe: seasonal water table at or near the surface; subject to ponding; unstable; high compressibility; subject to subsidence when drained; bare soil subject to blowing.

for small buildings, irrigation systems, ponds and small dams, and systems for disposal of sewage and refuse.

Information in this section of the soil survey can be helpful to those who—

1. Select potential residential, industrial, commercial, and recreational areas.
2. Evaluate alternate routes for roads, highways, pipelines, and underground cables.
3. Seek sources of gravel, sand, or clay.
4. Plan farm drainage systems, irrigation systems, ponds, terraces, and other structures for controlling water and conserving soil.
5. Correlate performance of structures already built with properties of the kinds of soil on which they are built, for the purpose of predicting performance of structures on the same or similar kinds of soil in other locations.
6. Predict the trafficability of soils for cross-country movement of vehicles and construction equipment.
7. Develop preliminary estimates pertinent to construction in a particular area.

Most of the information in this section is presented in tables. Table 8 shows several estimated soil proper-

uses of the soils

Degree of limitation and soil features affecting use for—Continued			
Picnic areas	Playgrounds	Paths and trails	Golf fairways
Slight	Slight where slopes are 0 to 2 percent. Moderate where slopes are 2 to 7 percent.	Slight	Slight.
Moderate where slopes are 7 to	Severe: slopes of more than 7	Moderate: bare soil is	Moderate: slopes of more

TABLE 8.—*Estimated soil properties*

[The symbol > means more than;

Soil series and map symbols	Depth of seasonal high water table	Depth from surface	USDA texture	Classification	
				Unified	AASHTO
	Feet	*Inches*			
Batavia: 105A, 105B, 105C2	>5	0–10	Silt loam	CL or ML	A–6 or A–4
		10–42	Silty clay loam	CL	A–6
		42–60	Silt loam, loam	ML or SM	A–2 or A–4
Bowes: 792A, 792B	>5	0–7	Silt loam	ML or CL	A–4 or A–6
		7–37	Silty clay loam	CL	A–6 or A–7
		37–47	Gravelly sandy clay loam, loam.	SM or CL	A–2 or A–6
		47–60	Stratified sand and gravel.	SP, GP, SW, or GW	A–1
Camden: 134A, 134B	>5	0–8	Silt loam	ML or CL	A–4
		8–29	Silty clay loam	CL	A–6
		29–55	Stratified clay loam, silt loam.	SM, SC, or CL	A–2, A–4, or A–6
Catlin: 171A, 171B, 171C2	>5	0–11	Silt loam	CL, ML, or OL	A–7, A–4, or A–6
		11–43	Silty clay loam	CL	A–6 or A–7
		43–70	Clay loam, loam	CL	A–4
Dodge: 24A, 24B, 24C2	>5	0–9	Silt loam	ML or CL	A–4 or A–6
		9–25	Silty clay loam	CL	A–6 or A–7
		25–31	Clay loam	CL	A–6 or A–7
		31–60	Loam	CL	A–4 or A–6
Dresden: 325B, 325C2	>5	0–7	Silt loam	ML or CL	A–4 or A–6
		7–29	Silty clay loam, clay loam.	CL	A–6 or A–7
		29–38	Gravelly clay loam	SM or CL	A–2, A–4, or A–6
		38–60	Stratified sand and gravel.	GP or SP	A–1
Drummer: 152	>2	0–18	Silty clay loam	CL or OH	A–7
		18–50	Silty clay loam	CL	A–6 or A–7
		50–78	Silt loam, sandy clay loam.	ML, CL, SC	A–2, A–4, or A–6
Elburn: 198	1–3	0–14	Silt loam, silty clay loam.	ML or CL	A–4 or A–6
		14–48	Silty clay loam	CL	A–6 or A–7
		48–60	Clay loam	CL	A–6 or A–4
Flanagan: 154	1–3	0–16	Silt loam	CL, ML, MH, or OL	A–7, A–4, or A–6
		16–35			
		35–60	Silty clay loam	CL or CH	A–6 or A–7
			Loam, silt loam	CL or ML	A–4 or A–6
Harpster: 67	>2	0–12	Silty clay loam	CL or OH	A–7
		12–30	Silty clay loam	CL	A–6 or A–7
		30–58	Silt loam, loam	ML or CL	A–4 or A–6
Harvard: 344A, 344B, 344C2	>5	0–12	Silt loam	ML or CL	A–4 or A–6
		12–27	Silty clay loam	CL	A–6 or A–7
		27–68	Stratified clay loam, loam, and sand.	CL, SM, SC	A–2, A–4, A–6, or A–7
Herbert: 62	1–3	0–12	Silt loam	ML or CL	A–4 or A–6
		12–26	Silty clay loam	CL	A–6 or A–7
		26–36	Clay loam	CL	A–6 or A–7
		36–58	Loam	CL	A–4

significant in engineering

the symbol < means less than]

Percentage less than 3 inches passing sieve[1] —			Liquid limit	Plasticity index	Permeability	Available water capacity	Reaction	Shrink-swell potential
No. 4 (4.7 mm)	No. 10 (2.0 mm)	No. 200 (0.074 mm)						
			Percent		*Inches per hour*	*Inches per inch of soil*	*pH*	
95–100	90–100	80–100	30–40	10–15	0.6–2.0	0.20–0.25	6.6–7.3	Low.
95–100	90–100	85–100	40–55	20–35	0.6–2.0	0.18–0.20	5.6–7.3	Moderate.

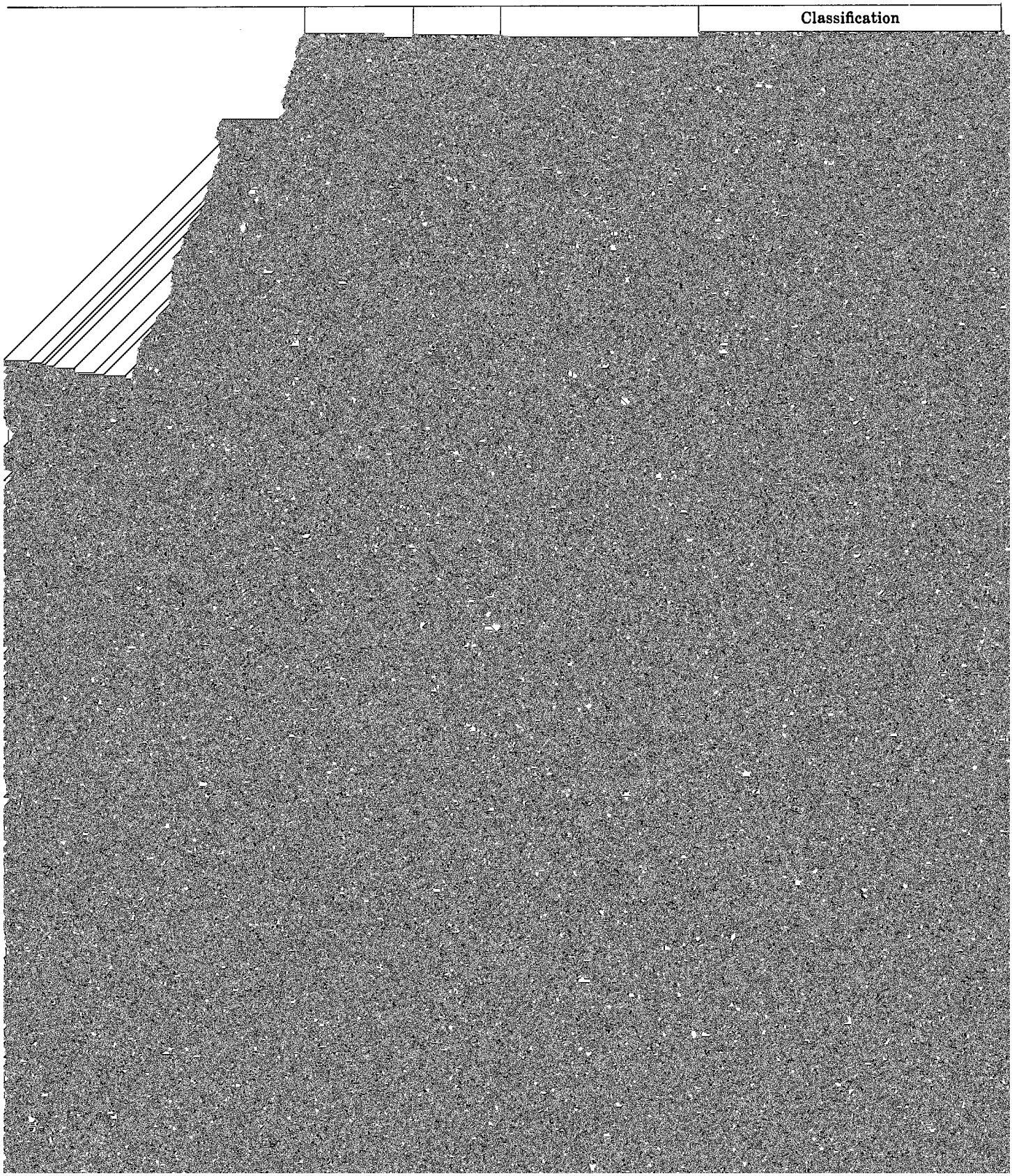
TABLE 8.—*Estimated soil properties*

Soil series and map symbols	Depth of seasonal high water table	Depth from surface	USDA texture	Classification	
				Unified	AASHTO
	Feet	*Inches*			
Houghton: 103	0–1	0–55	Muck (sapric material).	Pt	
Kendall: 242	1–3	0–14	Silt loam	ML or CL	A–4 or A–6
		14–52	Silty clay loam	CL	A–6 or A–7
		52–65	Loam, silt loam	ML or CL	A–4 or A–6
Knight: 191	<2	0–35	Silt loam	CL or OL	A–6 or A–7
		35–54	Silty clay loam	CL	A–6 or A–7
		54–60	Clay loam	CL	A–6 or A–7
La Rose: 60B, 60C2, 60D2	>5	0–7	Silt loam	ML or CL	A–4 or A–6
		7–20	Clay loam, loam	CL	A–6 or A–7
		20–60	Loam	CL	A–4
Lisbon: 59	1–3	0–12	Silt loam	CL, ML, OL	A–4 or A–6
		12–26	Silty clay loam	CL	A–6 or A–7
		26–60	Loam, clay loam	CL	A–4
Lorenzo: 318D2	>5	0–5	Loam	CL	A–4
		5–14	Clay loam	CL	A–6
		14–60	Stratified sand and gravel.	SP or GP	A–1
Miami: 27B, 27C2, 27D2	>5	0–6	Silt loam	ML or CL	A–4 or A–6
		6–31	Clay loam, silty clay loam.	CL	A–6 or A–7
		31–60	Loam	CL	A–4
Millbrook: 219	1–3	0–12	Silt loam	CL or ML	A–6 or A–7
		12–34	Silty clay loam, loam	CL	A–6 or A–7
		34–68	Stratified loam, silt loam, and sandy loam.	SM, SC, ML, or CL	A–2, A–4, or A–6
Muscatine: 41	1–3	0–14	Silt loam	ML or CL	A–4 or A–6
		14–42	Silty clay loam	CL or CH	A–7
		42–60	Silt loam	CL	A–6 or A–4
Octagon: 656B, 656C2	>5	0–7	Silt loam	ML or CL	A–4 or A–6
		7–28	Clay loam	CL	A–6 or A–7
		28–60	Loam	CL	A–4
Peotone: 330	0–1	0–20	Silty clay loam	CL, OH, or CH	A–7
		20–38	Silty clay loam	CL or CH	A–7
		38–60	Silty clay loam	CL	A–7
Plano: 199A, 199B	>5	0–9	Silt loam	CL or ML	A–6 or A–4
		9–51	Silty clay loam	CL	A–6
		51–74	Stratified clay loam, loam.	ML or CL	A–4 or A–6
Proctor: 148A, 148B	>5	0–12	Silt loam	CL or ML	A–6 or A–4
		12–25	Silty clay loam	CL	A–6 or A–7
		25–60	Stratified clay loam, loam, and sandy loam.	SM, SC, or CL	A–2, A–4, A–6, or A–7
Rush: 791A, 791B	>5	0–13	Silt loam	ML or CL	A–4 or A–6
		13–46	Silty clay loam	CL	A–6 or A–7
		46–56	Gravelly clay loam	CL	A–4 or A–6
		56–60	Stratified sand and gravel.	SP or GP	A–1
Sable: 68	<2	0–17	Silty clay loam	CH, CL, or OH	A–7
		17–44	Silty clay loam	CL or CH	A–6 or A–7
		44–60	Silt loam	CL	A–6
St. Charles: 243A, 243B	>5	0–10	Silt loam	CL or ML	A–6 or A–4
		10–41	Silty clay loam	CL	A–6
		41–60	Clay loam, silt loam	ML or CL	A–4 or A–6

significant in engineering—Continued

Percentage less than 3 inches passing sieve[1] —			Liquid limit	Plasticity index	Permeability	Available water capacity	Reaction	Shrink-swell potential
No. 4 (4.7 mm)	No. 10 (2.0 mm)	No. 200 (0.074 mm)						
			Percent		*Inches per hour*	*Inches per inch of soil*	*pH*	
---	---	---	---	NP	2.0–6.3	>0.25	6.6–7.3	Not applicable
100	95–100	90–100	30–40	10–15	0.6–2.0	0.22–0.24	6.1–7.3	Low.
100	95–100	80–95	40–55	20–35	0.6–2.0	0.18–0.20	5.1–6.0	Moderate.
90–100	60–100	50–80	15–25	5–15	0.6–6.3	0.14–0.18	6.6–8.4	Low.
95–100	90–100	80–90	30–40	10–15	0.6–2.0	0.22–0.24	6.1–7.3	Low.
95–100	90–100	75–90	40–55	20–35	0.02–0.2	0.18–0.20	5.6–6.0	Moderate.
90–100	85–95	60–90	30–55	15–30	0.6–2.0	0.14–0.16	5.6–6.0	Moderate.
100	95–100	85–100	35–55	10–15	0.6–2.0	0.20–0.25	6.6–7.3	Low.
95–100	90–100	65–85	30–50	15–30	0.6–2.0	0.16–0.18	6.1–7.8	Moderate.
95–100	85–95	60–80	15–25	5–15	0.2–1.0	0.14–0.18	7.4–8.4	Low.
100	95–100	90–100	35–55	15–25	0.6–2.0	0.20–0.25	6.6–7.3	Low.
95–100	90–100	70–95	30–50	15–30	0.6–2.0	0.16–0.19	6.6–7.3	Moderate.
95–100	85–95	60–80	30–55	5–15	0.2–1.0	0.14–0.18	7.4–8.4	Low.
100	95–100	80–95	20–65	5–30	0.6–2.0	0.16–0.20	6.6–7.3	Low.
90–100	80–100	60–80	30–55	15–25	0.6–2.0	0.16–0.18	6.1–6.5	Moderate.
50–70	30–45	0–10	---	NP	6.3–20	0.02–0.04	7.4–8.4	Low.
100	95–100	85–95	30–40	10–15	0.6–2.0	0.16–0.20	6.6–7.3	Low.
95–100	90–100	65–85	30–55	15–30	0.6–2.0	0.16–0.19	5.6–7.3	Moderate.
95–100	85–95	60–80	15–25	5–15	0.2–1.0	0.14–0.18	7.4–8.4	Low.
100	95–100	90–100	30–40	10–15	0.6–2.0	0.20–0.25	5.1–5.5	Low.
100	90–100	60–90	40–55	20–35	0.6–2.0	0.18–0.20	5.6–7.3	Moderate.
95–100	90–100	30–80	25	NP–15	0.6–6.3	0.12–0.18	6.6–8.4	Low.
100	100	95–100	30–40	10–15	0.6–2.0	0.20–0.25	6.1–6.5	Low.
100	100	95–100	40–55	20–35	0.6–2.0	0.19–0.21	5.6–7.3	Moderate.
100	100	95–100	15–25	5–15	0.6–2.0	0.18–0.23	7.4–8.4	Low.
100	95–100	75–95	25–50	10–15	0.6–2.0	0.20–0.25	5.1–5.5	Low.
95–100	90–100	65–85	30–55	15–30	0.6–2.0	0.16–0.19	5.6–7.8	Moderate.
95–100	85–95	60–80	20–36	5–15	0.2–1.0	0.14–0.18	7.4–7.8	Low.
95–100	90–100	85–100	40–80	30–55	0.6–2.0	0.19–0.23	6.6–7.3	Moderate.
95–100	90–100	85–100	40–80	30–55	0.2–0.6	0.19–0.21	6.6–7.3	Moderate.
95–100	90–100	85–100	30–55	20–40	0.2–0.6	0.19–0.21	6.6–7.3	Moderate.
100	100	95–100	30–40	10–15	0.6–2.0	0.20–0.25	6.6–7.3	Low.
100	100	95–100	40–55	20–35	0.6–2.0	0.19–0.21	6.1–7.3	Moderate.
90–100	80–90	50–75	30–55	5–15	0.6–6.3	0.10–0.14	6.6–8.4	Low.
100	95–100	80–95	30–40	10–15	0.6–2.0	0.20–0.25	6.6–7.3	Low.
95–100	90–100	60–90	40–55	20–35	0.6–2.0	0.18–0.20	6.1–7.3	Moderate.
80–100	50–95	25–80	35	NP–15	0.6–6.3	0.10–0.14	6.1–7.8	Low.
100	100	80–95	30–40	10–15	0.6–2.0	0.22–0.24	6.6–7.3	Low.
100	95–100	85–95	30–50	15–30	0.6–2.0	0.18–0.20	5.6–7.3	Moderate.
80–100	65–90	50–65	30–40	15–25	2.0–6.3	0.14–0.16	5.6–6.0	Moderate.
40–80	30–70	0–10	---	NP	6.3–20	0.04–0.06	7.4–8.4	Low.
100	100	95–100	40–55	20–40	0.6–2.0	0.15–0.20	6.1–7.3	Moderate.
100	100	95–100	40–50	20–40	0.6–2.0	0.13–0.19	6.1–7.3	Moderate.
100	100	95–100	15–25	5–15	0.6–2.0	0.18–0.23	6.6–7.3	Low.
100	100	95–100	30–40	10–15	0.6–2.0	0.20–0.25	6.6–7.3	Low.
100	100	95–100	40–55	20–35	0.6–2.0	0.18–0.20	5.6–7.3	Moderate.
90–100	80–90	50–75	30–55	5–15	0.6–6.3	0.10–0.14	6.1–7.3	Low.

TABLE 8.—*Estimated soil properties*



significant in engineering—Continued

Percentage less than 3 inches passing sieve[1] —			Liquid limit	Plasticity index	Permeability	Available water capacity	Reaction	Shrink-swell potential
No. 4 (4.7 mm)	No. 10 (2.0 mm)	No. 200 (0.074 mm)						
			Percent		*Inches per hour*	*Inches per inch of soil*	*pH*	
100	95–100	90–100	40–55	20–40	0.6–2.0	0.19–0.23	6.6–7.3	Moderate.
95–100	90–100	80–100	40–50	20–40	0.6–2.0	0.19–0.21	6.1–7.3	Moderate.
80–100	70–90	60–90	30–55	NP–15	0.6–2.0	0.10–0.19	6.6–7.3	Low.
100	95–100	90–100	30–45	10–20	0.6–2.0	0.20–0.25	6.1–6.5	Low.
95–100	90–100	80–95	40–55	20–35	0.6–2.0	0.16–0.19	6.1–6.5	Moderate.
95–100	90–100	55–75	30–55	15–30	0.6–2.0	0.16–0.19	6.6–7.8	Moderate.
95–100	85–95	55–75	15–25	5–15	0.2–1.0	0.14–0.18	7.4–8.4	Low.
100	90–100	80–100	30–50	10–15	0.6–2.0	0.20–0.25	6.6–7.3	Low.
95–100	90–100	65–85	30–55	15–30	0.6–2.0	0.16–0.18	6.6–7.3	Moderate.
95–100	85–95	60–80	15–25	5–15	0.2–1.0	0.14–0.18	7.4–8.4	Low.
100	95–100	90–100	30–45	5–15	0.6–2.0	0.22–0.24	6.1–7.3	Low.
100	95–100	80–100	35–50	15–30	0.6–2.0	0.18–0.20	6.1–7.3	Moderate.
90–100	60–100	40–95	10–30	5–15	0.6–6.3	0.14–0.18	7.4–8.4	Low.
100	85–90	80–95	50–70	20–30	0.6–2.0	0.21–0.23	7.4–8.4	Moderate.
95–100	70–90	60–90	35–60	20–35	0.6–2.0	0.18–0.20	7.4–8.4	Moderate.
40–100	30–80	0–40	15	NP–6	0.6–20	0.02–0.10	7.4–8.4	Low.

soils, have 5 to 20 percent coarse fraction greater than 3 inches in the lower layers.
[1] NP means nonplastic.

properties of the soils

Suitability as a source of—Continued		Soil features affecting—			
Sand and gravel	Topsoil	Drainage for crops and pasture	Irrigation	Terraces and diversions	Grassed waterways
Poor to fair source of sand below a depth of 4 feet: generally contains considerable fines.	Fair: 8 to 16 inches of suitable material. Poor if eroded.	Natural drainage is adequate.	Medium intake rate; moderate permeability; high available water capacity; sloping areas subject to runoff and erosion.	Soil properties are generally favorable; irregular topography in places.	Soil properties are favorable.
Good source of sand and gravel below a depth of 4 to 5 feet.	Fair: 8 to 16 inches of suitable material. Poor if eroded.	Natural drainage is adequate.	Medium intake rate; moderate permeability; sloping areas subject to runoff and erosion.	Deep cuts should be avoided because of sand and gravel at a depth of 4 to 5 feet.	Soil properties are favorable.
Generally not suitable in upland areas; on stream terraces there may be thick deposits below a depth of 5 feet.	Fair: 8 to 16 inches of suitable material. Poor if eroded.	Natural drainage is adequate.	Medium intake rate; moderate permeability; sloping areas subject to runoff and erosion.	Soil properties are generally favorable; irregular topography in places.	Soil properties are favorable.

TABLE 9.—*Interpretations of engineering*

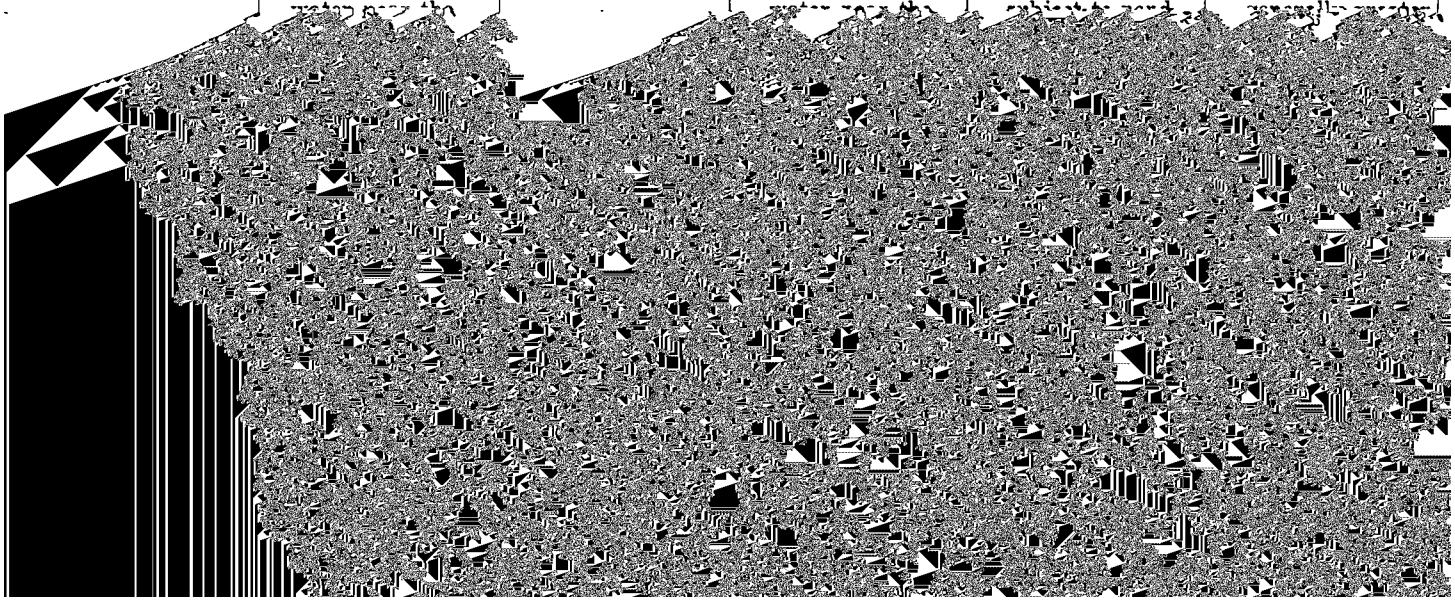
Soil series and map symbols	Degree and kind of limitation for—				Suitability as a source of—
	Septic tank absorption fields	Shallow excavations	Dwellings with basements	Roads and streets	Road fill
Dodge: 24A, 24B, 24C2.	Moderate: permeability of the subsoil is dominantely 0.63 to 1.00 inch per hour.	Slight	Slight	Severe: subsoil has plasticity index greater than 15.	Poor for subsoil: plasticity index generally more than 15. Fair to good for underlying material; plasticity index generally less than 15.
Dresden: 325B, 325C2.	Slight[1]	Moderate: sand and gravel below a depth of 2 to 3 feet may slump.	Slight	Severe: subsoil has plasticity index greater than 15.	Poor for subsoil: plasticity index generally more than 15. Good for underlying material: stratified sand and gravel.
Drummer: 152	Severe[1]: seasonally saturated with water near the surface.	Severe: seasonal high water table.	Severe: seasonal high water table at a depth of less than 2 feet.	Severe: generally has a high water table; high susceptibility to frost action.	Poor for subsoil: high water table.
Elburn: 198	Severe: periodically saturated with water at a depth of 1 foot to 3 feet.	Severe: seasonal high water table.	Severe: seasonally saturated with water at a depth of 1 foot to 3 feet.	Severe: high susceptibility to frost action.	Poor for subsoil: plasticity index generally more than 15. Fair for underlying material: plasticity index generally less than 15; seasonally saturated with water.
Flanagan: 154	Severe: periodically saturated with water at a depth of 1 foot to 3 feet.	Severe: seasonal high water table.	Severe: seasonally saturated with water at a depth of 1 foot to 3 feet.	Severe: high susceptibility to frost action.	Poor for subsoil: plasticity index generally more than 15. Fair for underlying material: plasticity index generally less than 15; seasonally saturated with water.
Harpster: 67	Severe: seasonally saturated with water near the surface.	Severe: seasonal high water table.	Severe: seasonally saturated with water close to the surface.	Severe: poorly drained; seasonal high water table; high susceptibility to frost action.	Poor for subsoil: plasticity index generally more than 15. Variable in underlying material: high water table.
Harvard: 344A, 344B, 344C2.	Slight	Slight	Slight	Severe for subsoil: plasticity index greater than 15.	Poor for subsoil: plasticity index generally more than 15. Fair to good for underlying material: plasticity index generally less than 15.

properties of the soils—Continued

Suitability as a source of—Continued		Soil features affecting—			
Sand and gravel	Topsoil	Drainage for crops and pasture	Irrigation	Terraces and diversions	Grassed waterways
Not suitable	Fair: 8 to 16 inches	Natural drainage is	Medium intake rate:	Soil properties are	Soil properties are

TABLE 9.—*Interpretations of engineering*

Soil series and map symbols	Degree and kind of limitation for—				Suitability as a source of—
	Septic tank absorption fields	Shallow excavations	Dwellings with basements	Roads and streets	Road fill
Catlin: 171A, 171B, 171C2.	Slight	Slight	Slight	Severe: subsoil has plasticity index greater than 15.	Poor for subsoil: plasticity index generally more than 15. Fair to good for underlying material: plasticity index generally less than 15.
Herbert: 62	Severe: periodically saturated with water at a depth of 1 foot to 3 feet.	Severe: seasonal high water table.	Severe: seasonally saturated with water at a depth of 1 foot to 3 feet.	Severe: high susceptibility to frost action.	Poor for subsoil: plasticity index generally 15 or more. Fair for underlying material: plasticity index generally less than 15; seasonally saturated with water.
Houghton: 103	Very severe: continuously saturated with water; organic material has poor supporting strength for septic tank and tile.	Severe: high water table; organic material.	Very severe: continuously saturated with water; organic material has poor supporting strength.	Very severe: organic material.	Not suitable: organic material.
Kendall: 242	Severe: periodically saturated with water at a depth of 1 foot to 3 feet.	Severe: seasonal high water table.	Severe: seasonally saturated with water at a depth of 1 foot to 3 feet.	Severe: high susceptibility to frost action.	Poor for subsoil: plasticity index generally greater than 15. Fair for underlying material: plasticity index generally less than 15; seasonally saturated with water.
Knight: 191	Severe: seasonally saturated with	Severe: seasonal high water table.	Severe: seasonally saturated with	Severe: seasonal high water table;	Poor for subsoil: plasticity index



properties of the soils—Continued

Suitability as a source of—Continued		Soil features affecting—			
Sand and gravel	Topsoil	Drainage for crops and pasture	Irrigation	Terraces and diversions	Grassed waterways
Not suitable	Fair: 8 to 16 inches of suitable material. Poor if eroded.	Natural drainage is adequate.	Medium intake rate; moderate permeability; sloping areas subject to runoff and erosion.	Soil properties are generally favorable; irregular topography in places.	Soil properties are favorable.
Not suitable	Fair: 8 to 16 inches of suitable material.	Seasonal high water table 1 foot to 3 feet below the surface; tile drains are suited and are needed during wet seasons.	Not generally irrigated.	Not needed because of topography.	Soil properties are generally favorable; needs subsurface drainage.
Not suitable: organic material.	Poor: high water table.	Water table at or near surface; tile drains are difficult to maintain; material subsides when water table is lowered.	Not generally irrigated, unless used for specialized crops; not suitable for furrow irrigation.	Not needed because of topography.	Not needed.
Poor to fair source below a depth of 4 feet; generally contains considerable fines.	Fair: 8 to 16 inches of suitable material.	Seasonal high water table at a depth of 1 foot to 3 feet; tile drains are suited and are needed during wet seasons.	Not generally irrigated.	Not needed because of topography.	Not needed because of topography.
Generally not suitable.	Fair: high water table.	Artificial drainage generally needed; tile drains function well if outlets are available.	Not generally irrigated.	Not needed	Not needed.
Not suitable	Fair: 8 to 16 inches of suitable material. Not suited if eroded.	Natural drainage is adequate.	Medium intake rate; moderate permeability; sloping areas subject to runoff and erosion.	Calcareous glacial material at a depth of 2 to 3 feet; difficult to vegetate.	Calcareous substratum may be difficult to vegetate.
Not suitable	Fair: 8 to 16 inches of suitable material.	Seasonal high water table at a depth of 1 foot to 3 feet; tile drains are suited and are needed during wet seasons.	Not generally irrigated.	Not needed	Not needed because of topography.

TABLE 9.—*Interpretations of engineering*

Soil series and map symbols	Degree and kind of limitation for—				Suitability as a source of—
	Septic tank absorption fields	Shallow excavations	Dwellings with basements	Roads and streets	Road fill
Lorenzo: 318D2-----	Moderate[1]: slopes	Moderate: sand	Moderate: slopes	Moderate: slopes	Poor for subsoil: plasticity index

properties of the soils—Continued

Suitability as a source of—Continued		Soil features affecting—			
Sand and gravel	Topsoil	Drainage for crops and pasture	Irrigation	Terraces and diversions	Grassed waterways
Good source of stratified sand and gravel below a depth of 1 foot to 2 feet.	Not suited: thin surface layer; gravelly.	Natural drainage is excessive.	Not suited; steep	Gravel at a depth 1 foot to 2 feet; difficult to vegetate; low productivity.	Gravelly substratum difficult to vegetate.
Not suitable	Fair: 8 to 16 inches of suitable material.	Natural drainage is adequate.	Medium intake rate; moderate permeability; subject to	Soil properties are generally favorable; irregular	Exposed subsoil difficult to vegetate.

TABLE 9.—*Interpretations of engineering*

Soil series and map symbols	Degree and kind of limitation for—				Suitability as a source of—
	Septic tank absorption fields	Shallow excavations	Dwellings with basements	Roads and streets	Road fill
Proctor: 148A, 148B	Slight	Slight	Slight	Severe: subsoil has plasticity index greater than 15.	Poor for subsoil: plasticity index generally more than 15. Fair to good for underlying material: plasticity index generally less than 15.
Rush: 791A, 791B	Slight[1]	Slight	Slight	Severe: subsoil has	Poor for subsoil:

properties of the soils—Continued

Suitability as a source of—Continued		Soil features affecting—			
Sand and gravel	Topsoil	Drainage for crops and pasture	Irrigation	Terraces and diversions	Grassed waterways
Poor to fair source of sand below a depth of 4 feet; generally contains considerable fines.	Fair: 8 to 16 inches of suitable material.	Natural drainage is adequate.	Medium intake rate; moderate permeability.	Soil properties are favorable.	Soil properties are favorable.
Good source of sand and gravel below a depth of 4 to 5 feet.	Fair: 8 to 16 inches of suitable material. Poor if eroded.	Natural drainage is adequate.	Medium intake rate; moderate permeability; sloping areas subject to runoff and erosion.	Deep cuts should be avoided because of sand and gravel at a depth of 4 to 5 feet.	Soil properties are favorable.

TABLE 9.—*Interpretations of engineering*

properties of the soils—Continued

Suitability as a source of—Continued		Soil features affecting—			
Sand and gravel	Topsoil	Drainage for crops and pasture	Irrigation	Terraces and diversions	Grassed waterways
Poor to fair source below a depth of 4 feet; generally contains considerable fines.	Fair: 8 to 16 inches of suitable material.	Tile drains are suited and are needed during wet seasons.	Not generally irrigated.	Not needed because of topography.	Not needed because of topography.
Good source of stratified sand and gravel below a depth of 2 1/2 feet.	Poor: calcareous; high water table.	Artificial drainage generally needed; tile function well if outlets are available; keep tile above sand and gravel if possible; use [illegible]	Not generally irrigated.	Not needed because of topography.	Not needed.

TABLE 10.—*Engineering*

Soil name and location	Parent material	Report No. 71–IL–019	Depth	Moisture-density[1]	
				Maximum dry density	Optimum moisture
			Inches	*Lb per cu ft*	*Percent*
Herbert silt loam: 147 feet north of road and 306 feet east of section line in the NW¼NW¼ sec. 14, T. 42 N., R. 4 E. (Modal)	Loess over loam till.	3–1	0–8	101	20
		3–2	12–16	101	20
		3–3	36–58	113	14
Octagon silt loam: 1,133 feet west and 79 feet north of the intersection of Base Line and Lloyd Road, sec. 32, T. 42 N., R. 5 E. (Modal)	Loess over loam till.	2–1	0–7	110	16
		2–2	7–18	110	15
		2–3	24–60	124	11
Peotone silty clay loam: 75 feet east and 120 feet south of the junction of Lee Road and CNWRR tracks, NW¼NE¼ sec. 7, T. 38 N., R. 4 E. (Modal)	Silty clay loam sediments.	4–1	0–8	82	32
		4–2	8–34	100	21
		4–3	34–45	109	17
Saybrook silt loam: 95 feet west and 238 feet south of the NE. corner of SE¼NW¼ sec. 27, T. 41 N., R. 3 E. (Modal)	Loess over loam till.	5–1	0–8	101	21
		5–2	15–26	99	21
		5–3	26–31	110	15
		5–4	44–58	128	10
Virgil silt loam: 1,000 feet north and 330 feet west of the intersection of Loves Road and Pleasant Street, sec. 18, T. 40 N., R. 5 E. (Modal)	Water-deposited silts and sands.	6–1	0–9	109	16
		6–2	11–46	104	19
		6–3	64–92	118	14

[1] Based on AASHTO Designation T 99, Method A (*1*).
[2] Mechanical analysis according to AASHTO Designation T 88–57 (*1*). Results by this procedure may differ somewhat from the results obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHTO procedure, the fine material is analyzed by the hydrometer method, and the various grain-size fractions are calculated on the basis of all material up to and including that 3 inches in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method, and the

Engineering soil classification systems

The two systems most commonly used in classifying samples of soils for engineering are the Unified system (*2*) used by the Soil Conservation Service, Department of Defense, and other agencies, and the AASHTO [illegible] A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. In group A-1 are gravelly soils of high bearing strength, or the best soils for subgrade (foundation). At the other extreme, in group A-7, are clay soils that have low strength when wet and are the poorest soils for subgrade.

test data—Continued

Mechanical analysis [2]											Liquid limit	Plasticity index	Classification	
Percentage passing sieve—							Percentage smaller than—							
1 in.	¾ in.	⅜ in.	No. 4 (4.7 mm)	No. 10 (2.0 mm)	No. 40 (0.42 mm)	No. 200 (0.074 mm)	0.05 mm	0.02 mm	0.005 mm	0.002 mm			AASHTO [3]	Unified
											Percent			
-----	------	------	100	98	98	93	89	66	30	21	36	14	A-6(24)	CL
100	99	99	99	99	98	93	89	76	48	41	49	26	A-7-6(26)	CL
-----	------	100	99	99	95	63	59	49	32	28	35	23	A-6(11)	CL
-----	100	99	99	98	95	75	66	48	22	16	29	11	A-6(6)	CL
-----	100	99	98	96	93	67	61	49	29	21	36	19	A-6(10)	CL
-----	100	99	97	95	90	69	63	49	15	10	22	7	A-4(2)	CL
-----	------	------	------	100	96	89	87	79	48	37	72	37	A-7-6(40)	OH
-----	------	------	------	100	99	99	96	84	48	38	53	30	A-7-6(39)	CH
-----	------	------	------	100	99	99	94	70	36	30	51	33	A-7-6(36)	CH
-----	------	------	------	100	99	95	86	64	34	22	42	20	A-7-6(21)	CL
-----	------	------	100	99	97	89	84	64	38	32	48	28	A-7-6(26)	CL
-----	100	99	99	97	88	59	50	33	22	16	41	24	A-7-6(11)	CL
100	99	97	95	92	86	62	59	48	30	24	22	9	A-4(2)	CL
-----	------	------	100	99	95	73	58	36	17	11	30	9	A-4(5)	CL
-----	------	------	------	100	100	99	93	57	33	24	46	26	A-7-6(28)	CL
-----	------	------	100	99	99	92	85	48	27	20	29	13	A-6(11)	CL

material coarser than 2 millimeters in diameter is excluded from the calculation of grain-size fractions. The mechanical analysis data used in this table are not suitable for use in naming textural classes of soil.

[3] Based on AASHTO Designation M 145-66-I (*1*).

[4] 100 percent passed the 1½ inch sieve.

[5] NP means nonplastic.

gineering are shown in table 8. These estimates are made for typical soil profiles, by layers sufficiently different to have different significance for soil engineering. The estimates are based on field observations made in the course of mapping, on test data for these and similar soils, and on experience with the same kinds of soil in other counties. Following are explanations of some of the columns in table 8.

Depth to bedrock is not shown in table 8, because most soils in the county are deep enough that bedrock generally does not affect their use.

Depth to seasonal high water table is the distance from the surface of the soil to the highest level that ground water reaches in the soil in most years.

Soil texture is described in table 8 in the standard terms used by the Department of Agriculture (*7*). These terms take into account the relative percentages of sand, silt, and clay in soil material that is less than 2 millimeters in diameter. "Loam," for example, is soil material that contains 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the soil contains gravel or other particles coarser than sand, an appropriate modifier is added, as for example, "gravelly loamy sand." "Sand," "silt," "clay," and some of the other terms used in USDA textural classification are defined in the Glossary.

Liquid limit and plasticity index indicate the effect of water on the strength and consistence of soil material. As the moisture content of a clayey soil is increased from a dry state, the material changes from a semisolid to a plastic. If the moisture content is further increased, the material changes from a plastic to a liquid. The plastic limit is the moisture content at which the soil material changes from a semisolid to a plastic; and the liquid limit, from a plastic to a liquid. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a soil material is plastic. Liquid limit and plasticity index are estimated in table 8, but in table 10 the data on

liquid limit and plasticity index are based on tests of soil samples.

Permeability is that quality of a soil that enables it to transmit water or air. It is estimated on the basis of those soil characteristics observed in the field, particularly structure and texture. The estimates in table 8 do not take into account lateral seepage or such transient soil features as plowpans and surface crusts.

Available water capacity is the ability of soils to hold water for use by most plants. It is commonly defined as the difference between the amount of water in the soil at field capacity and the amount at the wilting point of most crop plants.

Reaction is the degree of acidity or alkalinity of a soil, expressed as a pH value. The pH value and terms used to describe soil reaction are explained in the Glossary.

Shrink-swell potential is the relative change in volume to be expected of soil material with changes in moisture content, that is, the extent to which the soil shrinks as it dries out or swells when it gets wet. Extent of shrinking and swelling is influenced by the amount and kind of clay in the soil. Shrinking and swelling of soils cause much damage to building foundations, roads, and other structures. A *high* shrink-swell potential indicates a hazard to maintenance of structures built in, on, or with material that has this rating.

Engineering interpretations of soils

The estimated interpretations in table 9 are based on the engineering properties of soils shown in table 8, on test data for soils in this survey area and in others nearby or adjoining, and on the experience of engineers and soil scientists with the soils of DeKalb County. In table 9, ratings are used to summarize limitation or suitability of the soils for all listed purposes other than drainage for crops and pasture, irrigation, terraces and diversions, and grassed waterways. For these particular uses, table 9 lists those soil features not to be overlooked in planning, installation, and maintenance.

Soil limitations are indicated by the ratings slight, moderate, and severe. *Slight* means soil properties are generally favorable for the rated use, or in other words, limitations are minor and easily overcome. *Moderate* means some soil properties are unfavorable but can be overcome or modified by special planning and design. *Severe* means soil properties are so unfavorable and so difficult to correct or overcome that they require major soil reclamation, special design, [illegible]

soil properties considered are those that affect both absorption of effluent and construction and operation of the system. Properties that affect absorption are permeability, depth to water table or rock, and susceptibility to flooding. Slope is a soil property that affects difficulty of layout and construction and also the risk of soil erosion, lateral seepage, and downslope flow of effluent. Large rocks or boulders increase construction costs.

Shallow excavations are those that require digging or trenching to a depth of less than 6 feet, for example, excavations for pipelines, sewerlines, phone and power transmission lines, basements, open ditches, and cemeteries. Desirable soil properties are good workability, moderate resistance to sloughing, gentle slopes, absence of rock outcrops or large stones, and freedom from flooding or a high water table.

Dwellings with basements, as rated in table 9, are no more than three stories high and are supported by foundation footings placed in undisturbed soil. The features that affect the ratings of a soil for dwellings are those that relate to capacity to support load and resist settlement under load and those that relate to ease of excavation. Soil properties that affect capacity to support load are wetness, susceptibility to flooding (fig. 8), density, plasticity, texture, and shrink-swell potential. Those that affect excavation are wetness, slope, depth to bedrock, and content of stones and rocks.

Roads and streets have an all-weather surface that is expected to carry automobile traffic all year, but not fast-moving, heavy trucks. They have a subgrade of underlying soil material; a base consisting of gravel, crushed rock, or soil material stabilized with lime or cement; and a flexible or rigid surface, commonly asphalt or concrete. These roads are graded to shed water and have ordinary provisions for drainage. They are built mainly from soil at hand, and most cuts and fills are less than 6 feet deep.

Soil properties that most affect design and construction of roads and streets are load-supporting capacity and stability of the subgrade and the workability and quantity of cut and fill material available. The AASHTO and Unified classifications of the soil material, and also the shrink-swell potential, indicate traffic-suporting capacity. Wetness and flooding affect stability of the material. Slope, depth to hard rock, content of stones and rocks, and wetness affect the ease of excavation and amount of cut and fill needed to reach an even grade.

Road fill is soil material used in embankments for

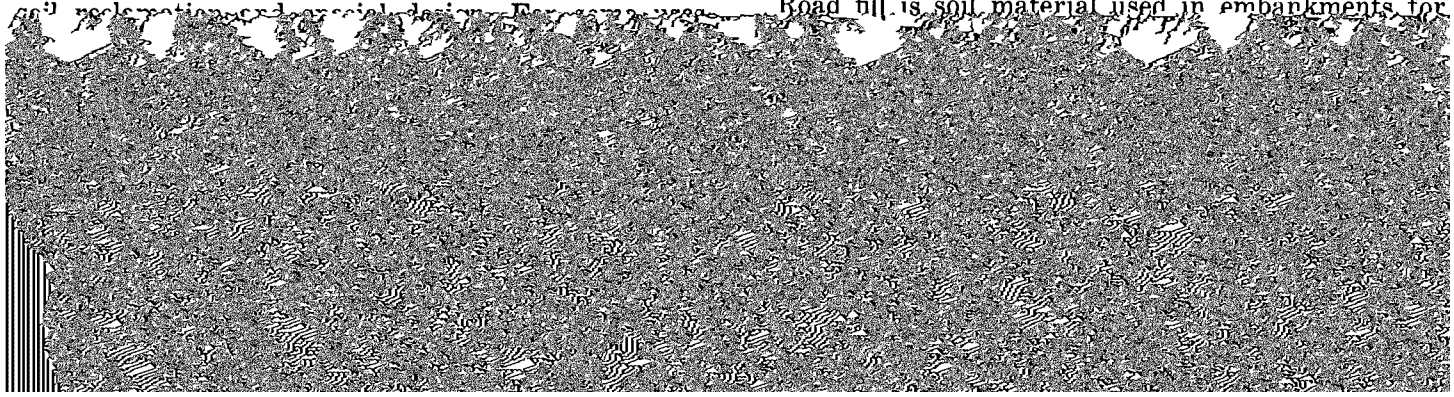


Figure 8.—**Flooding in a developed area on the flood plain of the Kishwaukee River.**

the materials, and neither do they indicate quality of the deposit.

Topsoil is used for topdressing an area where vegetation is to be established and maintained. Suitability is affected mainly by ease of working and spreading the soil material, as for preparing a seedbed; natural fertility of the material, or the response of plants when fertilizer is applied; and absence of substances toxic to plants. Texture of the soil material and its content of stone fragments are characteristics that affect suitability, but also considered in the ratings is damage that will result at the area from which topsoil is taken.

Drainage for crops and pasture is affected by such soil properties as permeability, texture, and structure; depth to claypan, rock, or other layers that influence rate of water movement; depth to the water table; slope; stability in ditchbanks; susceptibility to stream overflow; salinity or alkalinity; and availability of outlets for drainage.

Irrigation of a soil is affected by such features as slope; susceptibility to stream overflow, water erosion, or soil blowing; soil texture; content of stones; accumulations of salts and alkali; depth of root zone; rate of water intake at the surface; permeability of soil layers below the surface layer and in fragipans or other layers that restrict movement of water; amount of water held available to plants; and need for drainage, or depth to water table or bedrock.

The features considered for terraces, diversions, and Features considered include soil slope, texture and reaction of the subsoil, depth to gravel or other limiting layers, and natural soil drainage.

Soil test data

Table 10 contains engineering test data for some of the major soil series in DeKalb County. These tests were made to help evaluate the soils for engineering purposes. The engineering classifications shown are based on data obtained by mechanical analyses and by tests to determine liquid limits and plastic limits. The mechanical analyses were made by combined sieve and hydrometer methods.

Moisture-density data are important in earthwork. If a soil material is compacted at successively higher moisture content, assuming that the compactive effort remains constant, the density of the compacted material increases until the *optimum moisture content* is reached. After that, density decreases with increase in moisture content. The highest dry density obtained in the compactive test is termed the *maximum dry density.* As a rule, maximum strength of earthwork is obtained if the soil is compacted to the maximum dry density.

Mechanical analysis refers to the measurement of the amounts of various size classes of soil grains (sand, silt, or clay) in a sample. Proportions of the size classes determine the textural class of the material. Names used by engineers for various size classes of particles

sand, as determined by the soil scientist, consists of particles 0.25 to 0.10 millimeter in diameter.

Formation and Classification of the Soils

This section describes how the factors of soil formation have affected the development of soils in DeKalb County. It also explains the system of soil classification currently used and places each soil series in the classes of that system.

Factors of Soil Formation

The principal factors of soil formation are parent material, climate, plant and animal life, relief and drainage, and time. The kinds of soils in an area and how they formed are the result of the interaction of these five factors. The relative importance of each factor differs from place to place, and each modifies the effect of the other four. A change in any one of the five major factors of soil formation produces different soils, and each soil has its own characteristics and thus can be distinguished from other soils. The differences in all soils are in some measure related to the variation in and the interaction of the five soil-forming factors. Many times the exact role of each factor is difficult to determine, but the combined effect always produces a soil profile that has its own distinguishing characteristics. In some cases one factor may dominate the formation of a soil.

Man, in such activities as clearing forests and cultivating and fertilizing fields, also changes the course of soil formation, but so far he has had little effect on the overall development of the soils in DeKalb County.

Parent material

In DeKalb County the parent materials of the soils are glacial till, glacial outwash, loess, and alluvium. The three ice advances each deposited its own till, which can be distinguished by physical and chemical properties, namely texture or grain size and clay mineralogy. Not only can the soils that formed in loess be distinguished from those that formed in till, but also soils that formed in different tills can be distinguished from each other. This comes about because different tills have distinguishing physical and chemical properties that the soils may inherit. Thus, soils can be established for each geologic unit (*4*). The detailed soil map shows associations of soils not only because of their proximity to one another on the landscape, but also because of the relationship of some of their characteristics.

After the county was covered by three major ice advances of the late Wisconsinan age (*10*), it was covered by a mantle of windblown silt, called loess, which regionally thins from west to east. A small proportion of the soils formed entirely in loess, but a large proportion formed in 2 to 5 feet of loess and in the underlying glacial till. For example, Muscatine and Sable soils formed entirely in loess, and Catlin, Saybrook, and Flanagan soils formed in loess and in the underlying glacial till.

About 8 percent of the soils in the county formed mostly in till, and only the surface layer formed in loess. Examples are Miami and Octagon soils. Soils that formed in loess have distinctly different characteristics from those that formed in till.

The differences between soils that formed in different geologic units may not be great enough to justify separations for farming uses, but many of these differences are significant to other soil uses (fig. 9).

About 20 percent of the soils formed in outwash. The outwash areas are along the major streams or in front of the glacial moraines. Elburn, Camden, and Millbrook soils are examples of soils that formed in outwash.

In addition to the typical outwash areas, detailed soil mapping and aerial photographic interpretation have revealed a field of more than 500 highly symmetrical, circular to elliptical, raised, flat-topped mounds in the area around DeKalb and Malta. The mound field, which covers approximately 60 square miles, is confined to the low-relief, dominantly ground-moraine area between the Bloomington moraine on the west and north and the Shabbona, Arlington, and Mendota moraines on the east and south. The mounds, because of their relatively low relief, are most evident on aerial photographs.

The higher mounds rise 5 to 15 feet above the adjacent areas of gently rolling soils. The surfaces of the mounds tend to be flat or slightly depressed toward their center. In many areas where surface drainage is undeveloped, the mounds are surrounded by a moat or an annular depression.

Many of the mounds are closely spaced and are separated by depressions only a few feet wide. In many places one or more satellite mounds overlap the flanks of the larger mound. The mounds generally contain more than 20 feet of silt interbedded with sand underlain by till. The mounds apparently represent the deposit of lakes that existed in the region during part of the Woodfordian time. Examples of soils that formed on the mounds are those of the Batavia and Virgil series.

In the southeastern corner of the county, the outwash, which is water-worked drift material, has been deposited locally on the till. The outwash generally does not extend to a depth of more than 7 or 8 feet.

The soils of one series formed in water-deposited material or alluvium. These soils are on the flood plains of the major streams. They are the Sawmill soils. The soils of another series formed in partly decomposed organic material. They are the Houghton soils.

Climate

Climate affects the formation of soils through its influence on the rate of weathering of parent material. The humid, temperate climate of DeKalb County is conducive to the relatively rapid breakdown or

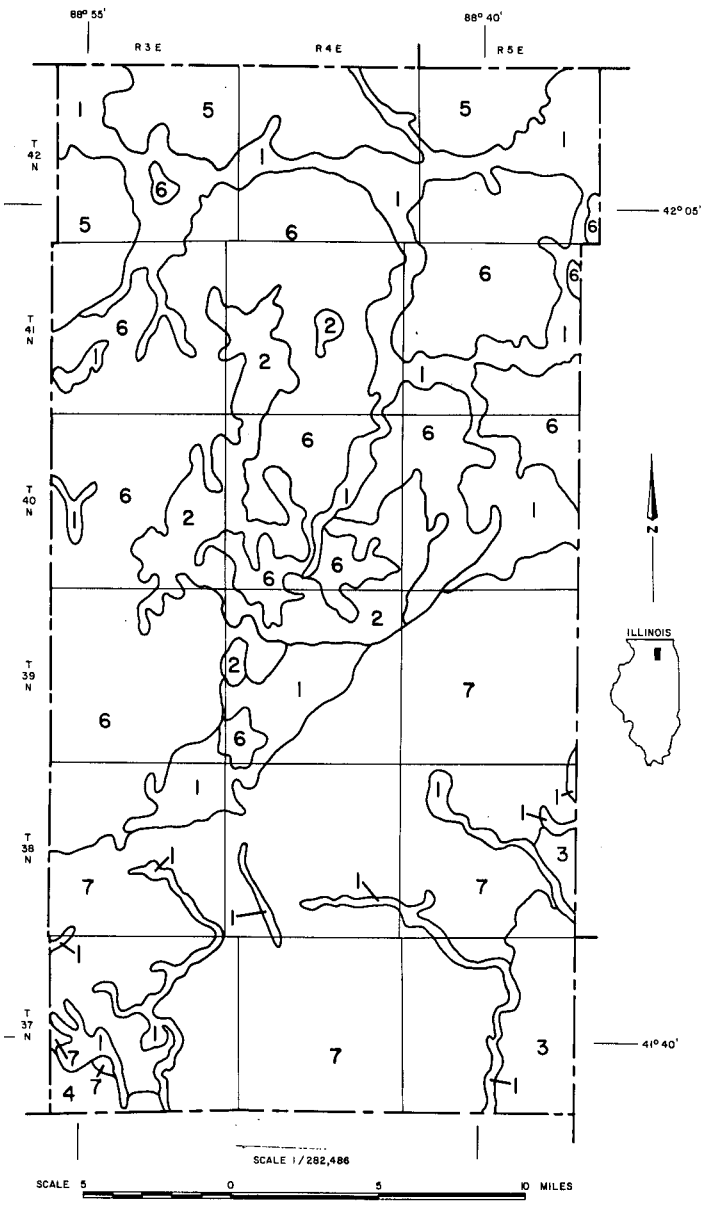


***Figure 9.*—Distribution of parent materials in DeKalb County. Numbered areas are as follows: 1, mainly 2 to 4 feet of loess over more than 10 feet of outwash, lacustrine deposits, or alluvium; 2, raised circular mounds that consist of more than 20 feet of stratified, water-laid, silty sediment and are entirely covered by 0 to 4 feet of loess; 3, glacial till plain made up of 2 to 5 feet of stratified, water-worked glacial material covered with 2 to 4 feet of loess; 4, more than 5 feet of loess; 5, Capron till covered with 5 to 4 feet of loess; 6, Tiskilwa till covered with 0 to 4 feet of loess; 7, Malden till covered with 0 to 4 feet of loess.**

weathering of soil minerals, to the formation of clay, and organisms that live on and in the soils also have been important. The changes they bring about depend mainly on the kind of life processes peculiar to each. The kinds of plants and animals that live on and in the soil are affected, in turn, by climate, parent material, relief, and the length of time that the soil has been forming.

Some soils in the county formed under trees and some under prairie grasses. Many of the sloping soils formed under trees, mainly oak and hickory. Dodge and Miami soils formed under trees. The soils that formed under prairie grasses are in the more nearly level areas of the county. Saybrook and Flanagan soils are examples of soils that formed under prairie grasses. They have a thicker and darker colored surface layer and are higher in organic-matter content than the soils that formed under forest. Organic matter has accumulated in all the soils.

Relief and drainage

Relief influences the amount of runoff, the degree of erosion, and the amount of water that infiltrates and percolates through the soil profile. Where the soils formed in uniform, permeable parent material, such as loess, natural drainage is closely associated with slope. The moderately well drained and well drained soils are in the more rolling areas, and the somewhat poorly drained to very poorly drained soils are mainly on flats or in depressions. Slopes in the county range from less than 2 percent in drainageways and on the nearly level uplands to more than 15 percent on the steeper parts of the uplands bordering streams.

In the poorly drained soils, iron compounds have been reduced and moved downward in the profile, causing the subsoil to have a gray color. Some of this iron has accumulated as concretions, or small, rounded pellets. In the well-drained soils, the iron compounds are oxidized and are generally more diffuse. They give a brown or yellowish-brown color to the subsoil.

Time

Time is necessary for the formation of soil from parent material, but the length of time required is largely dependent on the combined action of the other soil-forming factors.

Time is the effective age of a soil, as expressed by the degree of horizon differentiation. Recent deposits that have little or no horizon differentiation are considered young soils.

Soils that formed in parent material low in content of lime develop more rapidly and become more

the soil. Soils generally develop more rapidly in a humid climate than in a dry one. They are generally more strongly developed or have greater horizon differentiation where they have been exposed to weathering processes over a long period of time.

Most of the soils on uplands in DeKalb County are moderately well developed. The alluvial soils have weak horizon differentiation or none at all, because of continuing deposition.

Classification of the Soils

Soils are classified so that we can more easily remember their significant characteristics. Classification enables us to assemble knowledge about the soils, to see their relationship to one another and to the whole environment, and to develop principles that help us to understand their behavior and their response to manipulation. First through classification, and then through use of soil maps, we can apply our knowledge of soils to specific fields and other tracts of land.

The narrow categories of classification, such as those used in detailed soil surveys, allow us to organize and apply knowledge about soils in managing farms, fields, and woodlands; in developing rural areas; in engineering work; and in many other ways. Soils are placed in broad classes to facilitate study and comparison in large areas, such as countries and continents.

The system of soil classification currently used was adopted by the National Cooperative Soil Survey in 1965 (*8*). Because this system is under continual study, readers interested in developments of the current system should search the latest literature available.

The current system of classification has six categories. Beginning with the broadest, these categories are the order, the suborder, the great group, the subgroup, the family, and the series. In this system the criteria used as a basis for classification are soil properties that are observable and measurable. The properties are chosen, however, so that the soils of similar genesis, or mode of origin, are grouped. The same property or subdivisions of this property may be used in several different categories. In table 11 the soil series of DeKalb County are placed in four categories of the current system. Classes of the current system are briefly defined in the following paragraphs.

TABLE 11.—*Classification of soils*

Series	Family	Subgroup	Order
Batavia	Fine-silty, mixed, mesic	Mollic Hapludalfs	Alfisols.
Bowes	Fine-silty, mixed, mesic	Mollic Hapludalfs	Alfisols.
Camden	Fine-silty, mixed, mesic	Typic Hapludalfs	Alfisols.
Catlin	Fine-silty, mixed, mesic	Typic Argiudolls	Mollisols.
Dodge	Fine-silty, mixed, mesic	Typic Hapludalfs	Alfisols.
Desden	Fine-loamy over sandy or sandy-skeletal, mixed, mesic.	Mollic Hapludalfs	Alfisols.
Drummer	Fine-silty, mixed, mesic	Typic Haplaquolls	Mollisols.
Elburn	Fine-silty, mixed, mesic	Aquic Argiudolls	Mollisols.
Flanagan	Fine, montmorillonitic, mesic	Aquic Argiudolls	Mollisols.
Harpster	Fine-silty, mesic	Typic Calciaquolls	Mollisols.
Harvard	Fine-silty, mixed, mesic	Mollic Hapludalfs	Alfisols.
Herbert	Fine-silty, mixed, mesic	Udollic Ochraqualfs	Alfisols.
Houghton	Euic, mesic	Typic Medisaprists	Histosols.
Kendall	Fine-silty, mixed, mesic	Aeric Ochraqualfs	Alfisols.
Knight	Fine-silty, mixed, mesic	Argiaquic Argialbolls	Mollisols.
La Rose	Fine-loamy, mixed, mesic	Typic Argiudolls	Mollisols.
Lisbon	Fine-silty, mixed, mesic	Aquic Argiudolls	Mollisols.
Lorenzo	Fine-loamy over sandy or sandy-skeletal, mixed, mesic.	Typic Argiudolls	Mollisols.
Miami	Fine-loamy, mixed, mesic	Typic Hapludalfs	Alfisols.
Millbrook	Fine-silty, mixed, mesic	Udollic Ochraqualfs	Alfisols.
Muscatine	Fine-silty, mixed, mesic	Aquic Argiudolls	Mollisols.
Octagon	Fine-loamy, mixed, mesic	Mollic Hapludalfs	Alfisols.
Peotone	Fine, montmorillonitic, mesic	Cumulic Haplaquolls	Mollisols.
Plano	Fine-silty, mixed, mesic	Typic Argiudolls	Mollisols.
Proctor	Fine-silty, mixed, mesic	Typic Argiudolls	Mollisols.
Rush	Fine-silty, mixed, mesic	Typic Hapludalfs	Alfisols.
Sable	Fine-silty, mixed, mesic	Typic Haplaquolls	Mollisols.
St. Charles	Fine-silty, mixed, mesic	Typic Hapludalfs	Alfisols.
Sawmill	Fine-silty, mixed, mesic	Cumulic Haplaquolls	Mollisols.
Saybrook	Fine-silty, mixed, mesic	Typic Argiudolls	Mollisols.
Strawn	Fine-loamy, mixed, mesic	Typic Hapludalfs	Alfisols.
Virgil	Fine-silty, mixed, mesic	Udollic Ochraqualfs	Alfisols.
Will [1]	Fine-loamy over sandy or sandy-skeletal, mixed, mesic.	Typic Haplaquolls	Mollisols.

[1] The Will soils in this county are taxadjuncts to the Will series, because they are calcareous rather than neutral in the upper part of the profile.

Order.—Ten soils orders are recognized. The properties used to differentiate among soil orders are those that tend to give broad climatic groupings of soils. Three exceptions to this are the Entisols, Histosols, and Vertisols, which occur in many different climates. Each order is named with a word of three or four syllables, ending in *sol* (Moll-i-sol).

Suborder.—Each order is divided into suborders, based on those soil characteristics that seem to produce classes that have the greatest genetic similarity. The suborders are more narrowly defined than the orders. The soil properties used to separate suborders are mainly those that reflect either the presence or absence of a high water table; soil climate; the accumulation of clay, iron, or organic carbon in the upper part of the solum; cracking of soils caused by a decrease in soil moisture; and fine stratification. The names of suborders have two syllables. The last syllable indicates the order. An example is *Aquoll (Aqu,* meaning water or wet; and *oll,* from Mollisol).

Great group.—Soil suborders are separated into great groups on the basis of uniformity in the kinds and sequence of soil horizons and features. The horizons used to make separations are those in which clay, carbonates, and other constituents have accumulated or been removed and those that have pans that interfere with growth of roots, movement of water, or both. Some features used are acidity, climate, composition, and color of the soil. The names of great groups have three or four syllables and are made by adding a prefix to the name of the suborder. An example is *Haplaquoll (Hapl,* meaning simple horizons; *aqu,* for wetness or water; and *oll,* from Mollisols).

Subgroup.—Great groups are divided into subgroups, one that represents the central (typic) segment of the group and others, called intergrades, that have properties of the group and also one or more properties of another great group, suborder, or order. Other subgroups may have soil properties unlike those of any other great group, suborder or order. The names of

materials and methods of sampling and testing. Ed. 10, 2 vol., illus.
(2) American Society for Testing and Materials. 1974. Method for classification of soils for engineering purposes. ASTM Stand. D 2487-69. *In* 1974 Annual Book of ASTM Standards, Part 19, 464 pp., illus.
(3) Barger, G. L., R. H. Shaw, and R. F. Dale. 1959. Chances of receiving selected amounts of precipitation in the north-central region of the United States. Iowa State Univ. Agric. Exp. Stn., 277 pp.
(4) Flemel, R. C., K. C. Hinkley, and J. L. Hessler. 1973. The DeKalb mounds—a possible Wisconsinan pingo field in north central Illinois, United States. *In* The Wisconsin Stage. Geol. Soc. Am., Inc. 327 pp., illus.
(5) Huff, F. A. and S. A. Changnon. 1959. Hail climatology of Illinois. Ill. State Water Surv. Rep. Invest. 38, 46 pp.
(6) Joos, L. A. 1960. Freeze probabilities in Illinois. Ill. Agric. Exp. Stn. in coop. Natl. Weather Serv., U.S. Dep. Commer. Bull. 650, 16 pp., illus.
(7) United States Department of Agriculture. 1951. Soil survey manual. U.S. Dep. Agric. Handb. 18, 503 pp., illus. [Supplement issued May 1962]
(8) _____. 1960. Soil classification, a comprehensive system, 7th approximation. Soil Conserv. Serv., 265 pp., illus. [Supplements issued March 1967, September 1968, April 1969]
(9) University of Illinois Agricultural Experiment Station. 1965. Productivity of soils in the north-central region of the United States. North-Central Reg. Res. Publ. 166, Bull. 710, 27 pp., map.
(10) William, H. B., and J. C. Frye. 1970. Pleistocene stratigraphy of Illinois. Ill. State Geol. Surv. Bull. 94, 204 pp., illus.

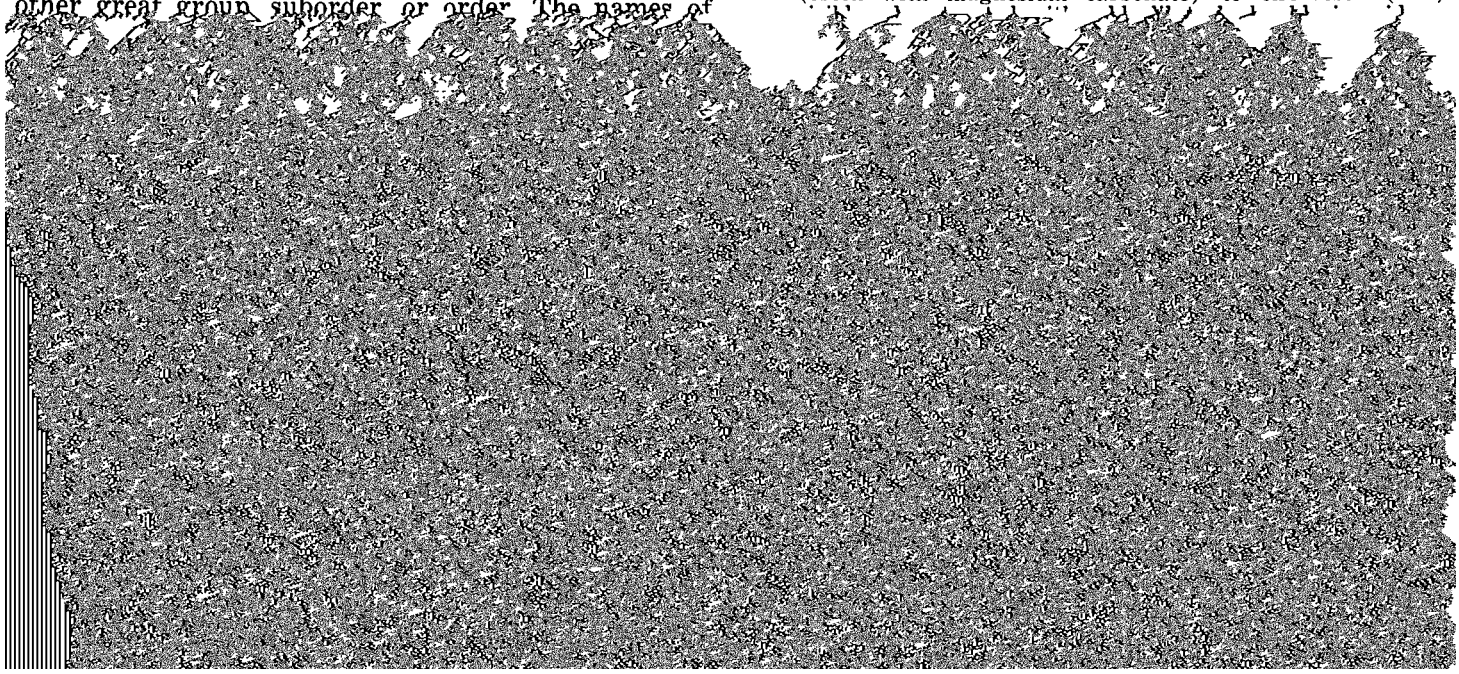
Glossary

Alluvium. Soil material, such as sand, silt, or clay, that has been deposited on land by streams.

Available water capacity (also termed available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil.

Bottom land. Nearly level land on the bottom of a valley that has a stream flowing through it. It is subject to flooding and is often referred to as a flood plain.

Calcareous soil. A soil that contains enough calcium carbonate (often with magnesium carbonate) to effervesce (fizz)



production; or grown between trees in orchards or between vines in vineyards.

Crop residue. The part of a plant, or crop, left in the field after harvest.

Depth, soil. Thickness of soil over a specified layer, generally one that does not permit the growth of roots.

Classes used in this survey are—

Deep—36 inches or more.
Moderately deep—20 to 36 inches.
Shallow—10 to 20 inches.
Very shallow—less than 10 inches.

Diversion, or diversion terrace. A ridge of earth, generally a terrace, that is built to divert runoff from its natural course and, thus, to protect areas downslope from the effects of such runoff.

Erosion. The wearing away of the land surface by wind (sandblast), running water, and other geological agents.

Fertility, soil. The quality of a soil that enables it to provide compounds, in adequate amounts and in proper balance, for the growth of specified plants when other growth factors, such as light, moisture, temperature, and the physical condition of the soil, are favorable.

Glacial till (geology). Unassorted, nonstratified glacial drift that consists of clay, silt, sand, gravel, and boulders transported and deposited by glacial ice.

Green manure crop (agronomy). A crop of grasses or legumes grown for the purpose of being turned under in an early stage of maturity or soon after maturity to improve the soil.

Horizon, soil. A layer of soil, approximately parallel to the surface, that has distinct characteristics produced by soil-forming processes. These are the major horizons:

O horizon.—The layer of organic matter on the surface of a mineral soil. This layer consists of decaying plant residues.

A horizon.—The mineral horizon at the surface or just below an O horizon. This horizon is the one in which living organisms are most active and therefore is marked by the accumulation of humus. The horizon may have lost one or more of soluble salts, clay, and sesquioxides (iron and aluminum oxides).

B horizon.—The mineral horizon below an A horizon. The B horizon is in part of a layer of change from the overlying A to the underlying C horizon. The B horizon also has deepening of channels or the blocking of drainage outlets. Seven different classes of natural soil drainage are recognized.

Excessively drained soils are commonly very porous and rapidly permeable and have a low water-holding capacity.

Somewhat excessively drained soils are also very permeable and are free from mottling throughout their profile.

Well-drained soils are nearly free from mottling and are commonly of intermediate texture.

Moderately well drained soils have uniform color in the A and upper B horizons and have mottling in the lower B and the C horizons.

Somewhat poorly drained soils are wet for significant periods but not all the time. They commonly have mottlings in the B and C horizons and the lower part of the A horizon in some soils.

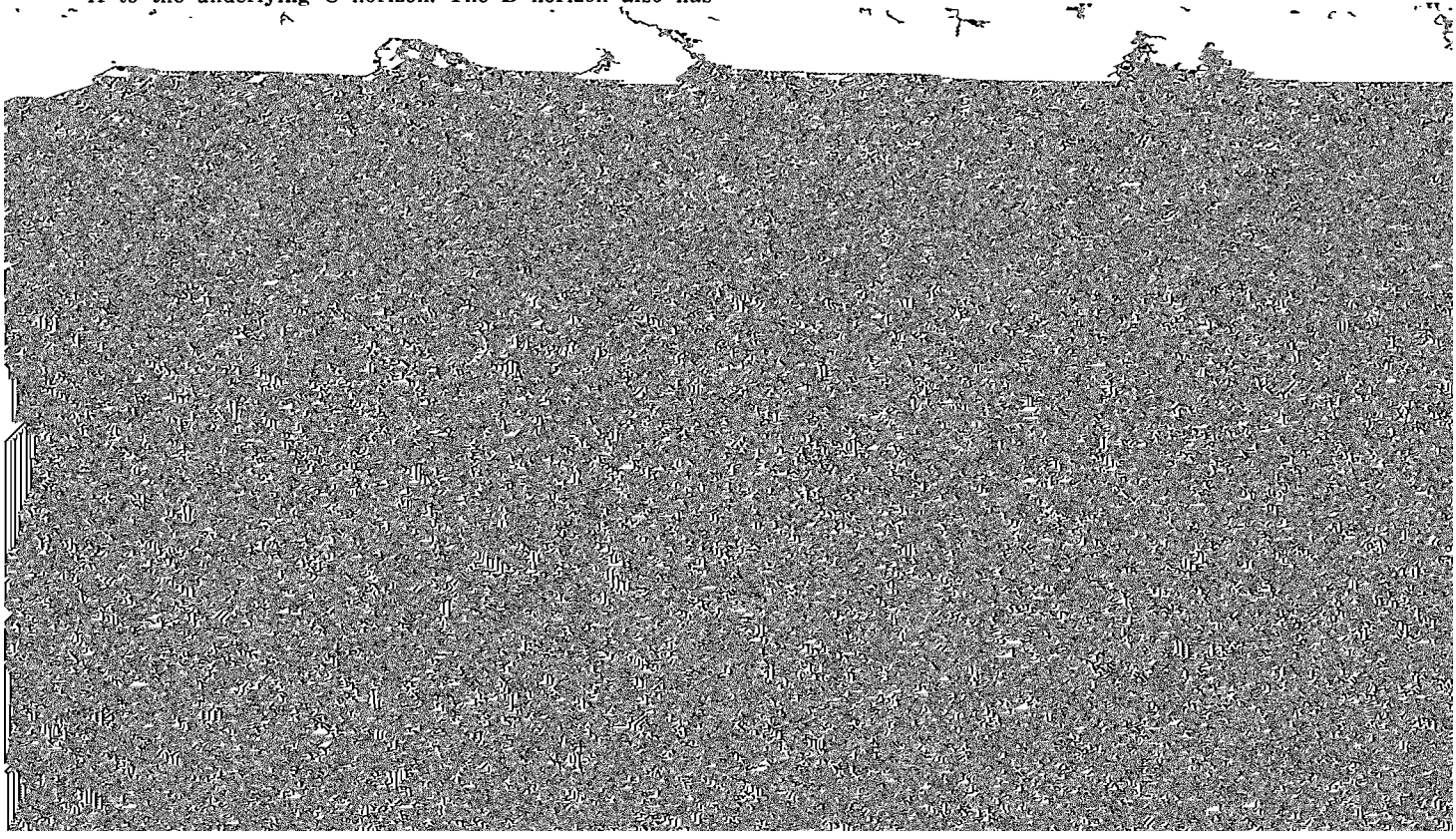
Poorly drained soils are wet for long periods and are light gray and generally mottled from the surface downward, although mottling may be absent or nearly so in some soils.

Very poorly drained soils are wet nearly all the time. They have a dark gray or black surface layer and are gray or light gray, with or without mottling, in the deeper parts of the profile.

Organic-matter content. The content of plant and animal material, in or on the soil, in all stages of decomposition. Ratings used in this survey have the following limits: low—below 2 percent of volume; moderate—2 to 4 percent; and high—more than 4 percent.

Permeability, soil. The quality of a soil horizon that enables water or air to move through it. The permeability of a soil may be limited by the presence of one nearly impermeable horizon even though the others are permeable. Terms used to describe permeability are as follows: *Very slow, slow, moderately slow, moderate, moderately rapid, rapid,* and *very rapid.*

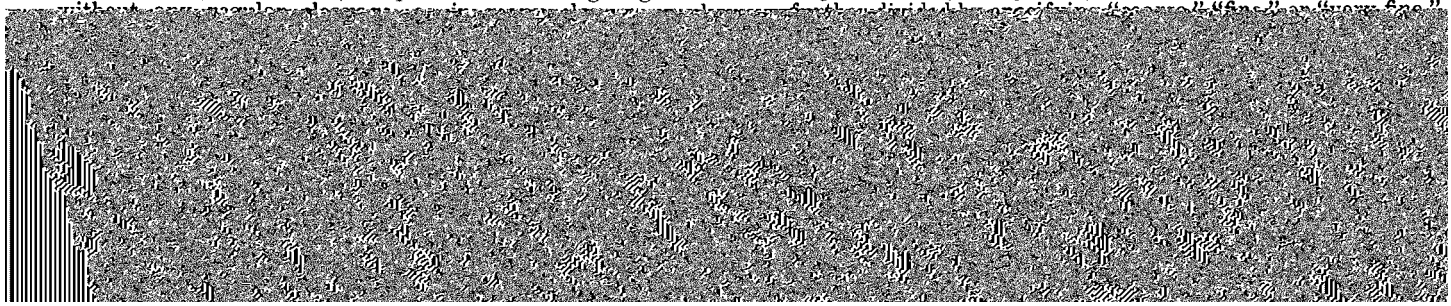
Reaction, soil. The degree of acidity or alkalinity of a soil expressed in pH values. A soil that tests to pH 7.0 is precisely neutral in reaction because it is neither acid nor alkaline. An acid, or "sour," soil is one that gives an acid reaction; an alkaline soil is one that is alkaline in reaction. In words, the degrees of acidity or alkalinity are expressed thus:



adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are (1) *single grained* (each grain by itself, as in dune sand) or (2) *massive* (the particles adhering together

to flood plains, and are seldom subject to overflow. Marine terraces were deposited by the seas and are generally wide.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay* and *clay*. The sand, loamy sand, and sandy loam classes may be



GUIDE TO MAPPING UNITS

For a complete description of a mapping unit, read both the description of the mapping unit and the description of the soil series to which the mapping unit belongs. Other information is given in tables as follows:

Acreage and extent, table 3, page 10.
Predicted yields, table 4, page 37.
Guide for tree and shrub plantings, table 5, page 38.
Wildlife, table 6, page 40.
Recreational uses of the soils, table 7, page 42.
Engineering uses of the soils, tables 8, 9, and 10, pages 44 through 61.

Map symbol	Mapping unit	Described on page	Management group		Tree and shrub planting group	Recreation group
			Symbol	Page	Number	Number
24A	Dodge silt loam, 0 to 2 percent slopes	14	I-1	34	1	1
24B	Dodge silt loam, 2 to 4 percent slopes	14	IIe-1	34	1	1
24C2	Dodge silt loam, 4 to 7 percent slopes, eroded	14	IIe-4	35	1	1
27B	Miami silt loam, 2 to 4 percent slopes	23	IIe-1	34	2	1
27C2	Miami silt loam, 4 to 7 percent slopes, eroded	24	IIe-4	35	2	1
27D2	Miami silt loam, 7 to 12 percent slopes, eroded	24	IIIe-1	35	2	2
41	Muscatine silt loam	25	I-3	34	3	3
59	Lisbon silt loam	23	I-3	34	3	3
60B	La Rose silt loam, 2 to 4 percent slopes	22	IIe-2	34	2	1
60C2	La Rose silt loam, 4 to 7 percent slopes, eroded	22	IIe-4	35	2	1
60D2	La Rose silt loam, 7 to 12 percent slopes, eroded	22	IIIe-1	35	2	2
62	Herbert silt loam	20	I-3	34	3	3
67	Harpster silty clay loam	18	IIw-1	35	4A	4
68	Sable silty clay loam	29	IIw-1	35	4	4
103	Houghton muck	20	IIIw-2	36	5	5
104	Virgil silt loam	32	I-3	34	3	3
105A	Batavia silt loam, 0 to 2 percent slopes	11	I-2	34	1	1
105B	Batavia silt loam, 2 to 4 percent slopes	11	IIe-2	34	1	1
105C2	Batavia silt loam, 4 to 7 percent slopes, eroded	11	IIe-4	35	1	1
V107	Sawmill soils	30	IIw-1	35	4	4
134A	Camden silt loam, 0 to 2 percent slopes	12	I-1	34	1	1
134B	Camden silt loam, 2 to 6 percent slopes	12	IIe-1	34	1	1
145B	Saybrook silt loam, 2 to 4 percent slopes	31	IIe-2	34	1	1
145C2	Saybrook silt loam, 4 to 7 percent slopes, eroded	31	IIe-4	35	1	1
148A	Proctor silt loam, 0 to 2 percent slopes	27	I-2	34	1	1
148B	Proctor silt loam, 2 to 4 percent slopes	28	IIe-2	34	1	1
152	Drummer silty clay loam	15	IIw-1	35	4	4
154	Flanagan silt loam	17	I-3	34	3	3
171A	Catlin silt loam, 0 to 2 percent slopes	13	I-2	34	1	1
171B	Catlin silt loam, 2 to 4 percent slopes	13	IIe-2	34	1	1
171C2	Catlin silt loam, 4 to 7 percent slopes, eroded	13	IIe-4	35	1	1
191	Knight silt loam	21	IIw-1	35	4	4
198	Elburn silt loam	17	I-3	34	3	3
199A	Plano silt loam, 0 to 2 percent slopes	27	I-2	34	1	1
199B	Plano silt loam, 2 to 4 percent slopes	27	IIe-2	34	1	1
219	Millbrook silt loam	24	I-3	34	3	3
224E2	Strawn soils, 10 to 20 percent slopes, eroded	31	VIe-1	36	2	2
242	Kendall silt loam	21	I-3	34	3	3
243A	St. Charles silt loam, 0 to 2 percent slopes	29	I-1	34	1	1
243B	St. Charles silt loam, 2 to 4 percent slopes	29	IIe-1	34	1	1
318D2	Lorenzo loam, 6 to 15 percent slopes, eroded	23	IVe-1	36	2	2
325B	Dresden silt loam, 2 to 4 percent slopes	15	IIe-3	35	1	1
325C2	Dresden silt loam, 4 to 7 percent slopes, eroded	15	IIIe-2	35	1	1
329	Will clay loam	32	IIw-1	35	4	4
330	Peotone silty clay loam	26	IIIw-1	36	4	4
344A	Harvard silt loam, 0 to 2 percent slopes	19	I-2	34	1	1
344B	Harvard silt loam, 2 to 4 percent slopes	19	IIe-2	34	1	1
344C2	Harvard silt loam, 4 to 7 percent slopes, eroded	19	IIe-4	35	1	1

Map symbol	Mapping unit	De-scribed on page	Management group		Tree and shrub planting group	Recreation group
			Symbol	Page	Number	Number
656B	Octagon silt loam, 2 to 4 percent slopes----------	26	IIe-2	34	2	1
656C2	Octagon silt loam, 4 to 7 percent slopes, eroded--------	26	IIe-4	35	2	1
791A	Rush silt loam, 0 to 2 percent slopes----------	28	I-1	34	1	1
791B	Rush silt loam, 2 to 4 percent slopes----------	28	IIe-1	34	1	1
792A	Bowes silt loam, 0 to 2 percent slopes----------	12	I-2	34	1	1
792B	Bowes silt loam, 2 to 4 percent slopes----------	12	IIe-2	34	1	1

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