United States Department of Agriculture

Soil Conservation Service

In cooperation with Illinois Agricultural Experiment Station

Soil Survey of Christian County, Illinois

How To Use This Soil Survey

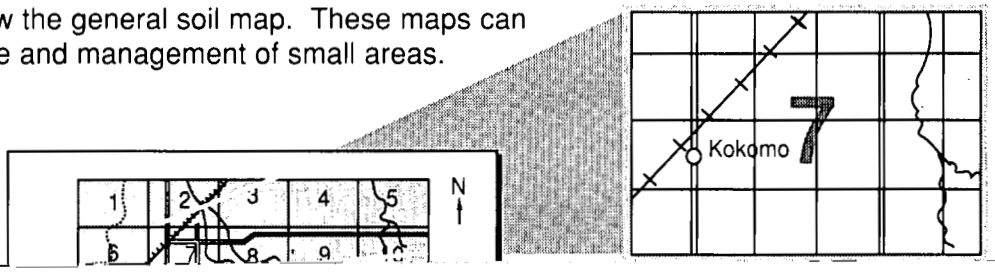
General Soil Map

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

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

Detailed Soil Maps

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



To find information about your area of interest, locate that area on the

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

Major fieldwork for this soil survey was completed in 1988. Soil names and descriptions were approved in 1988. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1988. This survey was made cooperatively by the Soil Conservation Service and the Illinois Agricultural Experiment Station. Financial assistance was provided by the Christian County Board and the Illinois Department of Agriculture. The survey is part of the technical assistance furnished to the Christian County Soil and Water Conservation District.

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

All programs and services of the Soil Conservation Service are offered on a nondiscriminatory basis, without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

This soil survey is Illinois Agricultural Experiment Station Soil Report No. 143.

Cover: Corn planted on the contour in a terraced area of Hickory loam, 10 to 15 percent slopes, eroded.

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Foreword

This soil survey contains information that can be used in land-planning programs in Christian County. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

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

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

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

Charles Whitmore
State Conservationist
Soil Conservation Service

Soil Survey of Christian County, Illinois

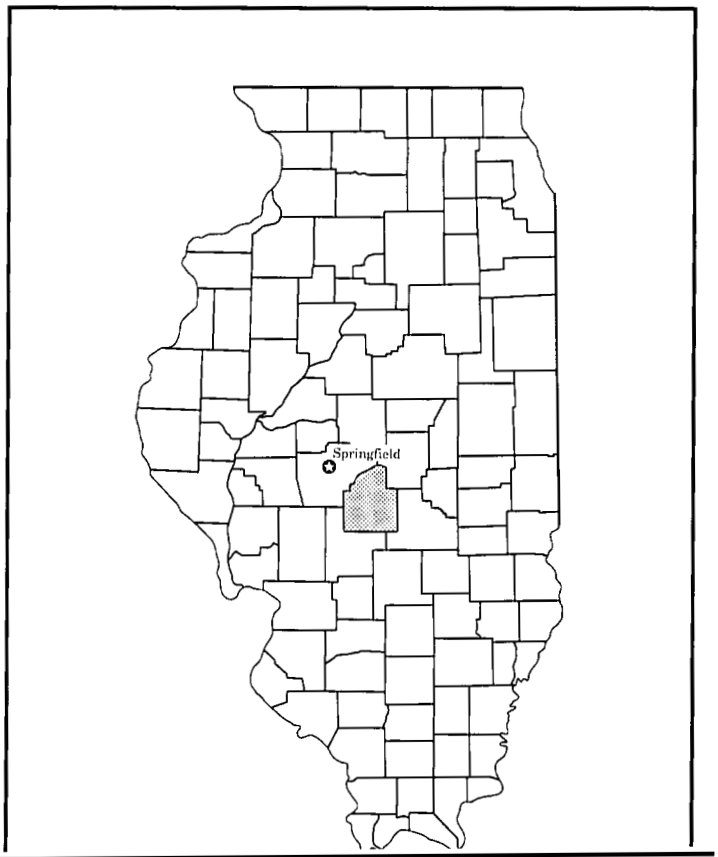
By Gerald V. Berning, Soil Conservation Service

Fieldwork by Gerald V. Berning and Steven E. Suhl, Soil Conservation Service, and Robert J. Linder and Phillip L. Mansfield, Christian County

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

CHRISTIAN COUNTY is in the central part of Illinois (fig. 1). It has a total area of 458,340 acres, or about 716 square miles. In 1980, the population of the county was 36,446. The population of Taylorville, the county seat, was 11,386.

This soil survey updates the survey of Christian County published by the University of Illinois in 1950 *(4)*. It provides more information and has larger maps, which show the soils in greater detail.



General Nature of the County

This section gives general information about Christian County. It describes settlement and development, farming, physiography and drainage, and climate.

Settlement and Development

The area that is now Christian County at one time was part of the hunting grounds of the Kickapoo, Potawatomi, Sac, and Fox Tribes *(5)*. In 1818, settlers from Tennessee and Kentucky arrived in the survey area. The county was established in 1839 from parts of Sangamon, Montgomery, and Shelby Counties. Its original name, Dane County, was changed to Christian County in 1840. Taylorville was established in 1839.

The early settlers cleared [illegible]

were used to drain cultivated areas of the wet, nearly level soils.

The coal resource in Christian County is estimated at 4,415 million tons. Small active oil fields are in the northern and eastern parts of the county. Generally thin deposits of limestone are in scattered areas in the county. An active limestone quarry is in the southern part of the county.

The transportation network in the county consists mainly of two State highways, several railroad lines, one municipal airport, and numerous county roads.

Farming

The primary enterprise in the county is farming. Corn, soybeans, and wheat are the main crops. Grasses and legumes are grown in some areas, and some farms have livestock.

In 1982, Christian County had 1,161 farms, which made up 412,448 acres, or nearly 91 percent of the total land area *(10)*. A total of 382,955 acres is cropland. Of this total, about 347,700 acres is planted to corn and soybeans and about 11,600 acres to wheat *(6)*. In 1982, the county had 11,016 cattle and calves and 40,688 hogs and pigs *(10)*.

Physiography and Drainage

up about 2,700 acres; Lake Taylorville, 1,148 acres; and Lake Pana, 211 acres.

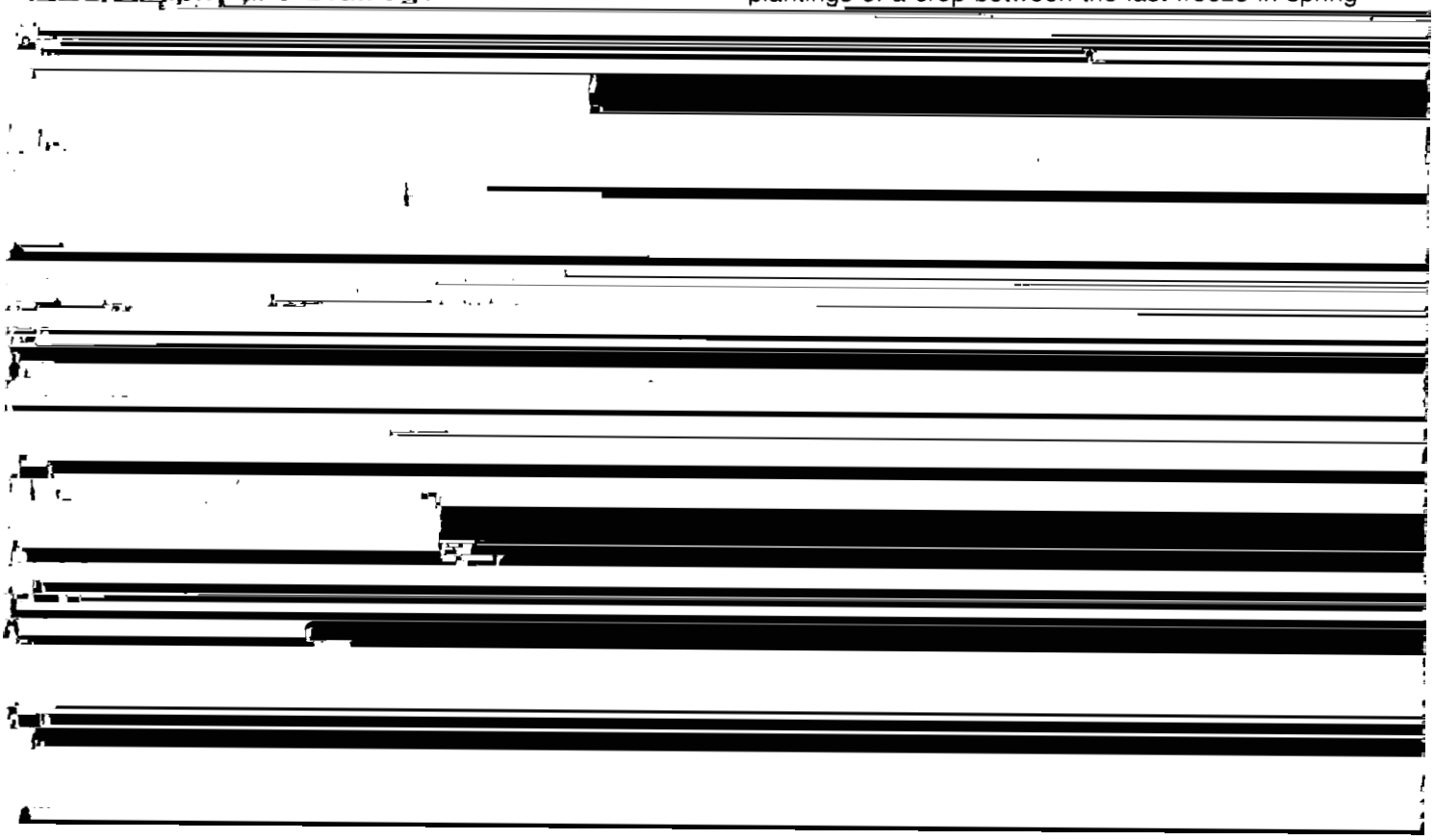
Climate

Wayne Wendland, Illinois State Water Survey, helped prepare this section.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Decatur in the period 1951 to 1980. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 33.3 degrees F and the average daily minimum temperature is 24.5 degrees. The lowest temperature on record, which occurred at Decatur on January 7, 1977, is -23 degrees. In summer, the average temperature is 74.7 degrees and the average daily maximum temperature is 86.3 degrees. The highest recorded temperature, which occurred at Decatur on July 14, 1954, is 113 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring



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

The soils in the survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a

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

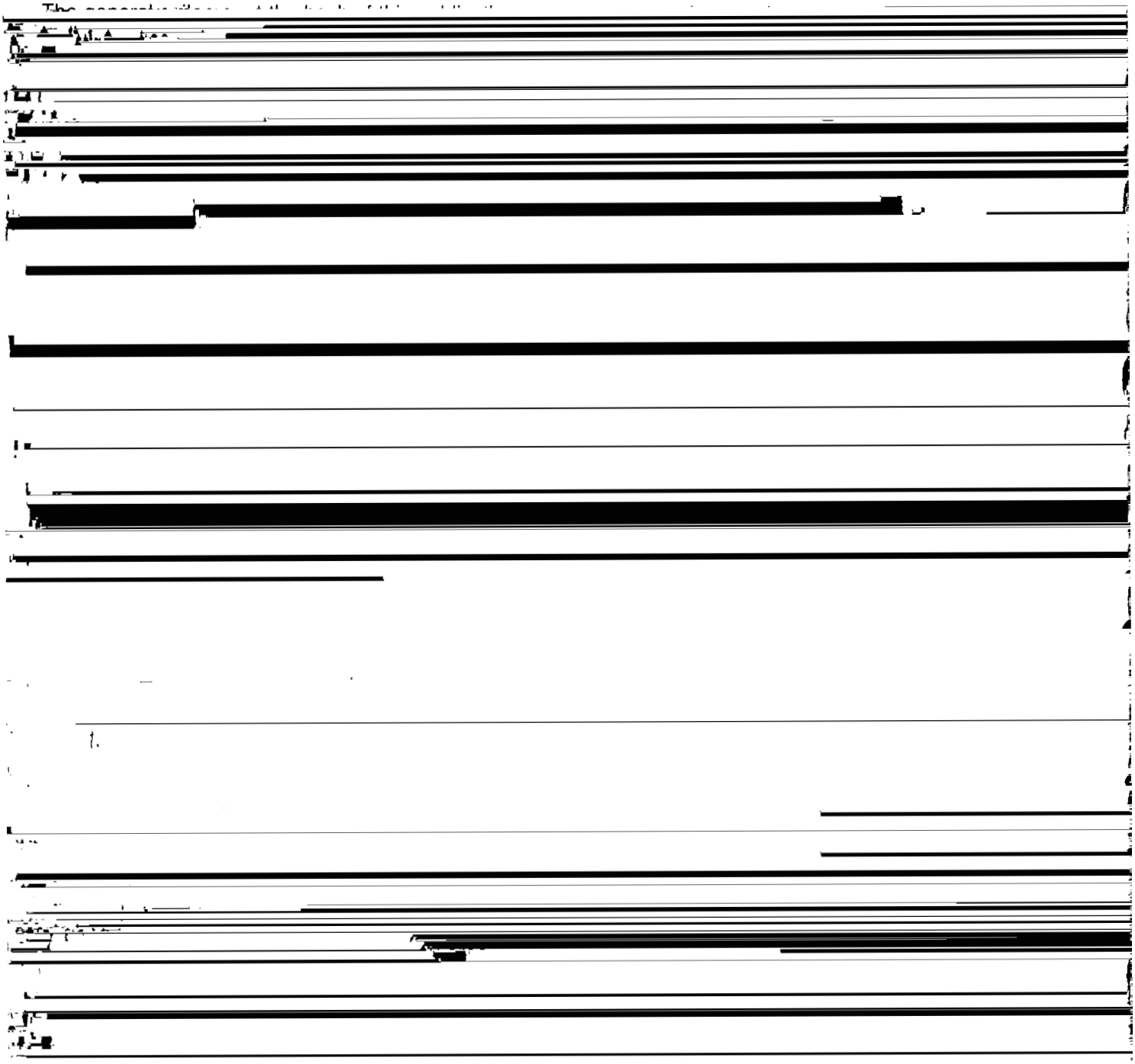
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable

other taxonomic classes. These latter soils are called inclusions or included soils.

Most inclusions have properties and behavioral patterns similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting (similar) inclusions. They are described but are not identified by name in the map unit descriptions. Other inclusions, however, have properties and behavior divergent enough to affect use or require different management. These are contrasting (dissimilar) inclusions. They generally occupy small areas and cannot be shown separately on the soil maps because of the scale used in mapping. The inclusions of contrasting soils are identified by the name in the map unit descriptions. A few inclusions may not have been observed and consequently are not mentioned in the descriptions, especially where the soil pattern was so complex that it was impractical to make enough observations to identify all of the kinds of soil on the landscape.

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

General Soil Map Units



Minor in this association are Kendall, Plano, Sable, and Virden soils. The somewhat poorly drained Kendall

This association makes up about 9 percent of the county. It is about 36 percent Ipava soils, 31 percent

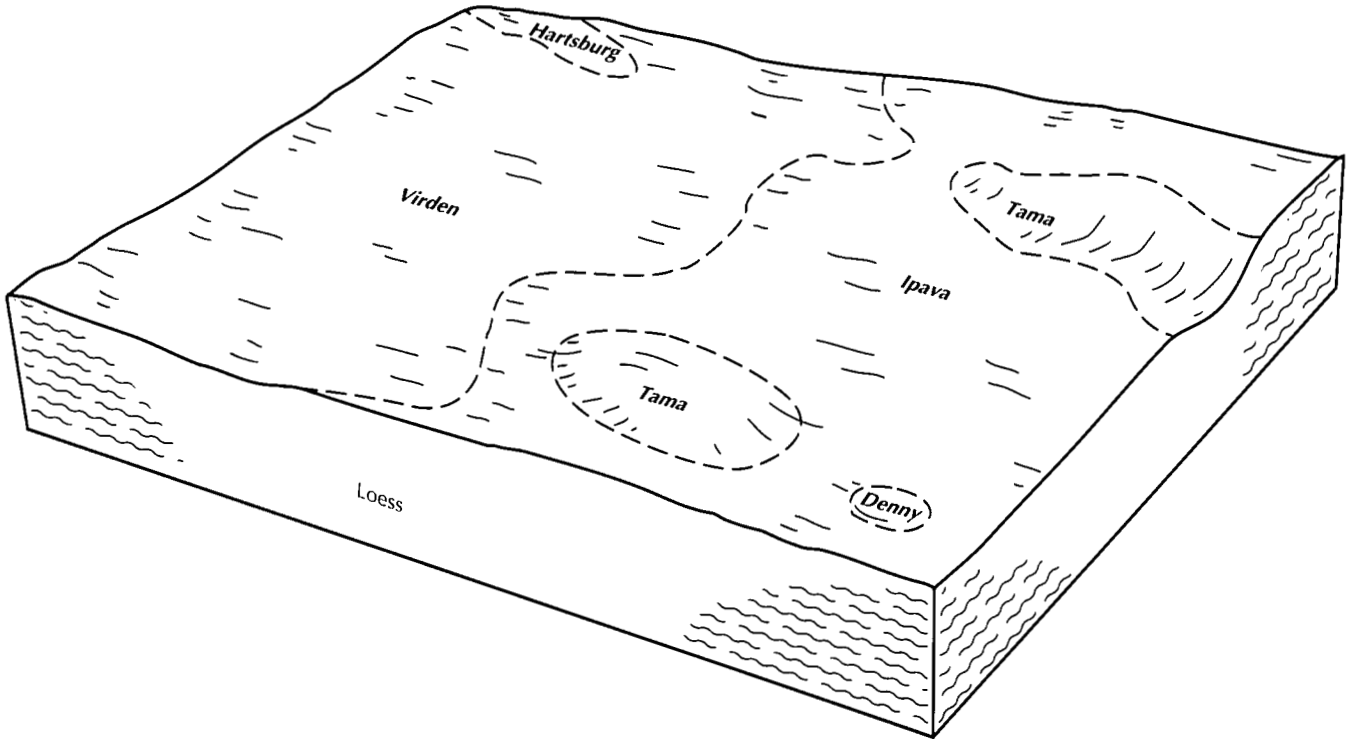


Figure 4.—Typical pattern of soils and parent material in the Ipava-Virden-Tama association.

ridgetops, knolls, and side slopes. They are moderately well drained. Typically, the surface layer is very dark grayish brown, friable silt loam about 9 inches thick. The subsurface layer is very dark grayish brown, friable silty clay loam about 5 inches thick. The subsoil is about 38 inches thick. The upper part is brown, friable silty clay loam; the next part is brown, mottled, friable silty clay loam; and the lower part is yellowish brown, mottled, friable silt loam. The underlying material to a depth of 60 inches also is yellowish brown, mottled, friable silt loam.

Minor in this association are Assumption, Denny, Downs, Edinburg, and Hartsburg soils. The moderately well drained Assumption soils are on side slopes in the uplands. They formed in loess and in the underlying paleosol. Denny soils are in depressions. The moderately well drained Downs soils are on convex ridgetops. They have a dark surface layer that is less than 10 inches thick. Edinburg and Hartsburg soils are in low areas.

[redacted]

dwellings and septic tank absorption fields. Seasonal wetness, the shrink-swell potential, and restricted permeability are the main management concerns in areas used for urban development.

4. Herrick-Virden-Harrison Association

Nearly level and gently sloping, poorly drained to moderately well drained, silty soils formed in loess or in loess and the underlying glacial till; on uplands

This association is on broad interstream divides that originally were covered dominantly by prairie grasses. Slope ranges from 0 to 5 percent.

This association makes up about 43 percent of the county. It is about 37 percent Herrick soils, 31 percent Virden soils, 11 percent Harrison soils, and 21 percent soils of minor extent.

The nearly level Herrick soils are on broad rises. They are somewhat poorly drained. Typically, the surface layer is very dark grayish brown, friable silt loam about 11 inches thick. The subsurface layer also

yellowish brown and is very firm and firm. The underlying material to a depth of 60 inches is mottled yellowish brown and light brownish gray, friable silt loam.

The nearly level Virden soils are in broad, low areas. They are poorly drained. Typically, the surface layer is very dark gray, firm silty clay loam about 9 inches thick. The subsurface layer also is very dark gray, firm silty clay loam. It is about 3 inches thick. The subsoil is mottled, firm silty clay loam about 40 inches thick. The upper part is very dark gray, the next part is dark grayish brown, and the lower part is olive gray. The underlying material to a depth of 60 inches is light olive gray, mottled, firm silt loam.

The gently sloping Harrison soils are on convex ridgetops and side slopes. They are moderately well drained. Typically, the surface layer is very dark grayish brown, friable silt loam about 10 inches thick. The subsoil extends to a depth of 60 inches or more. The upper part is very dark grayish brown and brown, mottled, friable silt loam; the next part is brown and yellowish brown, mottled, firm silty clay loam; and the lower part is grayish brown, mottled, firm silty clay loam.

[redacted]

friable silt loam about 8 inches thick. The subsoil is about 47 inches thick. It is mottled. The upper part is brown, firm silty clay loam and silty clay; the next part is grayish brown and light brownish gray, firm silty clay loam; and the lower part is light brownish gray, friable silt loam.

The nearly level Virden soils are in broad, low areas. They are poorly drained. Typically, the surface layer is very dark gray, firm silty clay loam about 9 inches thick. The subsurface layer also is very dark gray, firm silty clay loam. It is about 8 inches thick. The subsoil is mottled, firm silty clay loam about 40 inches thick. The upper part is very dark gray, the next part is dark grayish brown, and the lower part is olive gray. The underlying material to a depth of 60 inches is light olive gray, mottled, firm silt loam.

The nearly level Herrick soils are on broad rises. They are somewhat poorly drained. Typically, the surface layer is very dark grayish brown, friable silt loam about 11 inches thick. The subsurface layer also is very dark grayish brown, friable silt loam. It is about 4 inches thick. The subsoil is mottled silty clay loam about 43 inches thick. The upper part is dark grayish brown

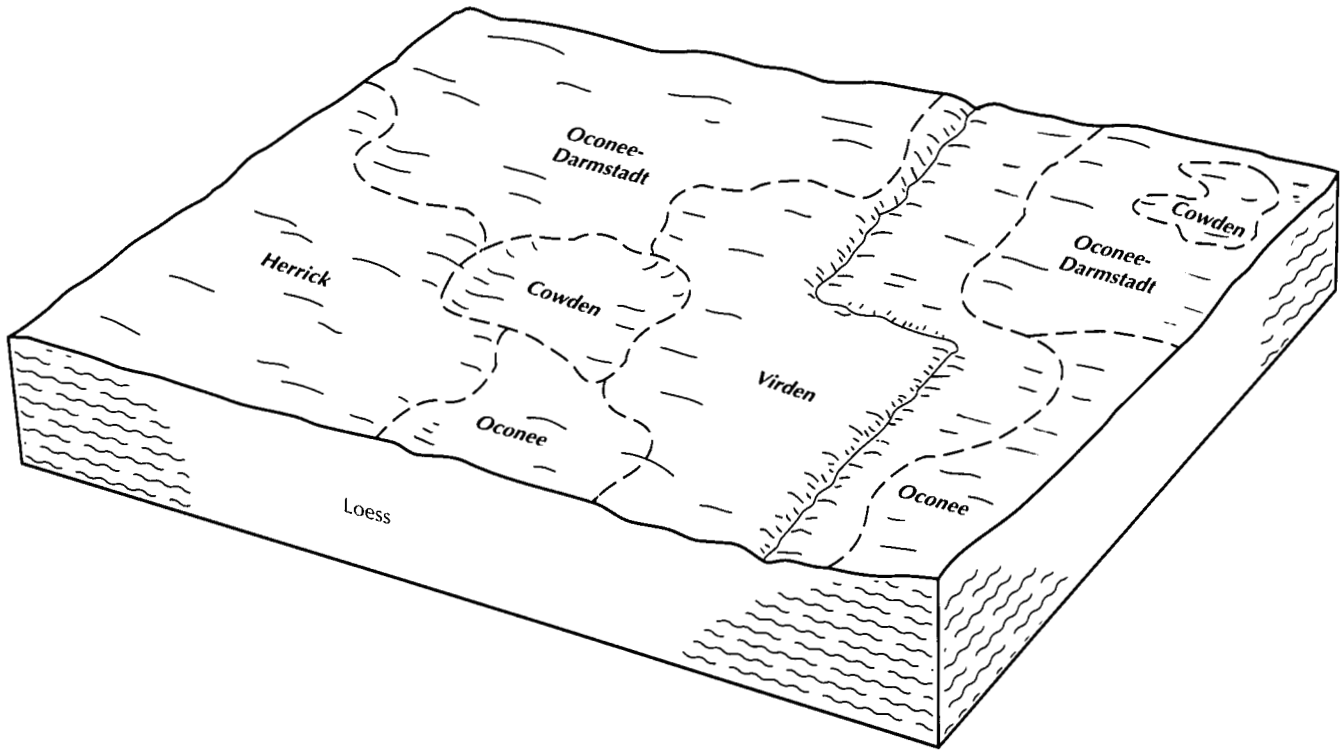


Figure 5.—Typical pattern of soils and parent material in the Oconee-Virden-Herrick association.

county. It is about 45 percent Sawmill soils, 24 percent Radford soils, 8 percent Tice soils, and 23 percent soils of minor extent (fig. 6).

The Sawmill soils are in low areas. They are poorly drained. Typically, the surface layer is very dark gray, friable silty clay loam about 7 inches thick. The subsurface layer is very dark gray, firm silty clay loam about 15 inches thick. The subsoil to a depth of 60 inches or more is firm silty clay loam. The upper part is very dark grayish brown, and the lower part is dark gray and mottled.

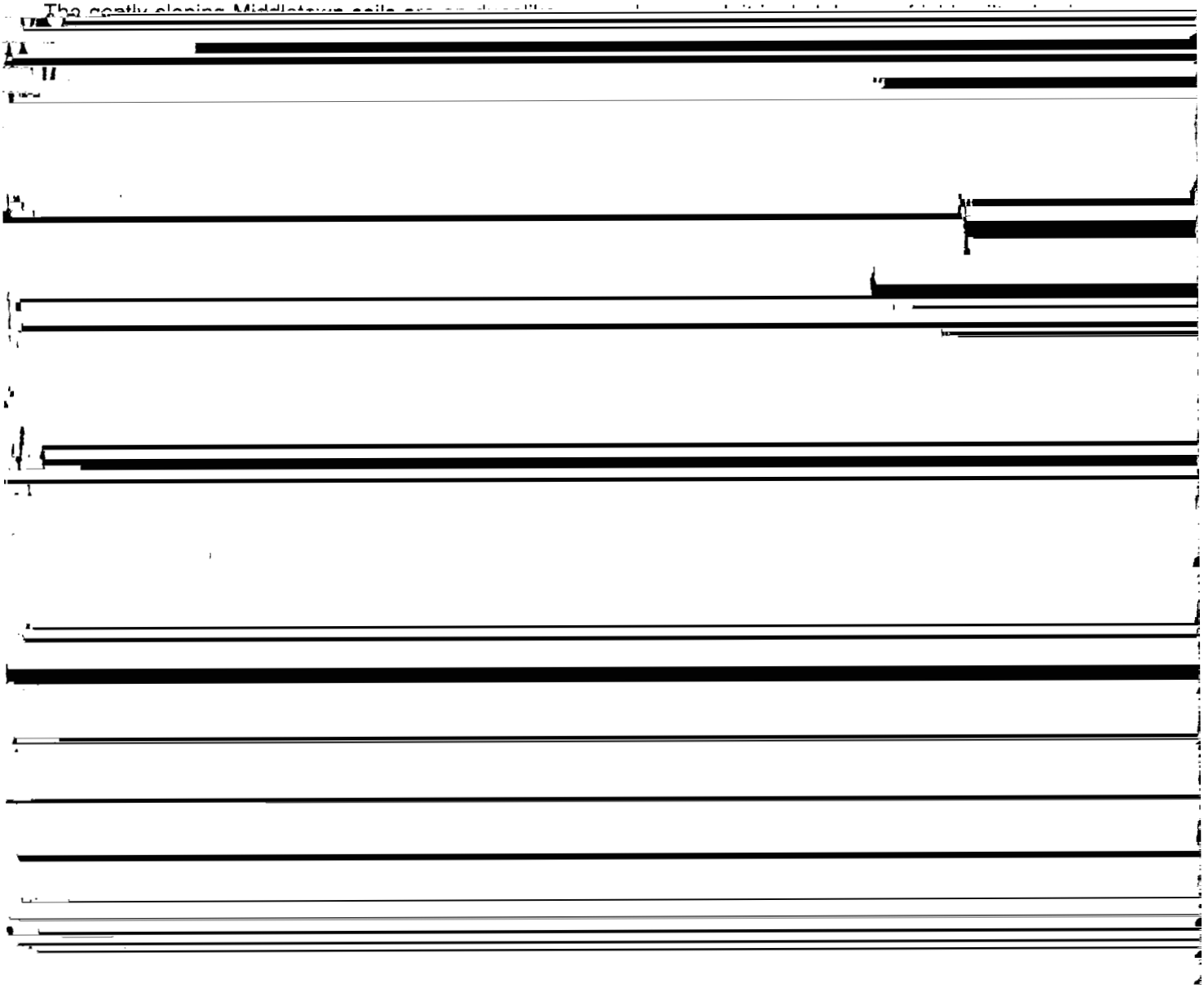
The Radford soils are on broad rises. They are somewhat poorly drained. Typically, the surface layer is

The subsoil to a depth of 60 inches or more is mottled, firm silty clay loam. The upper part is brown, and the lower part is grayish brown.

Minor in this association are Camden, Ross, and Thorp soils. Camden and Thorp soils formed in silty material and in the underlying stratified, loamy outwash. The well drained Camden soils are on convex ridgetops and side slopes. The poorly drained Thorp soils are in low areas. The well drained Ross soils are on flood plains.

Most areas of this association are used for corn or soybeans. Some areas are used for pasture, hay, or woodland. Improving drainage and controlling flooding

county. It is about 26 percent Middletown soils, 15 percent Alvin soils, 13 percent Broadwell soils, and 46 percent soils of minor extent (fig. 7).



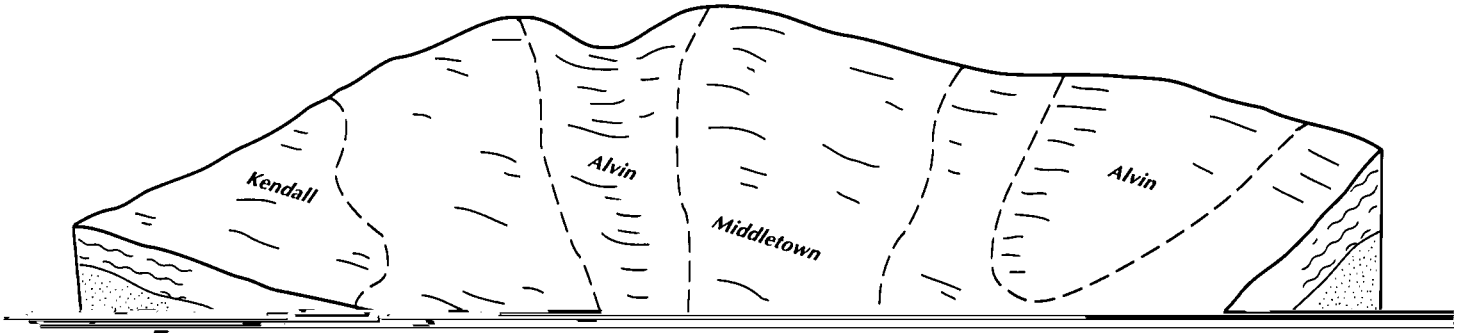
ridgetops and side slopes. They are moderately well drained. Typically, the surface layer is grayish brown, friable silt loam about 8 inches thick. The subsoil extends to a depth of 60 inches or more. It is yellowish brown. In sequence downward, it is firm silt loam and silty clay loam; mottled, firm and friable silty clay loam; mottled, friable clay loam and fine sandy loam; and very friable loamy fine sand.

The moderately sloping Alvin soils are on dunelike ridgetops and side slopes. They are well drained. Typically, the surface layer is mixed brown and yellowish brown, friable fine sandy loam about 7 inches thick. The subsoil extends to a depth of 60 inches or

very dark grayish brown, friable silt loam. The combined thickness of these layers is about 15 inches. The subsoil is about 40 inches thick. In sequence

brown and dark yellowish brown, firm silty clay loam; dark yellowish brown, friable silt loam; and dark yellowish brown, very friable loamy fine sand. The underlying material to a depth of 60 inches is yellowish brown, loose fine sand.

Minor in this association are Ipava, Sable, and Tama soils and the Kendall soils that have a sandy substratum. The somewhat poorly drained Ipava soils, the poorly drained Sable soils, and the moderately well drained Tama soils formed entirely in loess. Ipava soils are on broad rises. Sable soils are in low areas. Tama soils are on convex ridgetops. The somewhat poorly drained Kendall soils are on broad rises.


Kendall
Alvin
Middletown
Alvin

ridges. The somewhat poorly drained Radford soils are on flood plains.

Most areas of this association are used for corn, soybeans, or small grain. Some areas are used for

Douglas soils, 14 percent Harrison soils, and 20 percent soils of minor extent.

The gently sloping Oconee soils are on convex ridgetops and side slopes. They are somewhat poorly

Figure 9.—Farmland in an area of the Herrick-Virden-Harrison association. An area of the Rozetta-Hickory-Keomah association is in the background.

ridgetops and side slopes. They are moderately well drained. Typically, the surface layer is very dark grayish brown, friable silt loam about 10 inches thick. The subsoil extends to a depth of 60 inches or more. The upper part is very dark grayish brown and brown, mottled, friable silt loam; the next part is brown and yellowish brown, mottled, firm silty clay loam; and the lower part is grayish brown, mottled, firm silty clay loam.

Minor in this association are Cowden, Herrick, and Pana soils. The poorly drained Cowden soils are in

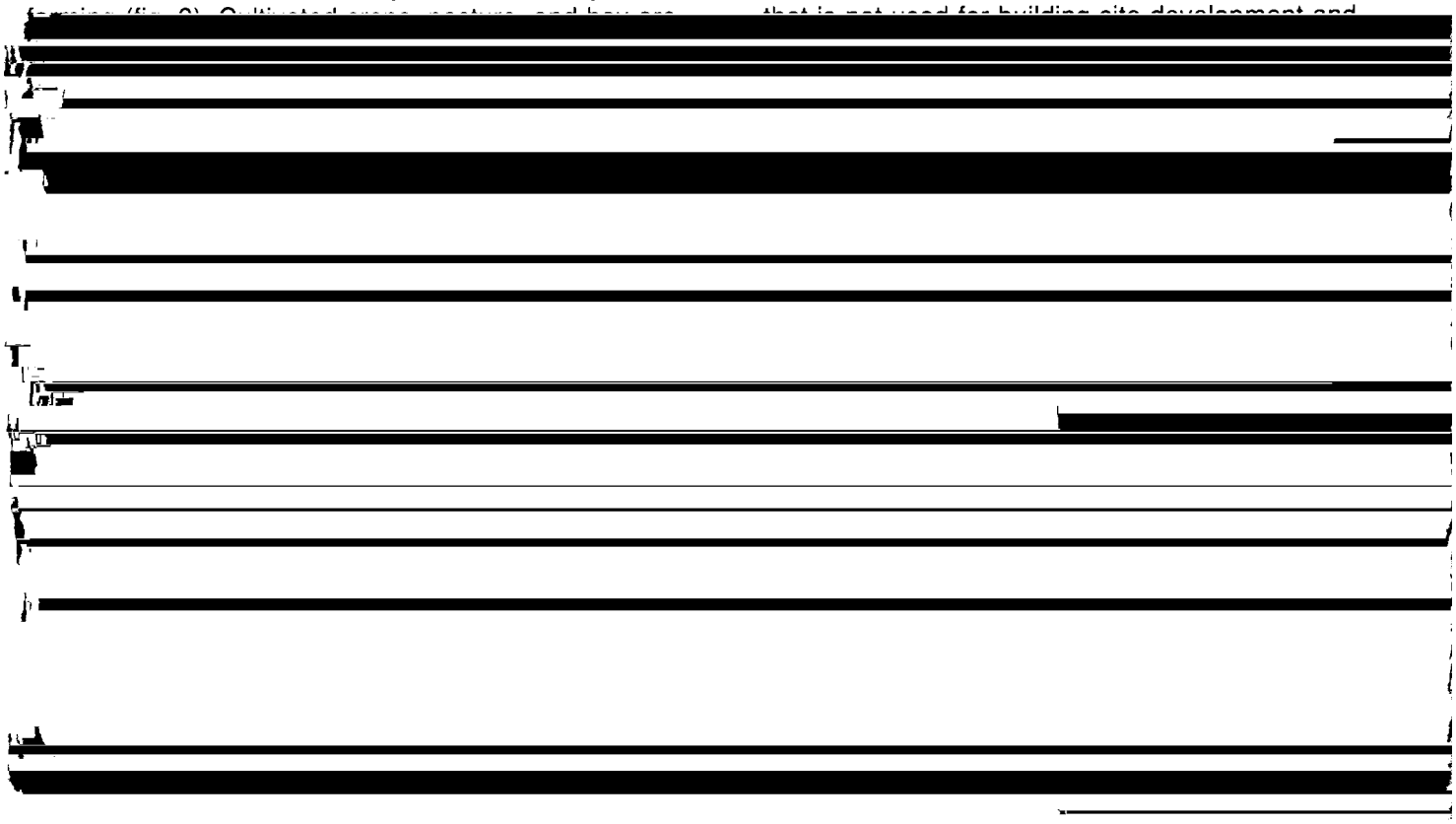
drained Pana soils are on narrow ridgetops and side slopes. They formed in glacial drift.

Most areas of this association are used for corn, soybeans, or small grain. Some areas are used for pasture or hay. Improving drainage and controlling erosion are the main management concerns.

Some areas of this association are used as sites for dwellings and septic tank absorption fields. Seasonal wetness, the shrink-swell potential, and restricted

Broad Land Use Considerations

The soils in Christian County are used mainly for



controlling erosion and plant competition and limiting the use of equipment.

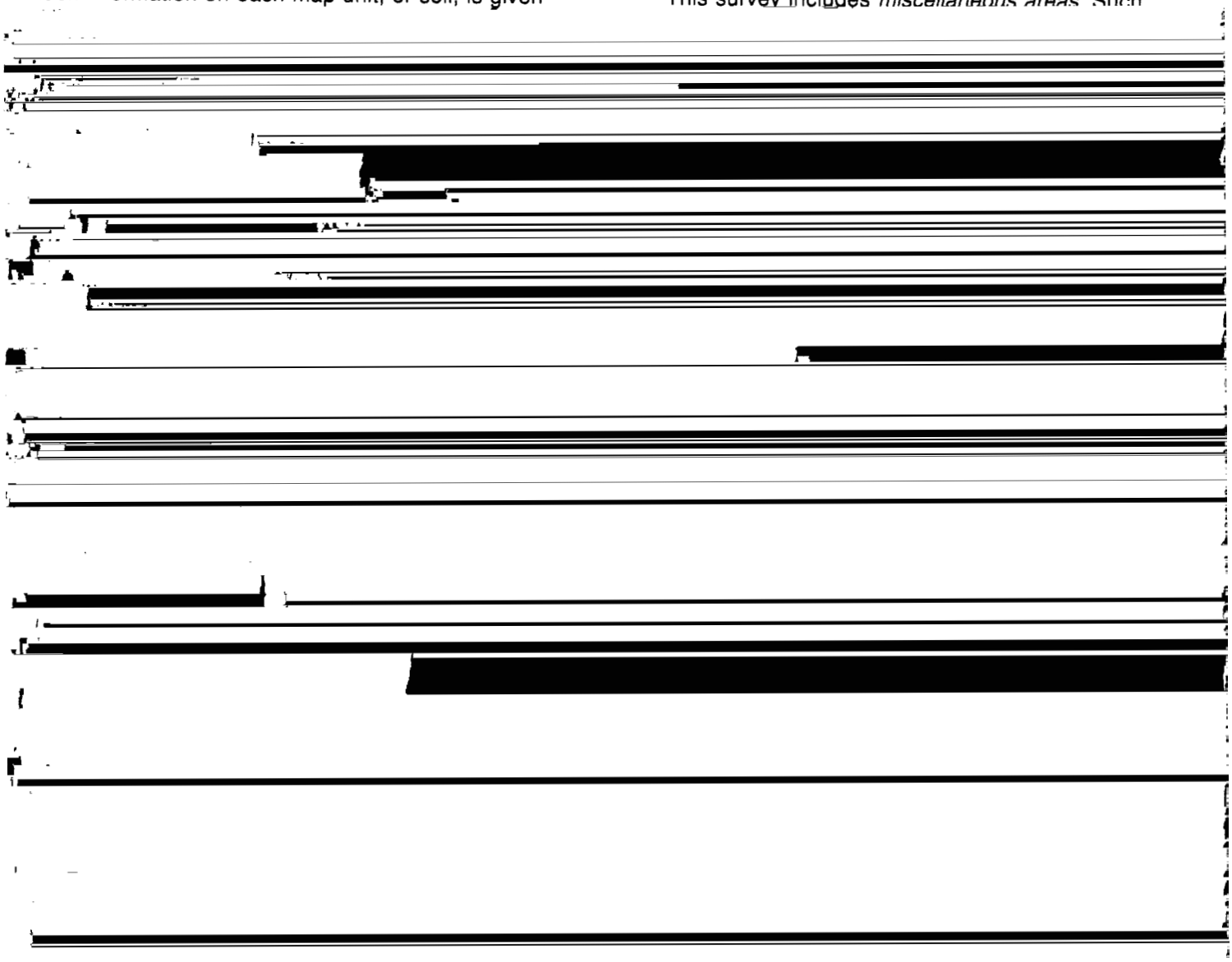
Association 6 is the only association in the county

Detailed Soil Map Units

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

substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

This survey includes *miscellaneous areas*. Such



lower part is light gray, firm clay loam. In some places the surface soil is darker. In other places the surface layer is silty clay loam. In some areas the subsoil has less clay. In other areas it has less sand.

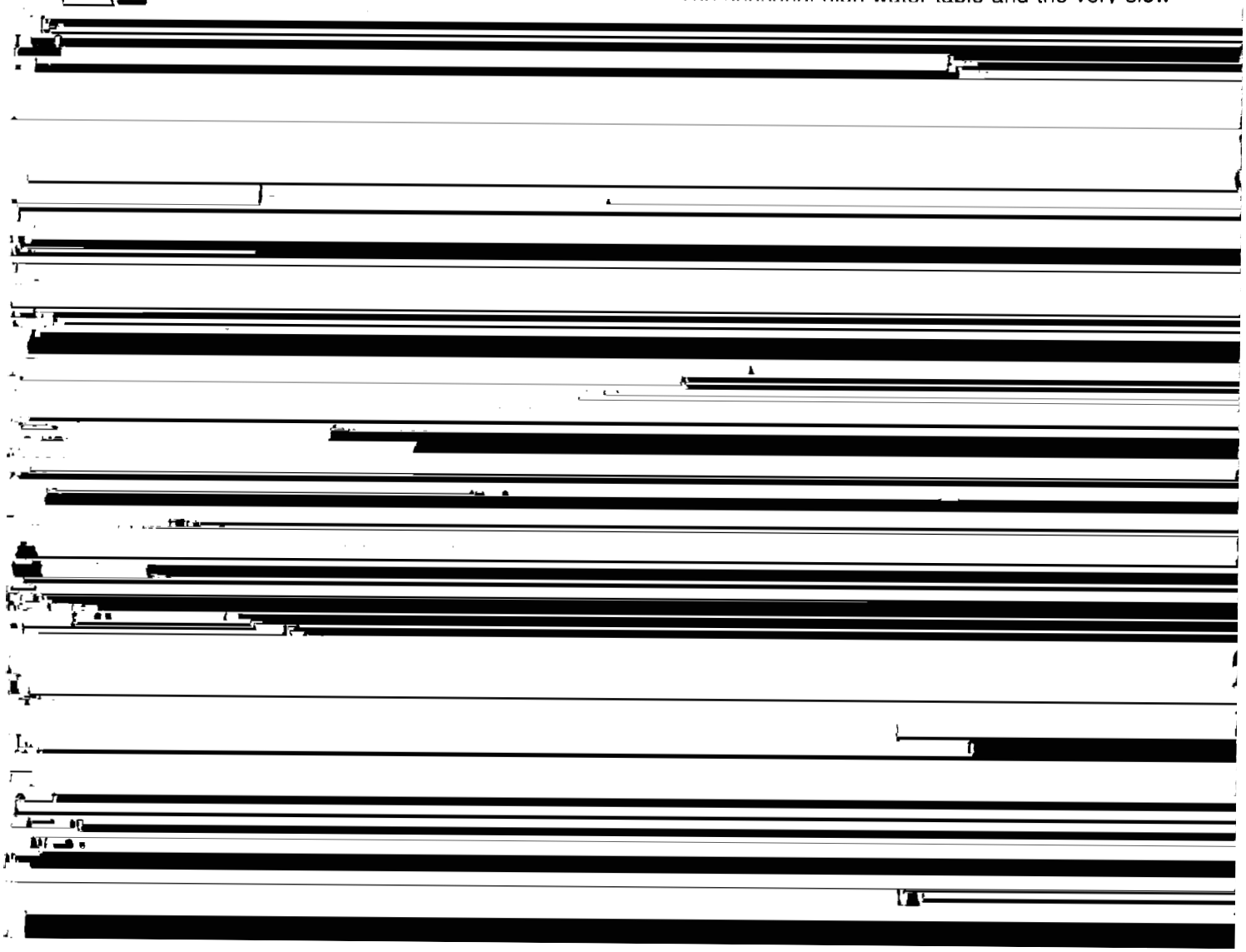
Included with this soil in mapping are small areas of the moderately well drained Elco and Rozetta soils and the well drained Hickory soils. Elco soils are in positions on the landscape similar to those of the Atlas soil. Rozetta soils are upslope from the Atlas soil, and Hickory soils are downslope. Hickory soils are on the steeper slopes. Included soils make up 5 to 10 percent of the unit.

Water and air move through the Atlas soil at a very slow rate. In cultivated areas surface runoff is rapid. The seasonal high water table is perched at a depth of 1 to 2 feet during winter and spring. Available water capacity is moderate. Organic matter content is moderately low. This soil is seepy in many spots. The [illegible] tends to crust and puddle after hard rains

tolerant of excessive wetness. The hazard of windthrow can be reduced by harvesting methods that do not isolate the remaining trees or leave them widely spaced. For example, only high-value trees should be removed from a strip 50 feet wide along the west and south edges of the woodland. Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable, young trees, compaction of the soil, and damage to tree roots. Measures that protect the woodland from fire are needed.

If this soil is used as a site for dwellings, the seasonal high water table and the shrink-swell potential are limitations. Installing either subsurface tile drains near the foundations or interceptor drains upslope from the buildings helps to overcome the wetness. Extending the footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The seasonal high water table and the very slow



soil can be easily tilled only within a narrow range in moisture content. The shrink-swell potential and the potential for frost action are high.

Most areas are used for cultivated crops. Some areas are used for pasture, hay, or woodland. A few

are limitations. Installing either subsurface tile drains near the foundations or interceptor drains upslope from the buildings helps to overcome the wetness. Extending the footings below the subsoil or reinforcing the foundations helps to prevent the structural damage

Figure 10.—Grassed ridge terraces reduce the length of slopes and thus help to control runoff and erosion on Hickory loam, 10 to 15 percent slopes, eroded.

these can help to keep soil losses within tolerable limits (fig. 10). Returning crop residue to the soil and regularly adding other organic material help to prevent crusting and improve tilth and fertility.

Establishing pasture plants or hay helps to keep erosion within tolerable limits. Timely deferment of grazing helps to prevent overgrazing and thus also helps to prevent surface compaction, excessive runoff, and a greater susceptibility to erosion. Tilling on the contour when a seedbed is prepared or the pasture is harvested can be controlled by chemical or mechanical means. Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots. Measures that protect the woodland from fire are needed.

If this soil is used as a site for dwellings, the slope and the shrink-swell potential are limitations. Cutting and filling help to overcome the slope. Extending the footings below the subsoil or reinforcing the foundations

8D3—Hickory clay loam, 10 to 15 percent slopes, severely eroded. This strongly sloping, well drained soil is on side slopes along drainageways in the uplands. In most areas, nearly all of the original surface layer has been removed by erosion and tillage has mixed the rest with the upper part of the subsoil. Individual areas are long and narrow and range from 4 to 40 acres in size.

Typically, the surface layer is mixed dark brown and dark yellowish brown, friable clay loam about 5 inches

where the subsoil is exposed. Timely deferment of grazing helps to prevent overgrazing and thus also helps to prevent surface compaction, excessive runoff, and a greater susceptibility to erosion. Tilling on the contour when a seedbed is prepared or the pasture is renovated helps to control further erosion. The plants should not be grazed or clipped until they are sufficiently established. Proper stocking rates, rotation

Water and air move through the Hickory soil at a moderate rate. Surface runoff is rapid. Available water capacity is high. Organic matter content is moderately low. The shrink-swell potential and the potential for frost action are moderate.

Most areas are used as woodland. Some areas are used for cultivated crops, pasture, or hay. This soil is moderately suited to woodland. It is poorly suited to

17—Keomah silt loam. This nearly level, somewhat poorly drained soil is on broad ridges in the uplands. Individual areas are irregular in shape and range from 3 to 175 acres in size.

Typically, the surface layer is dark grayish brown and grayish brown, friable silt loam about 9 inches thick. The subsurface layer is grayish brown, mottled, friable silt loam about 4 inches thick. The subsoil is about 45

In the areas used as woodland, plant competition is a management concern. It restricts the growth of desirable seedlings. The competition in openings where timber has been harvested can be controlled by chemical or mechanical means. Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots. Measures that protect the woodland from fire are needed.

If this soil is used as a site for dwellings, the seasonal high water table and the shrink-swell potential are limitations. Installing subsurface tile drains near the foundations helps to overcome the wetness. Extending the footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The seasonal high water table and the slow permeability are limitations if this soil is used as a site

species in openings where timber has been harvested can be controlled by chemical or mechanical means. Laying out logging roads and skid trails on the contour and seeding bare logging areas to grass or to a grass-legume mixture help to control erosion. Skidding logs and trees uphill with a cable and winch helps to overcome the slope. Firebreaks should be the grass type. Machinery should be used only when the soil is firm enough to support the equipment. Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots. Measures that protect the woodland from fire are needed.

The land capability classification is VIIe.

36B—Tama silt loam, 1 to 5 percent slopes. This gently sloping, moderately well drained soil is

crops. It is moderately suited to dwellings and septic tank absorption fields.

In areas used for corn, soybeans, or small grain, erosion is a hazard. It can be controlled by a conservation tillage system that leaves crop residue on the surface after planting, by contour farming, or by terraces. Returning crop residue to the soil and adding other organic material help to maintain tilth.

If this soil is used as a site for dwellings, the shrink-swell potential is a limitation. The seasonal high water table also is a limitation on sites for dwellings with basements. Extending the footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling. Installing subsurface tile drains near the foundations helps to lower the water table.

The seasonal high water table is a limitation if this soil is used as a site for septic tank absorption fields. Subsurface tile drains lower the water table.

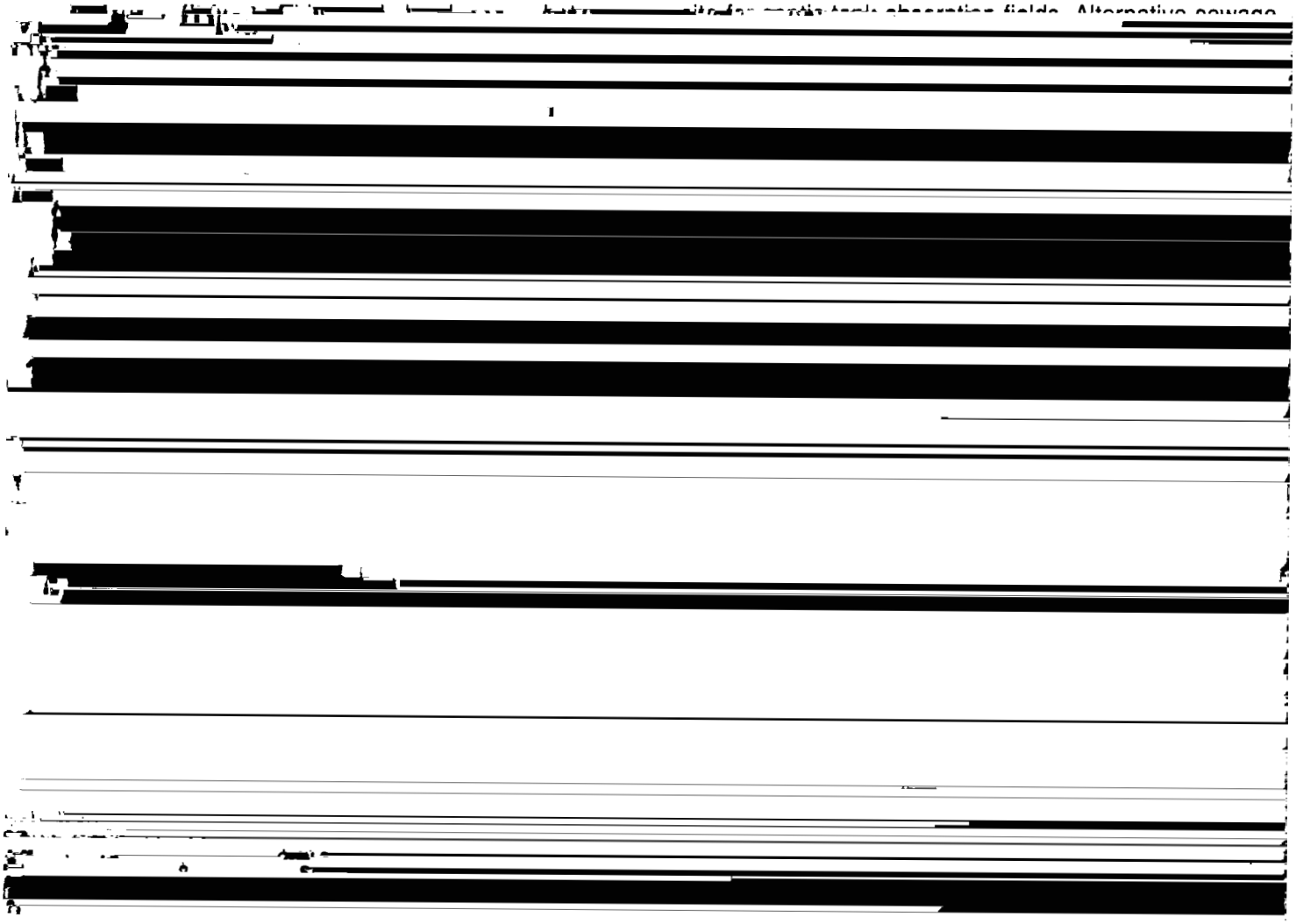
The land capability classification is IIe.

Most areas are used for cultivated crops. A few areas are used as sites for dwellings and septic tank absorption fields. This soil is well suited to cultivated crops. It is poorly suited to dwellings and septic tank absorption fields.

No major limitations affect the use of this soil for corn, soybeans, or small grain. The seasonal high water table can delay planting in some years. Subsurface tile drains function satisfactorily if suitable outlets are available. A conservation tillage system that leaves crop residue on the surface after planting helps to maintain tilth and fertility.

If this soil is used as a site for dwellings, the seasonal high water table and the shrink-swell potential are limitations. Installing subsurface tile drains near the foundations helps to overcome the wetness. Extending the footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The seasonal high water table and the moderately slow permeability are limitations if this soil is used as a



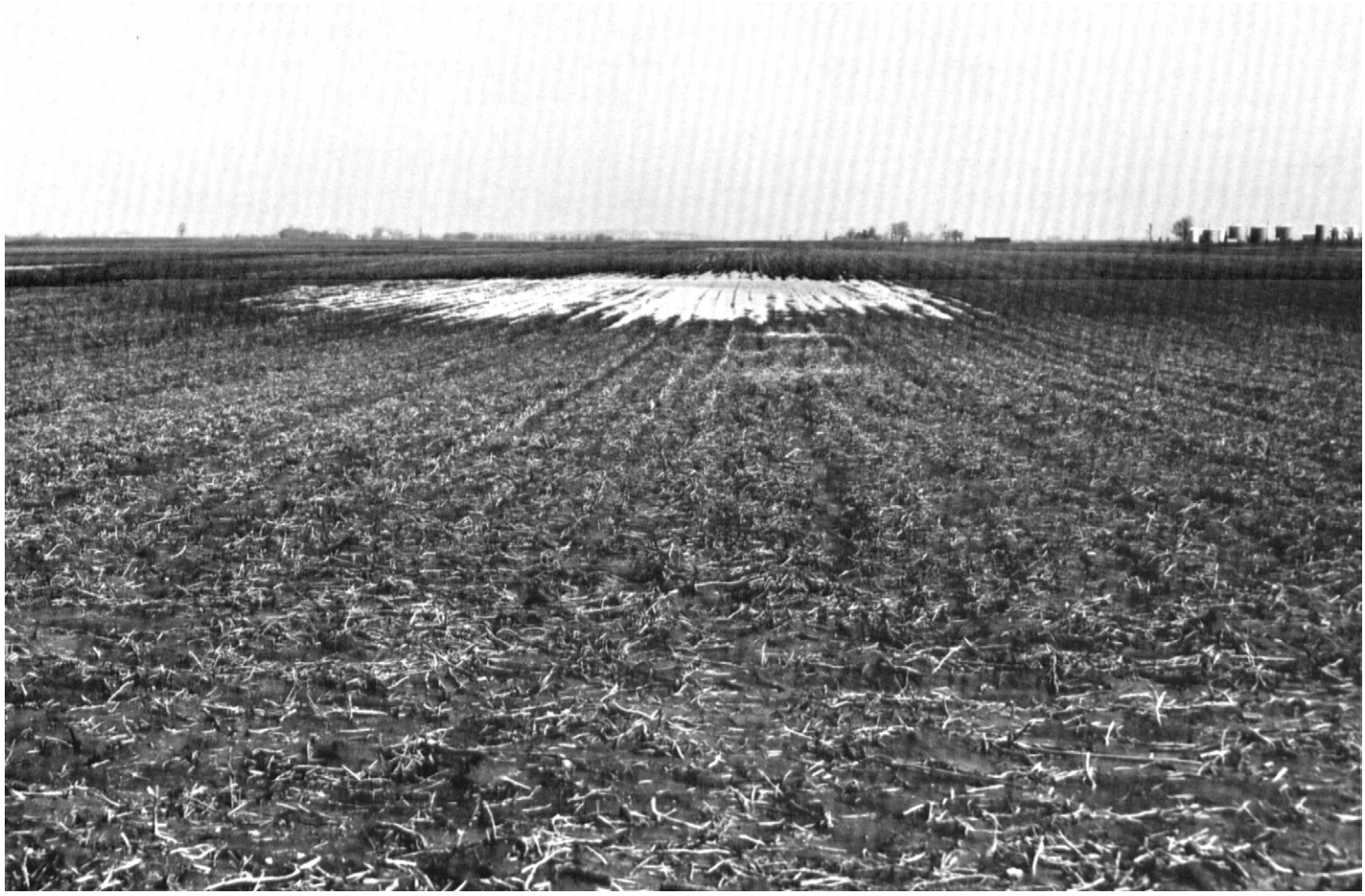


Figure 11.—Ponding in an area of Denny silt loam.

and puddle after hard rains. The shrink-swell potential and the potential for frost action are high.

Most areas are used for cultivated crops. A few small areas are used as sites for dwellings and septic tank absorption fields. This soil is well suited to cultivated crops. It is poorly suited to dwellings and septic tank absorption fields.

Corn, soybeans, and small grain can be grown in most areas because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. Surface drains, subsurface tile, and surface inlet tile function satisfactorily if suitable outlets are available. Land grading helps to control ponding. Tilling when the soil is wet causes surface compaction, cloddiness, and crusting. Applying a conservation tillage system that leaves crop residue on the surface after planting and regularly adding other organic material help to prevent surface compaction and crusting, improve tilth and fertility, and increase the rate of water intake.

The seasonal high water table and the shrink-swell potential are limitations if this soil is used as a site for dwellings. Reinforcing the footings and foundations helps to prevent the structural damage caused by shrinking and swelling. Installing subsurface drains near the footings helps to lower the water table. Elevating the floor of dwellings without basements above the surrounding ground level, grading, and diverting surface water also help to overcome the wetness.

The seasonal high water table and the slow permeability are limitations if this soil is used as a site for septic tank absorption fields. Alternative sewage disposal systems, including mound systems, may be needed.

The land capability classification is IIIw.

46—Herrick silt loam. This nearly level, somewhat poorly drained soil is on broad, low ridges in the uplands. Individual areas are irregular in shape and range from 50 to more than 1,000 acres in size.

Typically, the surface layer is very dark grayish brown, friable silt loam about 11 inches thick. The subsurface layer also is very dark grayish brown, friable silt loam. It is about 4 inches thick. The subsoil is mottled silty clay loam about 43 inches thick. The upper part is dark grayish brown and brown and is friable and firm, and the lower part is yellowish brown and is very firm and firm. The underlying material to a depth of 60 inches or more is yellowish brown and light brownish gray, mottled, friable silt loam. In some areas the subsoil has less clay. In other areas the seasonal high water table is at a depth of more than 3 feet. In some places the surface layer is thinner. In other places the upper part of the subsoil is dominantly gray.

Included with this soil in mapping are small areas of the moderately well drained Harrison soils and the poorly drained Cowden and Piasa soils. Harrison soils are on the more sloping parts of the landscape above the Herrick soil. Cowden and Piasa soils are in low areas below the Herrick soil. Included soils make up 5 to 10 percent of the unit.

[redacted]

The seasonal high water table and the moderately slow permeability are limitations if this soil is used as a site for septic tank absorption fields. Alternative sewage disposal systems, including mound systems, may be needed.

The land capability classification is IIw.

48—Ebbert silt loam. This nearly level, very poorly drained soil is in depressions in the uplands. It is ponded for brief periods during winter and spring. Individual areas are oval and range from 3 to 20 acres in size.

Typically, the surface layer is very dark gray, friable silt loam about 11 inches thick. The subsurface layer is dark gray, friable silt loam about 5 inches thick. The subsoil is mottled, friable and firm silty clay loam about 36 inches thick. It is gray in the upper part and light gray in the lower part. The underlying material to a depth of 60 inches or more is light gray, mottled, firm silt loam. In some areas the surface soil is thinner. In other areas the subsoil contains more clay.

Included with this soil in mapping are small areas of the somewhat poorly drained Herrick soils. These soils are higher on the landscape than the Ebbert soil. They make up 5 to 8 percent of the unit.

[redacted]

shrinking and swelling. Installing subsurface drains near the foundations helps to lower the water table. Elevating the floor of dwellings without basements above the surrounding ground level, grading, and diverting surface water also help to overcome the wetness.

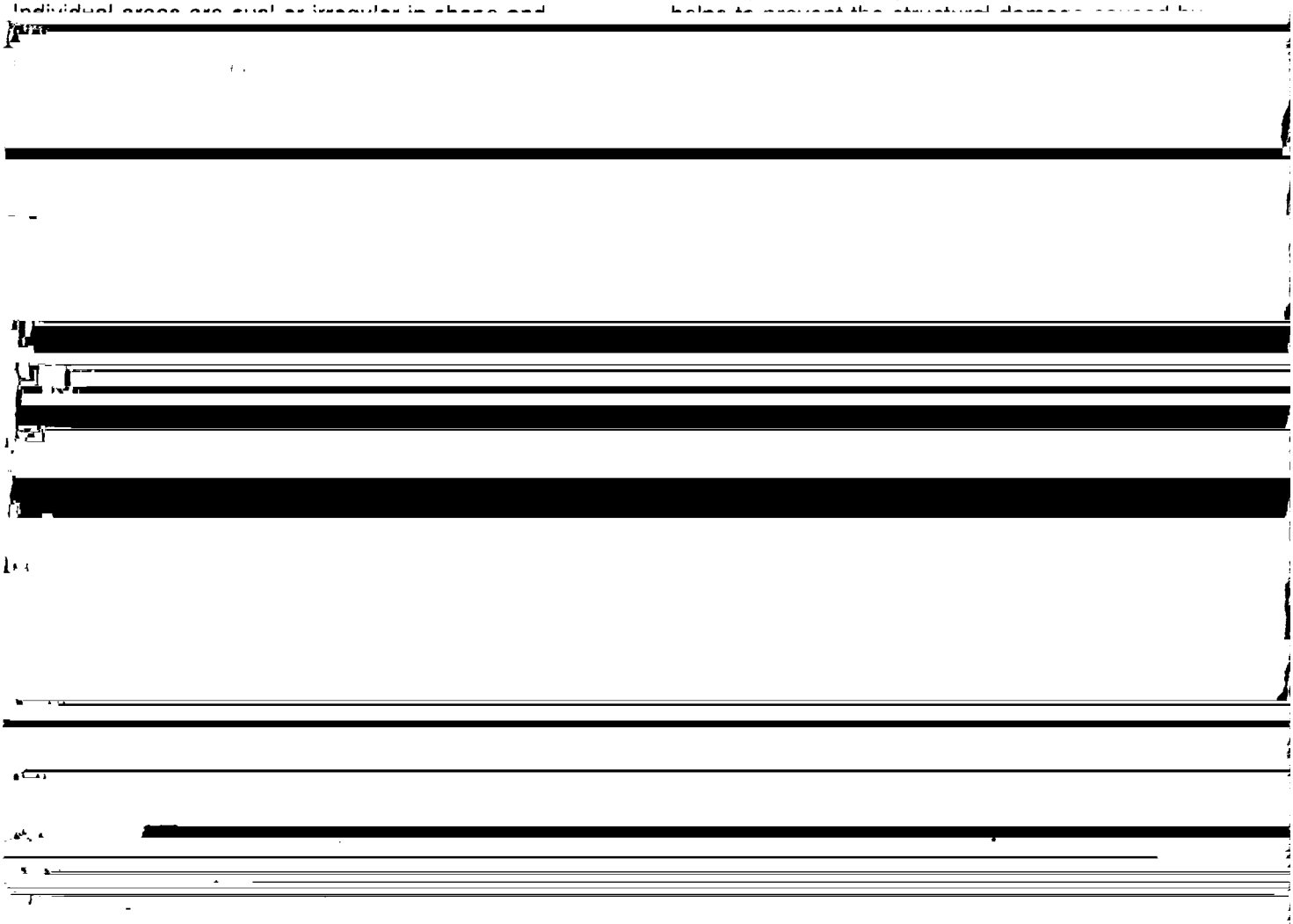
The seasonal high water table and the slow permeability are limitations if this soil is used as a site for septic tank absorption fields. Alternative sewage disposal systems, including mound systems, may be needed.

The land capability classification is IIIw.

50—Virden silty clay loam. This nearly level, poorly drained soil is in broad, low areas in the uplands. It is ponded for brief periods during winter and spring. Individual areas are oval or irregular in shape and

Corn, soybeans, and small grain can be grown in most areas because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. Surface drains and subsurface tile function satisfactorily if suitable outlets are available. Land grading helps to control ponding. Tilling when the soil is wet causes surface compaction, cloddiness, and crusting. Applying a conservation tillage system that leaves crop residue on the surface after planting and adding other organic material help to prevent surface compaction, cloddiness, and crusting, improve tilth, and increase the rate of water intake.

The seasonal high water table and the shrink-swell potential are limitations if this soil is used as a site for dwellings. Reinforcing the footings and foundations helps to prevent the structural damage caused by



range from 5 to more than 1,000 acres in size.

Typically, the surface layer is very dark gray, firm silty clay loam about 9 inches thick. The subsurface layer also is very dark gray, firm silty clay loam. It is about 3 inches thick. The subsoil is mottled, firm silty clay loam about 40 inches thick. The upper part is very

shrinking and swelling. Installing subsurface drains around the footings helps to lower the water table. Elevating the floor of dwellings without basements above the surrounding ground level, grading, and diverting surface water also help to overcome the wetness.

112—Cowden silt loam. This nearly level, poorly drained soil is on broad flats in the uplands. Individual areas are irregular in shape and range from 5 to 40 acres in size.

Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsurface layer is dark grayish brown and light brownish gray, mottled, friable silt loam about 10 inches thick. The subsoil is about 33 inches thick. It is mottled. The upper part is gray, firm silty clay; the next part is olive gray, firm silty clay; and the lower part is gray, friable silty clay loam. The underlying material to a depth of 60 inches or more is olive gray, mottled, friable silt loam. In some areas the dark surface layer is more than 10 inches thick. In other areas the surface layer is lighter in color. In some places the subsoil has less clay. In other places the lower part of the subsoil has more sand.

Included with this soil in mapping are small areas of the somewhat poorly drained Oconee soils and the poorly drained Piasa soils. Oconee soils are on low ridges above the Cowden soil. Piasa soils have a high content of sodium in the subsoil. They are in shallow depressions below the Cowden soil. Included soils make up less than 5 percent of the unit.

Water and air move through the Cowden soil at a slow rate. In cultivated areas surface runoff is slow or ponded. The seasonal high water table is 0.5 foot above to 2.0 feet below the surface during winter and spring. Available water capacity is high. Organic matter content is moderate. The surface layer tends to crust and puddle after hard rains. The shrink-swell potential and the potential for frost action are high.

Most areas are used for cultivated crops. A few small areas are used as sites for dwellings and septic tank absorption fields. This soil is well suited to cultivated crops. It is poorly suited to dwellings and septic tank absorption fields.

Corn, soybeans, and small grain can be grown in most areas because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. Surface drains, subsurface tile, and surface inlet tile function satisfactorily if suitable outlets are available. Land grading helps to control ponding. Tilling when the soil is wet causes surface compaction, cloddiness, and crusting. Applying a conservation tillage system that leaves crop residue on the surface after planting and adding other organic material help to prevent surface compaction and crusting, improve tilth, and increase the rate of water intake.

The seasonal high water table and the shrink-swell potential are limitations if this soil is used as a site for dwellings. Reinforcing the footings and foundations helps to prevent the structural damage caused by shrinking and swelling. Installing subsurface drains near the footings helps to lower the water table. Elevating the floor of dwellings without basements above the surrounding ground level, grading, and diverting surface water also help to overcome the wetness.

The seasonal high water table and the slow permeability are limitations if this soil is used as a site for septic tank absorption fields. Alternative sewage disposal systems, including mound systems, may be needed.

The land capability classification is IIw.

113A—Oconee silt loam, 0 to 2 percent slopes. This nearly level, somewhat poorly drained soil is on low ridges in the uplands. Individual areas are oblong or irregular in shape and range from 3 to 120 acres in size.

Typically, the surface layer is very dark grayish brown, friable silt loam about 7 inches thick. The subsurface layer is grayish brown, friable silt loam about 8 inches thick. It is mottled in the lower part. The subsoil extends to a depth of 60 inches or more. It is mottled. The upper part is brown and grayish brown, firm silty clay loam and silty clay; the next part is grayish brown and light brownish gray, firm silty clay loam; and the lower part is light brownish gray, friable silt loam. In some areas the surface layer is lighter in color. In other areas the subsoil has less clay. In places the dark surface layer is thicker.

Included with this soil in mapping, in the southern part of the county, are small, closely intermingled areas of the somewhat poorly drained Darmstadt soils. These soils have a high content of sodium in the subsoil. Also included are small areas of the poorly drained Cowden soils on the lower parts of the landscape. Included soils make up 5 to 10 percent of the unit.

Water and air move through the Oconee soil at a slow rate. In cultivated areas surface runoff is slow. The seasonal high water table is 1 to 3 feet below the surface during winter and spring. Available water capacity is high. Organic matter content is moderate. The surface layer tends to crust and puddle after hard rains. The shrink-swell potential and the potential for frost action are high.

Most areas are used for cultivated crops. A few small areas are used as sites for dwellings and septic tank absorption fields. This soil is well suited to cultivated crops. It is poorly suited to dwellings and septic tank absorption fields.

Corn, soybeans, and small grain can be grown in most areas because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. Surface drains, subsurface tile, and surface inlet tile function

satisfactorily if suitable outlets are available. Land grading helps to control ponding. Tilling when the soil is wet causes surface compaction, cloddiness, and crusting. Applying a conservation tillage system that leaves crop residue on the surface after planting and adding other organic material help to prevent surface compaction and crusting, improve tilth, and increase the rate of water intake.

If this soil is used as a site for dwellings, the seasonal high water table and the shrink-swell potential are limitations. Installing subsurface tile drains near the foundations helps to overcome the wetness. Extending the footings below the subsoil or reinforcing the foundation helps to prevent the structural damage

Most areas are used for cultivated crops. A few small areas are used as sites for dwellings and septic tank absorption fields. This soil is well suited to cultivated crops. It is poorly suited to dwellings and septic tank absorption fields.

In areas used for corn, soybeans, or small grain, erosion is a hazard (fig. 12). Also, the wetness can delay planting in some years. It can be reduced by subsurface tile drains or surface ditches. Erosion can be controlled by a conservation tillage system that leaves crop residue on the surface after planting, by contour farming, or by terraces. Returning crop residue to the soil and regularly adding other organic material help to prevent crusting, improve tilth and fertility, and

Figure 12.—A gully in an area of Oconee silt loam, 2 to 5 percent slopes.

at a slow rate. In cultivated areas surface runoff is medium. The seasonal high water table is perched at a depth of 2.5 to 4.5 feet during winter and spring. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust and puddle after hard rains. This soil is seepy in many spots. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are used for cultivated crops. Some areas are used for pasture, hay, or woodland. A few small areas are used as sites for dwellings and septic tank absorption fields. This soil is moderately suited to [redacted]

The land capability classification is IIIe.

127B—Harrison silt loam, 2 to 5 percent slopes. This gently sloping, moderately well drained soil is on convex ridgetops, knolls, and side slopes in the

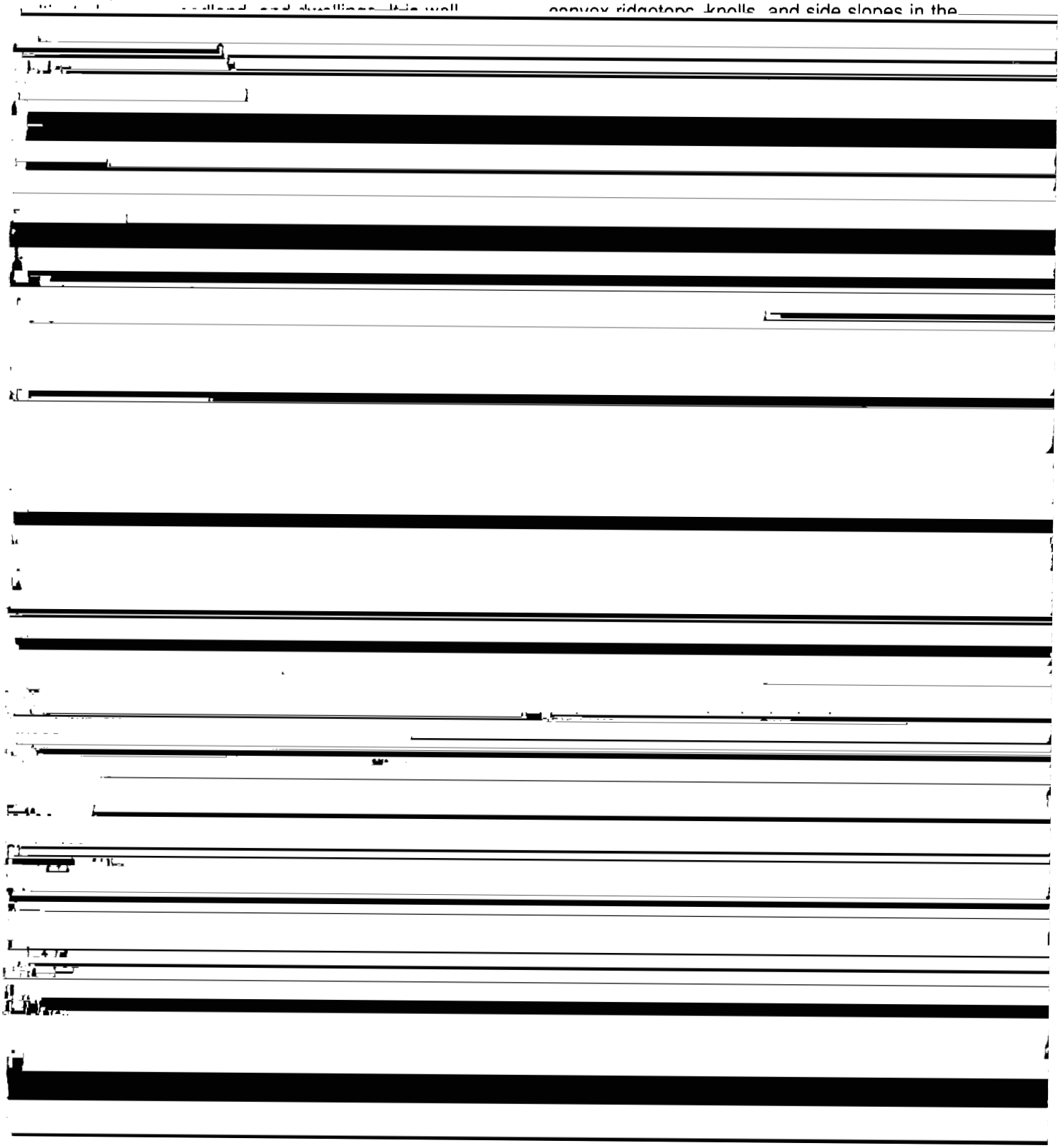


Figure 13.—Soybeans drilled into wheat stubble in an area of Harrison silt loam, 2 to 5 percent slopes. Coatsburg silt loam, 5 to 10 percent slopes, eroded, is on side slopes along the grassed waterway.

Installing subsurface tile drains near the foundations helps to lower the water table.

If this soil is used as a site for septic tank absorption fields, the seasonal high water table is a limitation. Subsurface tile drains lower the water table.

The land capability classification is IIe.

128B—Douglas silt loam, 2 to 5 percent slopes. This gently sloping, well drained soil is on convex ridgetops, knolls, and side slopes in the uplands. Individual areas are oval or irregular in shape and range from 5 to 100 acres in size.

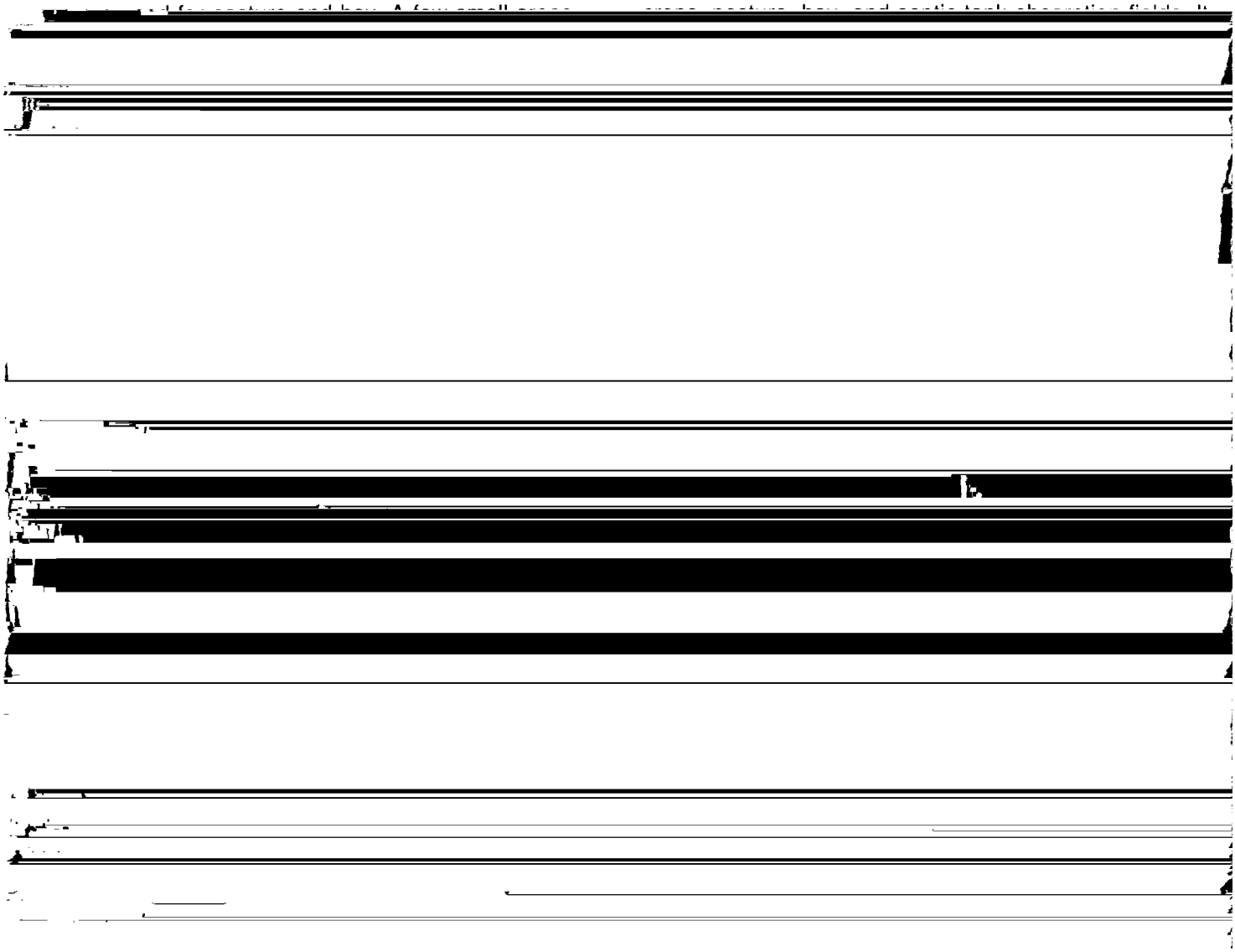
Typically, the surface layer and subsurface layer are [illegible] brown silt loam. The combined subsoil extends to a depth of 60 inches or more. The upper part is dark yellowish brown, friable silty clay loam; the next part is dark yellowish brown, mottled, friable silt loam; and the lower part is brown and dark brown, mottled, friable loam. In some areas the surface layer is lighter in color. In severely eroded areas it is silty clay loam. In places the water table is within a depth of 6 feet.

Included with this soil in mapping are small areas of the somewhat poorly drained Oconee soils. These soils are on ridges below the Douglas soil. They make up 5 to 10 percent of the unit.

Water and air move through the Douglas soil at a [illegible] to [illegible] In cultivated areas surface runoff is

matter content is moderate. The shrink-swell potential also is moderate, and the potential for frost action is high.

Most areas are used for cultivated crops. Some



are used as sites for dwellings and septic tank absorption fields. This soil is well suited to cultivated crops, pasture, hay, and septic tank absorption fields. It is moderately suited to dwellings.

In areas used for corn, soybeans, or small grain, erosion is a hazard. It can be controlled by a conservation tillage system that leaves crop residue on the surface after planting, by contour farming, or by terraces. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

Suitable forage and hay plants grow well on this soil. Overgrazing reduces forage yields, causes surface compaction and excessive runoff, and increases the

Most areas are used for cultivated crops. Some areas are used for pasture and hay. A few small areas are used as sites for dwellings and septic tank absorption fields. This soil is well suited to cultivated

is moderately suited to dwellings.

In areas used for corn, soybeans, or small grain, further erosion is a hazard. A crop rotation that includes 1 or more years of forage crops, a conservation tillage system that leaves crop residue on the surface after planting, contour farming, terraces, or a combination of these can help to keep soil losses within tolerable limits (fig. 14). Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

Establishing pasture plants or hay helps to keep erosion within tolerable limits. Timely deferment of grazing helps to prevent overgrazing and thus also helps to prevent surface compaction, excessive runoff, and a greater susceptibility to erosion. Tilling on the

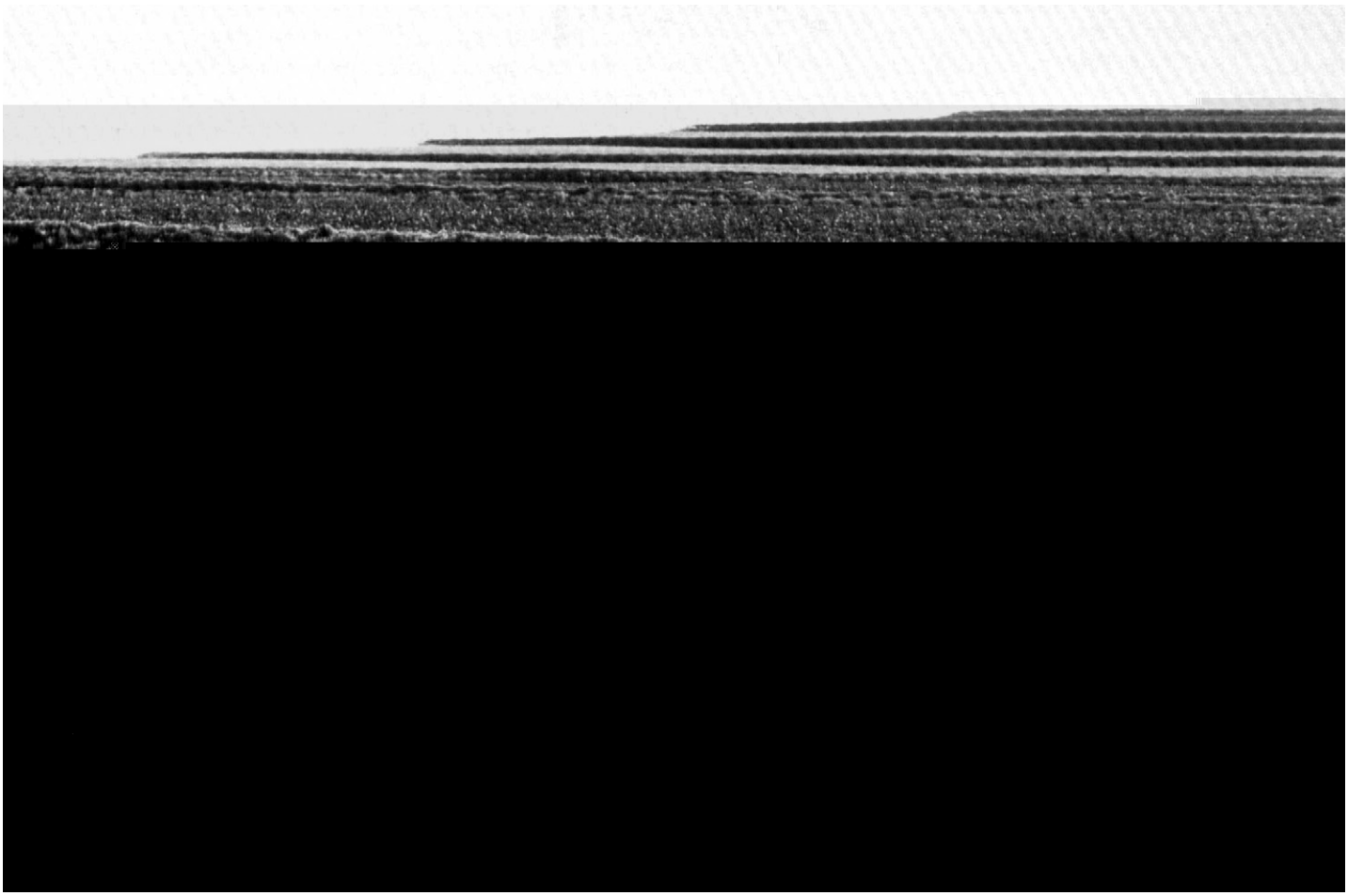


Figure 14.—Terraces help to control erosion in an area of Douglas silt loam, 5 to 10 percent slopes, eroded.

the subsoil than the Alvin soil. Kendall soils are in the less sloping areas. Included soils make up 5 to 10 percent of the unit.

Water and air move through the Alvin soil at a moderate rate. In cultivated areas surface runoff is medium. Available water capacity is moderate. Organic matter content is low. The surface layer is subject to soil blowing when dry. The potential for frost action is moderate, and the shrink-swell potential is low.

Most areas are used for cultivated crops. Some areas are used for pasture, hay, or woodland. A few small areas are used as sites for dwellings and septic tank absorption fields. This soil is moderately suited to cultivated crops and woodland. It is well suited to pasture and hay and to dwellings and septic tank absorption fields.

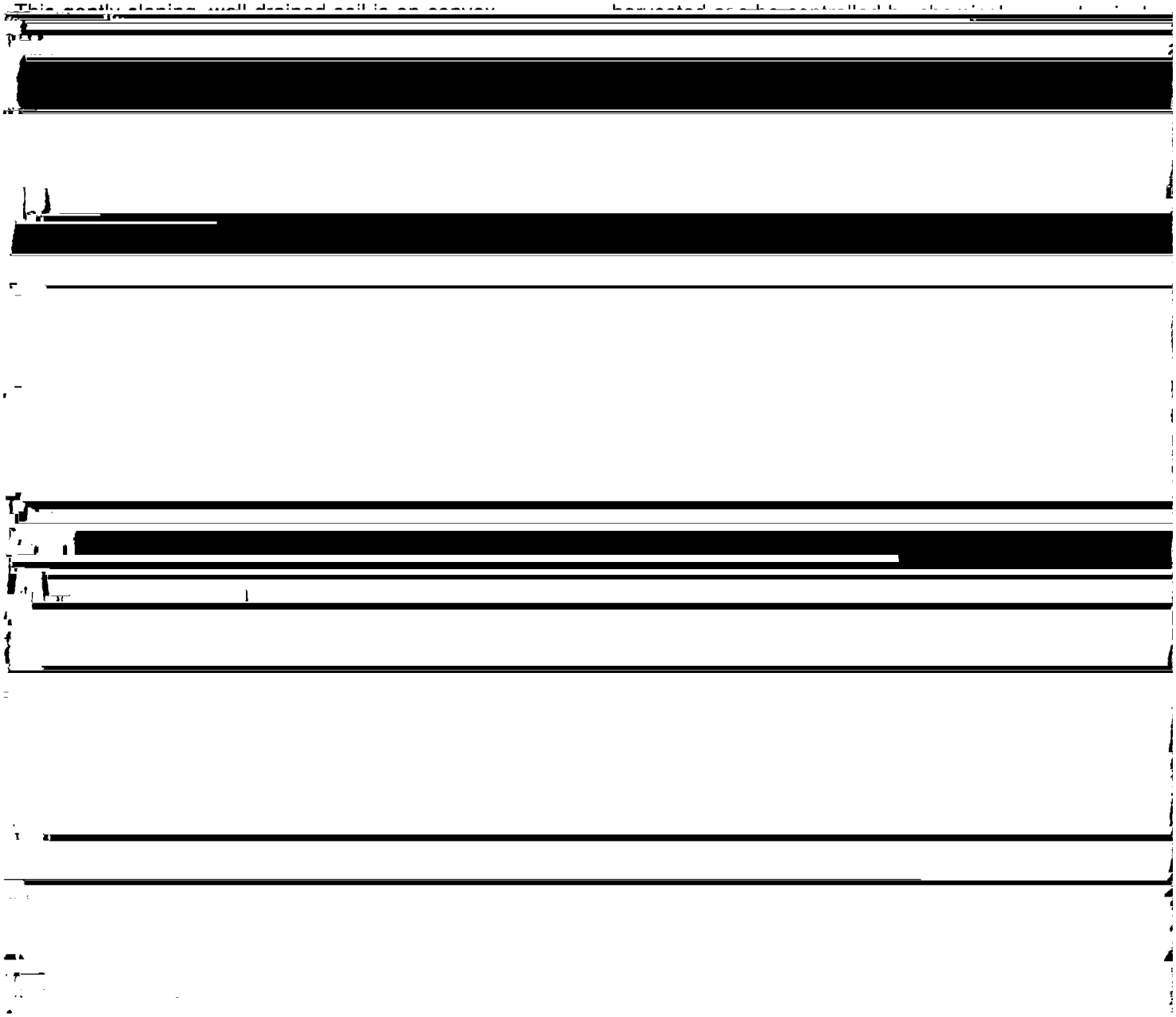
In areas used for corn, soybeans, or small grain, further erosion and soil blowing are hazards. Also, the moderate available water capacity and the level of fertility are limitations. Erosion can be controlled and moisture conserved by a conservation tillage system that leaves crop residue on the surface after planting, by contour farming, by terraces, or by a combination of these. Field windbreaks and a tillage system that leaves the surface rough are effective in controlling soil blowing. Returning crop residue to the soil and regularly adding other organic material improve tilth and fertility.

Establishing pasture plants or hay helps to keep erosion within tolerable limits. Timely deferment of grazing helps to prevent overgrazing and thus also helps to prevent surface compaction, excessive runoff, and a greater susceptibility to erosion. Tilling on the contour when a seedbed is prepared or the pasture is renovated helps to control erosion. The plants should not be grazed or clipped until they are sufficiently established. Proper stocking rates, rotation grazing, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition.

In the areas used as woodland, plant competition is a management concern. It restricts the growth of desirable seedlings. The competition from undesirable vegetation in openings where timber has been harvested can be controlled by chemical or mechanical means. Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots. Measures that protect the woodland from fire are needed.

The land capability classification is IIIe.

134B—Camden silt loam, 2 to 5 percent slopes.



ridgetops and side slopes in the uplands and on stream terraces. Individual areas are oblong or irregular in

regularly adding other organic material help to prevent crusting and improve tilth and fertility.

Suitable forage and hay plants grow well on this soil. Overgrazing reduces forage yields, causes surface compaction and excessive runoff, and increases the susceptibility to erosion. Proper stocking rates, rotation grazing, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition and help to control erosion.

In the areas used as woodland, plant competition is a management concern. It restricts the growth of desirable seedlings. The competition from undesirable vegetation in openings where timber has been

means. Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable

areas are used for pasture, hay, or woodland. A few small areas are used as sites for dwellings and septic

clay loam. The underlying material to a depth of 60 inches or more is

138—Shiloh silty clay loam. This nearly level, poorly drained soil is in broad, shallow depressions in the uplands. Individual areas are irregular in shape and range from 5 to 400 acres in size.

Typically, the surface layer and subsurface layer are black, firm silty clay loam. The combined thickness of these layers is about 15 inches. The subsoil extends to a depth of more than 60 inches. It is mottled. The upper part is black and olive gray, firm silty clay; the next part is olive gray, friable silty clay loam; and the lower part is olive gray, friable silt loam. In places the upper part of the subsoil is lighter in color. In some areas the subsoil contains less clay. In a few areas the underlying material is stratified with sandier textures.

Included with this soil in mapping are small areas of the somewhat poorly drained Elburn, Herrick, and Ipava soils on ridges above the Shiloh soil. These soils make up 2 to 10 percent of the unit.

Water and air move through the Shiloh soil at a moderately slow rate. In cultivated areas surface runoff is very slow or ponded. The seasonal high water table is 1 foot above to 2 feet below the surface during winter and spring. Available water capacity is high. Organic matter content also is high. The surface layer is firm and sticky when wet and hard and cloddy when dry. The shrink-swell potential and the potential for frost action are high.

Most areas are used for cultivated crops. A few small [illegible] and septic tank

diverting surface water also help to overcome the wetness.

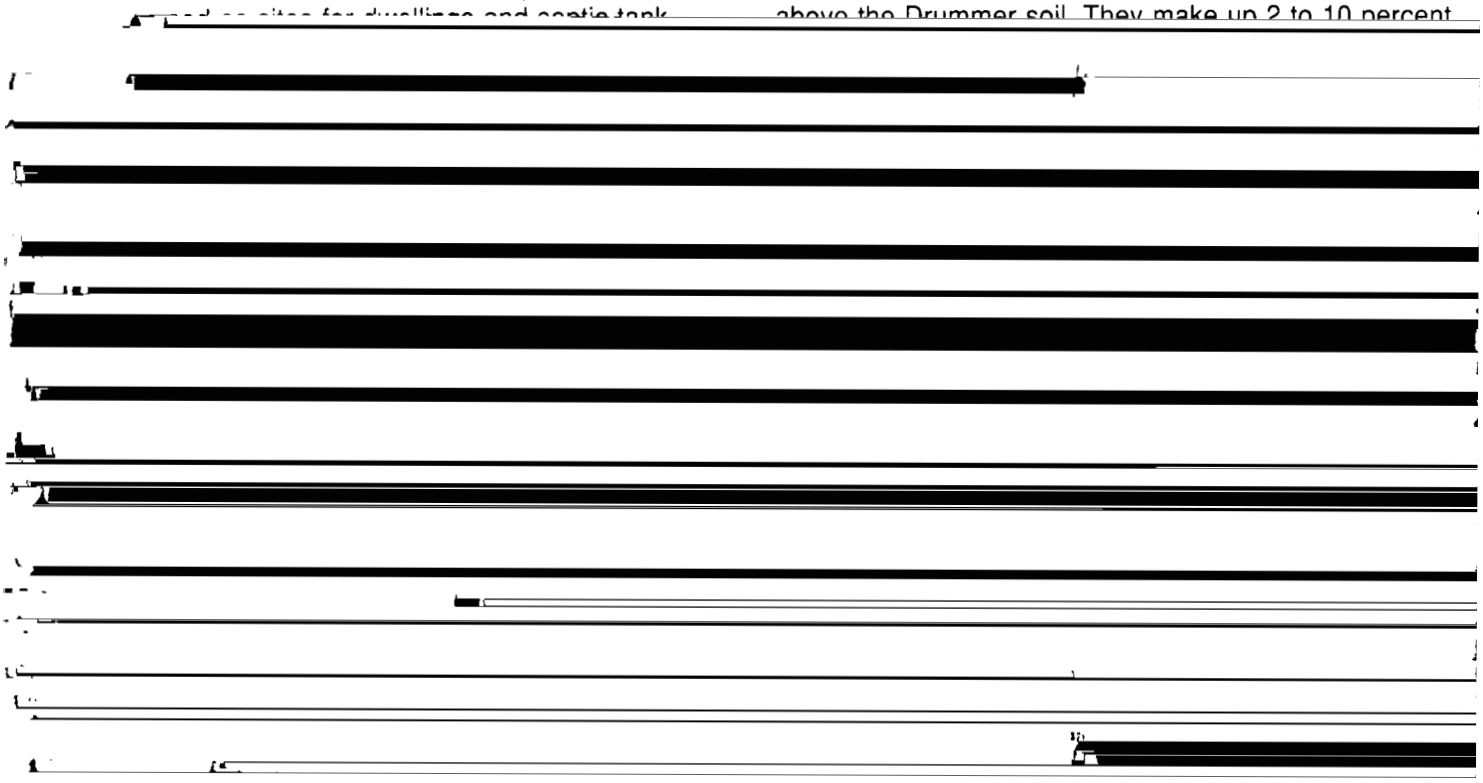
The seasonal high water table and the slow permeability are limitations if this soil is used as a site for septic tank absorption fields. Alternative sewage disposal systems, including mound systems, may be needed.

The land capability classification is IIw.

152—Drummer silty clay loam. This nearly level, poorly drained soil is on broad flats in the uplands. It is ponded for brief periods during winter and spring. Individual areas are irregular in shape and range from 5 to 400 acres in size.

Typically, the surface layer is black, friable silty clay loam about 8 inches thick. The subsurface layer is very dark gray, mottled, firm silty clay loam about 8 inches thick. The subsoil extends to a depth of 60 inches or more. It is mottled. It is dark grayish brown, grayish brown, light olive gray, and gray, firm silty clay loam in the upper part and gray, friable, stratified loam, clay loam, and fine sandy loam in the lower part. In some places the upper part of the subsoil is darker and contains more clay. In other places the lower part of the subsoil contains more sand.

Included with this soil in mapping are small areas of the somewhat poorly drained Elburn and moderately well drained Plano soils. These soils are on ridges above the Drummer soil. They make up 2 to 10 percent



adding other organic material help to prevent surface compaction and crusting, improve tilth, and increase the rate of water intake.

The seasonal high water table and the shrink-swell potential are limitations if this soil is used as a site for dwellings. Reinforcing the footings and foundations helps to prevent the structural damage caused by shrinking and swelling. Installing subsurface drains around the footings helps to lower the water table. Elevating the floor of dwellings without basements above the surrounding ground level, grading, and diverting surface water also help to overcome the wetness.

The seasonal high water table and the moderate permeability are limitations if this soil is used as a site for septic tank absorption fields. Alternative sewage disposal systems, including mound systems, may be needed.

The land capability classification is IIw.

areas are used as sites for dwellings and septic tank absorption fields. This soil is well suited to cultivated crops. It is poorly suited to dwellings and septic tank absorption fields.

No major limitations affect the use of this soil for corn, soybeans, or small grain. The seasonal high water table can delay planting in some years. Subsurface tile drains function satisfactorily if suitable outlets are available. A conservation tillage system that leaves crop residue on the surface after planting helps to maintain tilth and fertility.

If this soil is used as a site for dwellings, the seasonal high water table and the shrink-swell potential are limitations. Installing subsurface tile drains near the foundations helps to overcome the wetness. Extending the footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The seasonal high water table and the moderate

198—Elburn silt loam. This nearly level, somewhat poorly drained soil is on low, broad ridges in the uplands. Individual areas are irregular in shape and range from 5 to 500 acres in size.

Typically, the surface layer is very dark grayish brown, friable silt loam about 6 inches thick. The subsurface layer also is very dark grayish brown, friable silt loam. It is about 10 inches thick. The subsoil is about 42 inches thick. It is mottled. The upper part is brown, friable and firm silty clay loam; the next part is light olive brown and grayish brown, friable silty clay loam; and the lower part is grayish brown, friable, stratified silt loam, loam, and sandy loam. The underlying material to a depth of 60 inches or more is grayish brown, very friable, stratified sandy loam and loamy sand. In some places the upper part of the

for septic tank absorption fields. Alternative sewage disposal systems, including mound systems, may be needed.

The land capability classification is I.

199B—Plano silt loam, 1 to 5 percent slopes. This gently sloping, moderately well drained soil is on convex ridgetops and side slopes in the uplands and on stream terraces. Individual areas are irregular in shape and range from 5 to 90 acres in size.

Typically, the surface layer is very dark grayish brown, friable silt loam about 8 inches thick. The subsurface layer also is very dark grayish brown, friable silt loam. It is about 4 inches thick. The subsoil is about 42 inches thick. The upper part is dark yellowish brown, friable silty clay loam; the next part is dark yellowish

medium. The seasonal high water table is at a depth of 3 to 6 feet during winter and spring. Available water

slow. The seasonal high water table is 1 to 3 feet below the surface during winter and spring. Available water

disposal systems, including mound systems, may be needed.

The land capability classification is IIw.

244—Hartsburg silty clay loam. This nearly level, poorly drained soil is on broad flats in the uplands. It is ponded for brief periods during winter and spring. Individual areas are irregular in shape and range from 5 to 500 acres in size.

Typically, this surface layer is very dark gray, friable silty clay loam about 7 inches thick. The subsurface layer also is very dark gray, friable silty clay loam. It is about 13 inches thick. The subsoil is about 23 inches thick. It is mottled and friable. The upper part is dark grayish brown and olive gray silty clay loam, and the lower part is gray silt loam. The underlying material to a depth of 60 inches or more is gray, mottled, friable silt loam. In some areas the subsoil is more acid. In a few places the subsoil has more clay.

Included with this soil in mapping are small areas of the somewhat poorly drained Ipava soils and the poorly drained Harpster soils. Ipava soils are on ridges above the Hartsburg soil. Harpster soils are in shallow depressions below the Hartsburg soil. Included soils make up 5 to 10 percent of the unit.

Water and air move through the Hartsburg soil at a moderate rate. In cultivated areas surface runoff is slow or ponded. The seasonal high water table is 0.5 foot above to 2.0 feet below the surface during winter and

dwellings. Reinforcing the footings and foundations helps to prevent the structural damage caused by shrinking and swelling. Installing subsurface drains around the footings helps to lower the water table. Elevating the floor of dwellings without basements above the surrounding ground level, grading, and diverting surface water also help to overcome the wetness.

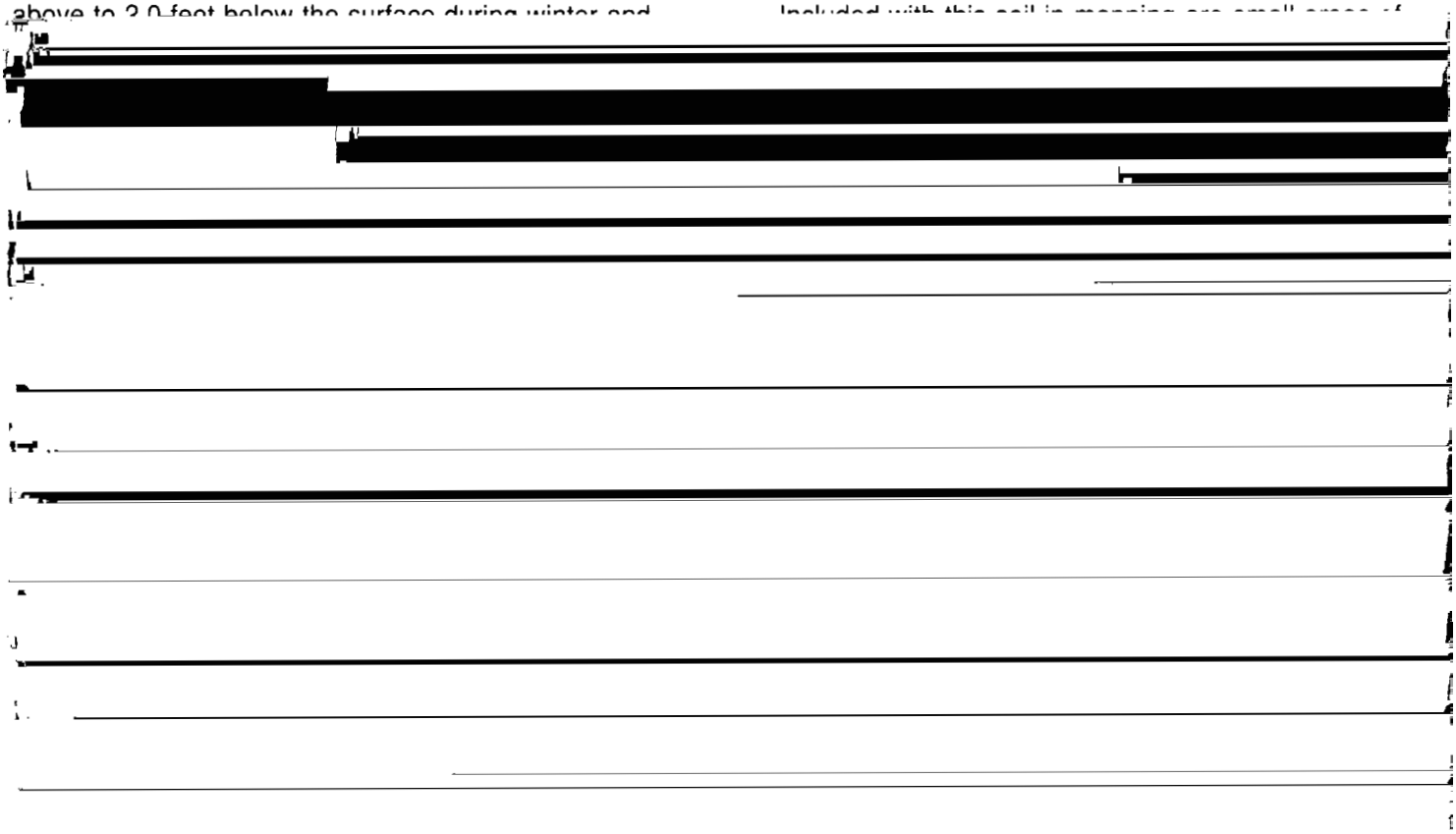
The seasonal high water table and the moderate permeability are limitations if this soil is used as a site for septic tank absorption fields. Alternative sewage disposal systems, including mound systems, may be needed.

The land capability classification is IIw.

249—Edinburg silty clay loam. This nearly level, very poorly drained soil is in shallow depressions in the uplands. It is ponded for brief periods during winter and spring. Individual areas are irregular in shape and range from 3 to 150 acres in size.

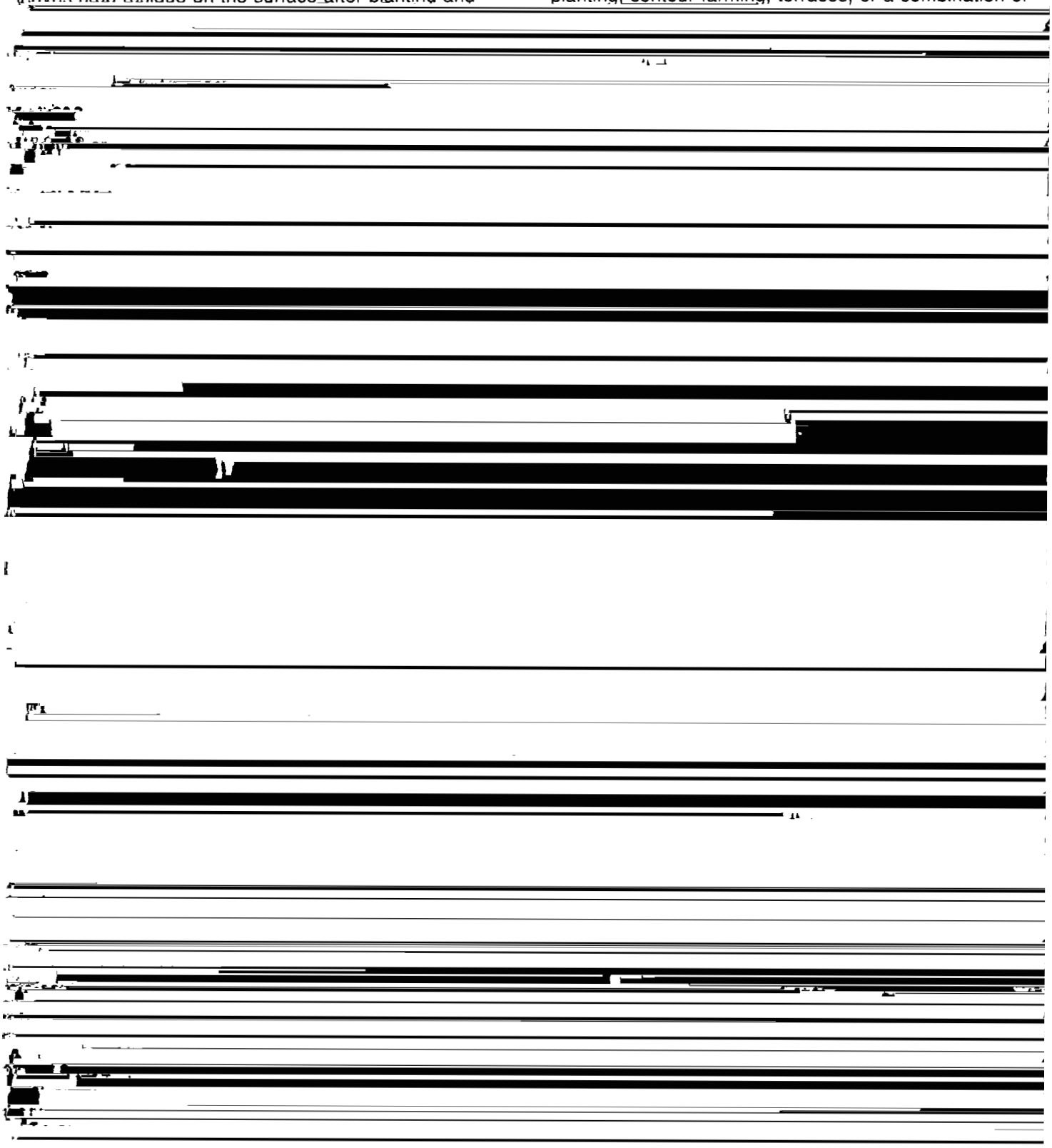
Typically, the surface layer and subsurface layer are very dark gray, firm silty clay loam. The combined thickness of these layers is about 12 inches. The subsoil is very dark gray, dark gray, and olive gray, firm silty clay loam about 40 inches thick. It is mottled in the lower part. The underlying material to a depth of 60 inches or more is light olive gray and gray, mottled, firm silty clay loam. In places the subsoil has less clay.

Included with this soil in mapping are small areas of



wet causes surface compaction, cloddiness, and crusting. Applying a conservation tillage system that leaves crop residue on the surface after planting and

1 or more years of forage crops, a conservation tillage system that leaves crop residue on the surface after planting, contour farming, terraces, or a combination of



and septic tank absorption fields.

No major limitations affect the use of this soil for corn, soybeans, or small grain. The seasonal high water table can delay planting in some years. Subsurface tile drains function satisfactorily if suitable outlets are available. A conservation tillage system that leaves crop residue on the surface after planting helps to maintain tilth and fertility.

Suitable forage and hay plants grow well on this soil. Subsurface tile drains can reduce the wetness if suitable outlets are available. Overgrazing or grazing when the soil is too wet reduces forage yields and causes surface compaction and excessive runoff. Proper stocking rates, pasture rotation, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition.

If this soil is used as a site for dwellings, the seasonal high water table and the shrink-swell potential are limitations. Installing subsurface tile drains near the foundations helps to overcome the wetness. Extending the footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The seasonal high water table and the moderately slow permeability are limitations if this soil is used as a site for septic tank absorption fields. Alternative sewage disposal systems, including mound systems, may be needed.

The land capability classification is I.

259C2—Assumption silt loam, 5 to 10 percent slopes, eroded. This moderately sloping, moderately well drained soil is on side slopes along drainageways in the uplands. Individual areas are long and narrow or irregular in shape and range from 5 to 225 acres in size.

Typically, the surface layer is very dark grayish brown, friable silt loam about 9 inches thick. The subsoil extends to a depth of more than 60 inches. It is mottled and firm. The upper part is brown silty clay loam, the next part is grayish brown silty clay loam, and the lower part is grayish brown clay loam. In some areas the surface layer is thinner and lighter colored. In other areas, the subsoil contains less sand and carbonates are within a depth of 40 inches. In places the lower part of the subsoil contains less sand.

Included with this soil in mapping are small areas of the poorly drained, very slowly permeable Sable

runoff is medium. The seasonal high water table is perched at a depth of 2.5 to 4.5 feet during winter and spring. Available water capacity is high. Organic matter content is moderate. This soil is seepy in many spots (fig. 15). The shrink-swell potential and the potential for frost action are high.

Most areas are used for cultivated crops. Some areas are used for pasture and hay. A few small areas are used as sites for dwellings and septic tank absorption fields. This soil is moderately suited to cultivated crops and to dwellings. It is well suited to pasture and hay. It is poorly suited to septic tank absorption fields.

In areas used for corn, soybeans, or small grain, further erosion is a hazard. A crop rotation that includes 1 or more years of forage crops, a conservation tillage system that leaves crop residue on the surface after planting, contour farming, terraces, grassed waterways, or a combination of these can help to keep soil losses within tolerable limits (fig. 16). Hillside seeps are common. Because of these seeps, the soil dries slowly in the spring. Tile drains help to overcome this limitation. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

Establishing pasture plants or hay helps to keep erosion within tolerable limits. Timely deferment of grazing helps to prevent overgrazing and thus also helps to prevent surface compaction, excessive runoff, and a greater susceptibility to erosion. Tilling on the contour when a seedbed is prepared or the pasture is renovated helps to control erosion. The plants should not be grazed or clipped until they are sufficiently established. Proper stocking rates, rotation grazing, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition.

If this soil is used as a site for dwellings, the shrink-swell potential is a limitation. The seasonal high water table is an additional limitation on sites for dwellings with basements. Installing subsurface tile drains near foundations helps to overcome the wetness. Reinforcing the foundations or extending them below the subsoil helps to prevent the structural damage caused by shrinking and swelling.

The seasonal high water table and the moderately slow permeability are limitations if this soil is used as a site for septic tank absorption fields. Alternative sewage

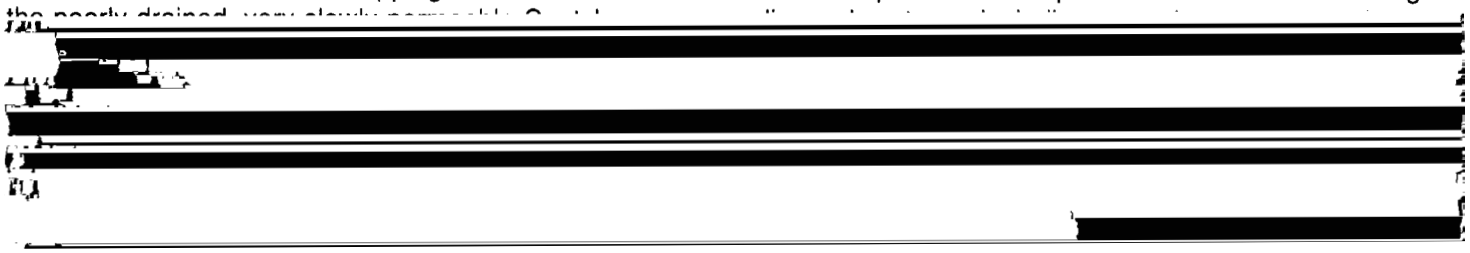


Figure 15.—A farm pond in an area of Assumption silt loam, 5 to 10 percent slopes, eroded. Harrison silt loam, 2 to 5 percent slopes, is in the foreground.

uplands. Individual areas are long and narrow and range from 5 to 75 acres in size.

Typically, the surface layer is mixed dark grayish brown and yellowish brown, very friable fine sandy loam about 10 inches thick. The subsoil is about 49 inches thick. It is yellowish brown. In sequence downward, it is friable sandy clay loam; mottled, friable sandy clay loam; mottled, friable fine sandy loam; and mottled, very friable, stratified fine sandy loam and loamy fine sand. The underlying material to a depth of 60 inches or more is pale brown, loose, stratified loamy fine sand and fine sand. In places the subsoil contains less sand and more gravel.

soil. Radford soils are on flood plains along narrow drainageways below the El Dara soil. Included soils make up 5 to 10 percent of the unit.

Water and air move through the El Dara soil at a moderate rate. In cultivated areas surface runoff is rapid. Available water capacity is moderate. Organic matter content is moderately low. The potential for frost action is moderate, and the shrink-swell potential is low.

Most areas are used for cultivated crops. Some areas are used for pasture, hay, or woodland. A few small areas are used as sites for dwellings and septic tank absorption fields. This soil is moderately suited to cultivated crops, pasture, hay, woodland, dwellings, and

planting, contour farming, terraces, or a combination of these can help to keep soil losses within tolerable limits. Returning crop residue to the soil and regularly adding other organic material help to prevent crusting and improve tilth and fertility.

Establishing pasture plants or hay helps to keep

In the areas used as woodland, the hazard of erosion and the equipment limitation are management concerns because of the slope. Plant competition also is a management concern. It restricts the growth of desirable seedlings. The competition from undesirable species in openings where timber has been harvested

trees, compaction of the soil, and damage to tree roots. Measures that protect the woodland from fire are needed.

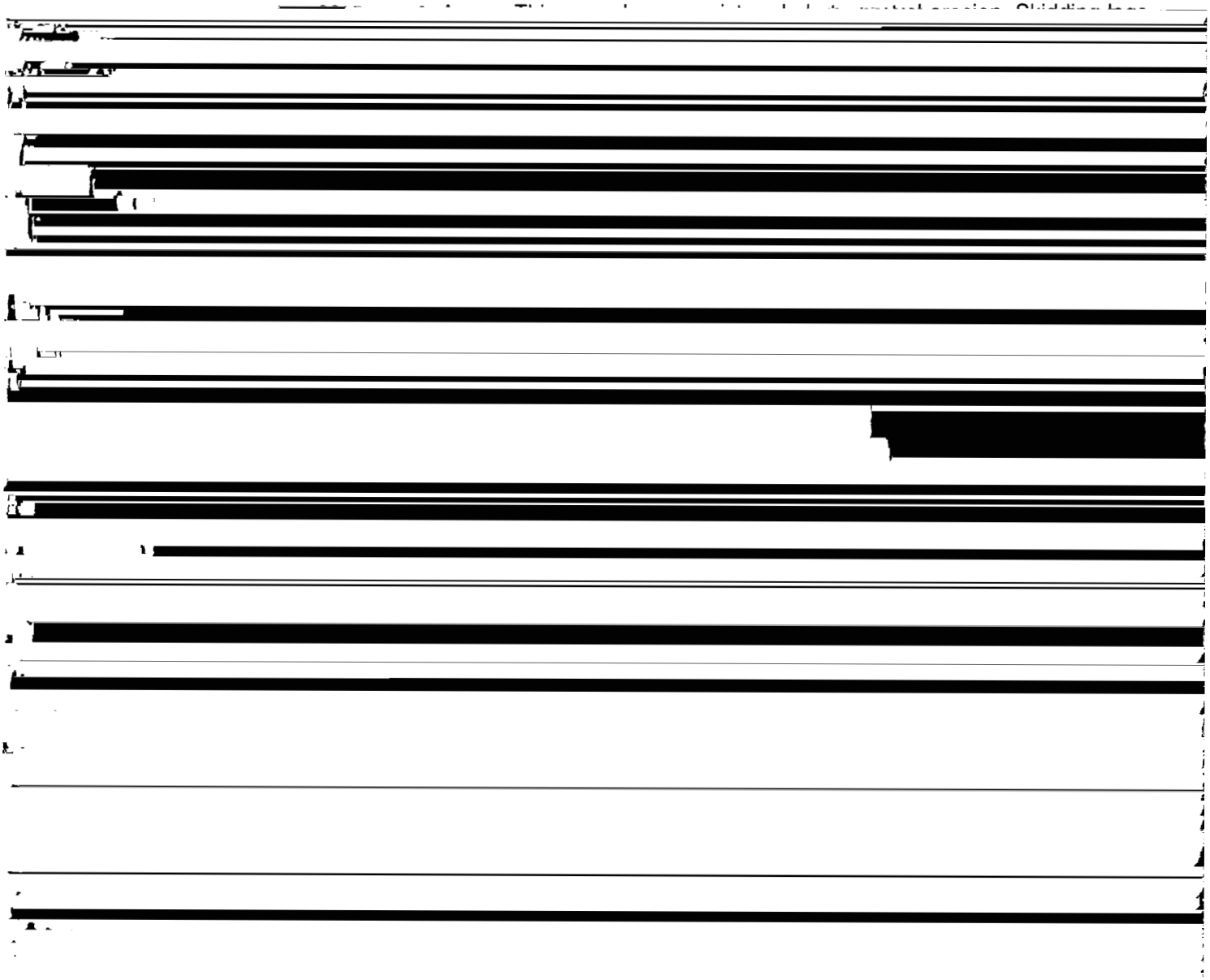
If this soil is used as a site for dwellings, the slope is a limitation. Cutting and filling help to overcome this limitation.

If this soil is used as a site for septic tank absorption fields, the moderate permeability and the slope are limitations. Increasing the size of the absorption field or adding more permeable fill material helps to overcome the moderate permeability. Installing the distribution lines on the contour helps to overcome the slope.

The land capability classification is IVe.

renovated helps to control erosion. The plants should not be grazed or clipped until they are sufficiently established. Proper stocking rates, rotation grazing, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition.

In the areas used as woodland, the hazard of erosion and the equipment limitation are management concerns because of the slope. Plant competition also is a management concern. It restricts the growth of desirable seedlings. The competition from undesirable species in openings where timber has been harvested can be controlled by chemical or mechanical means. Laying out logging roads and skid trails on the contour and seeding bare logging areas to grass or to a grass-



steep, well drained soil is on side slopes along drainageways in the uplands. Individual areas are long

and trees uphill with a cable and winch helps to overcome the slope. Firebreaks should be the grass

Figure 17.—Cropland in an area of Rozetta silt loam, 2 to 5 percent slopes. Elco silt loam, 5 to 10 percent slopes, eroded, is in the background.

They are on the less sloping parts of the landscape. They make up 5 to 10 percent of the unit.

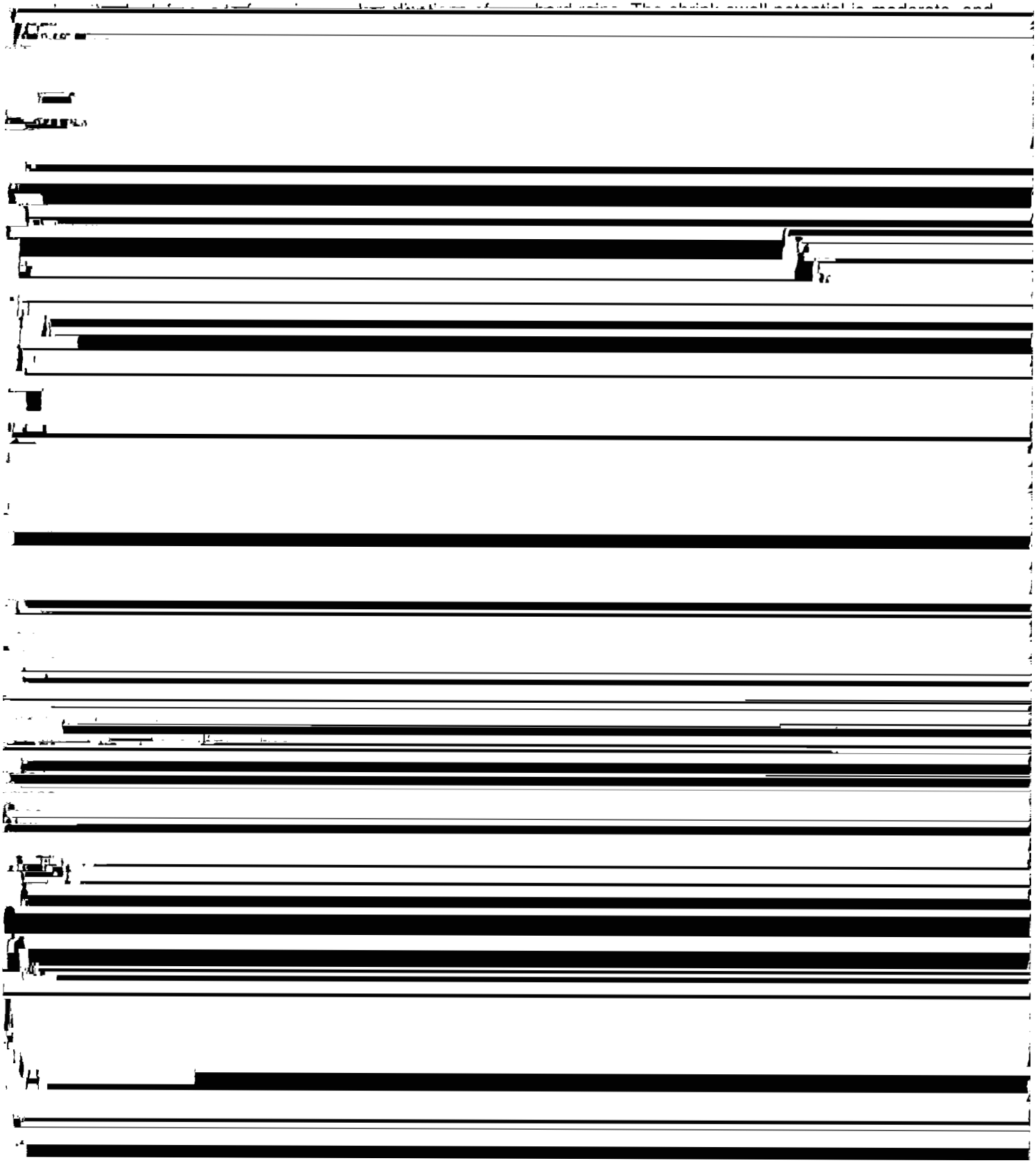
Water and air move through the Rozetta soil at a moderate rate. In cultivated areas surface runoff is medium. The seasonal high water table is 4 to 6 feet below the surface during winter and spring. Available water capacity is high. Organic matter content is moderately low. The surface layer tends to crust and puddle after hard rains. The shrink-swell potential is

septic tank absorption fields. This soil is well suited to cultivated crops, pasture, and hay. It is moderately suited to woodland and to dwellings and septic tank absorption fields.

In areas used for corn, soybeans, or small grain, erosion is a hazard. It can be controlled by a conservation tillage system that leaves crop residue on the surface after planting, by contour farming, or by terraces. Returning crop residue to the soil and

compaction and excessive runoff, and increases the susceptibility to erosion. Proper stocking rates, rotation

capacity is high. Organic matter content is moderately low. The surface layer tends to crust and puddle after



386B—Downs silt loam, 2 to 5 percent slopes. This gently sloping, moderately well drained soil is on convex ridgetops and side slopes in the uplands. Individual areas are irregular in shape and range from 3 to 20 acres in size.

Typically, the surface layer is very dark grayish brown, friable silt loam about 9 inches thick. The subsoil is silty clay loam about 40 inches thick. The upper part is dark yellowish brown and friable; the next part is dark yellowish brown, mottled, and firm; and the lower part is yellowish brown, mottled, and friable. The underlying material to a depth of 60 inches or more is yellowish brown, mottled, friable silt loam. In some areas the underlying material contains more sand. In a few areas the dark surface layer is thicker. In some places the surface layer is not so dark. In other places the soil is well drained.

Included with this soil in mapping are small areas of the somewhat poorly drained Clarksdale and Ipava soils. These soils are in the less sloping areas below the Downs soil. They make up 2 to 5 percent of the unit.

Water and air move through the Downs soil at a moderate rate. In cultivated areas surface runoff is medium. The seasonal high water table is 4 to 6 feet below the surface during winter and spring. Available water capacity is very high. Organic matter content is moderate. The shrink-swell potential also is moderate, and the potential for frost action is high.

Most areas are used for cultivated crops. Some areas are used for pasture, hay, or woodland. A few small areas are used as sites for dwellings and septic tank absorption fields. This soil is well suited to cultivated crops, pasture, and hay. It is moderately suited to dwellings and septic tank absorption fields.

In areas used for corn, soybeans, or small grain

subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling. Installing subsurface tile drains near the foundations lowers the water table.

The seasonal high water table is a limitation if this soil is used as a site for septic tank absorption fields. Subsurface tile drains lower the water table.

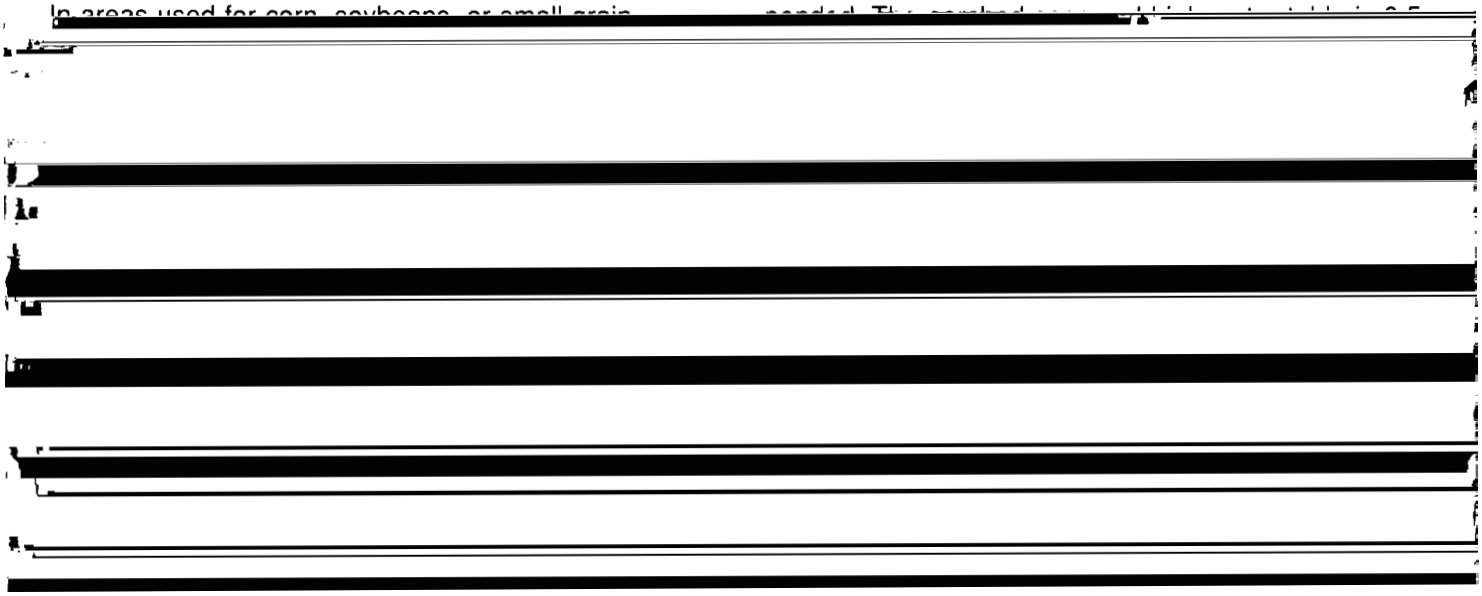
The land capability classification is IIe.

474—Piasa silt loam. This nearly level, poorly drained soil is in shallow depressions in the uplands. Individual areas are circular or irregular in shape and range from 3 to 15 acres in size.

Typically, the surface layer is very dark grayish brown, friable silt loam about 9 inches thick. The subsurface layer is dark grayish brown, friable silt loam about 5 inches thick. The subsoil is about 39 inches thick. It is mottled. The upper part is dark grayish brown, friable and firm silty clay loam; the next part is grayish brown, firm silty clay loam; and the lower part is light brownish gray, friable silt loam. The underlying material to a depth of 60 inches or more also is light brownish gray, friable silt loam. In some areas the surface layer is lighter in color. In places the seasonal high water table is at a depth of more than 2 feet.

Included with this soil in mapping are small areas of the poorly drained Cowden and somewhat poorly drained Herrick soils. These soils do not have a high content of sodium in the subsoil. Herrick soils are slightly higher on the landscape than the Piasa soil. Cowden soils are in landscape positions similar to those of the Piasa soil. Included soils make up 3 to 10 percent of the unit.

Water and air move through the Piasa soil at a very slow rate. In cultivated areas surface runoff is slow or



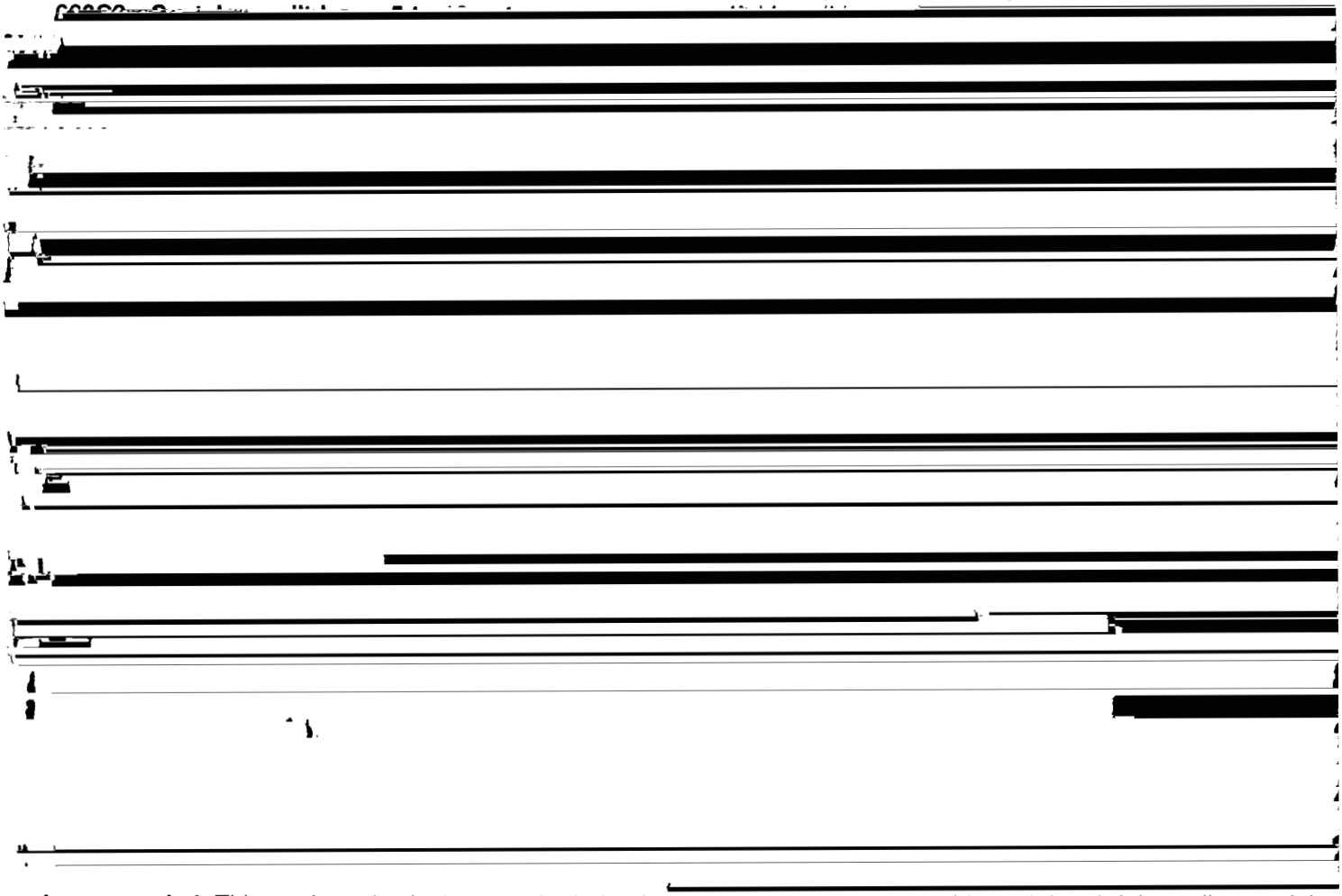
the high content of sodium in the subsoil, the tile lines

Individual areas are irregular in shape and range from 3

prevent the structural damage caused by shrinking and swelling.

The land capability classification is IIIe.

not be grazed or clipped until they are sufficiently established. Proper stocking rates, rotation grazing, timely deferment of grazing, and applications of fertilizer help to keep the pasture in good condition.



slopes, eroded. This moderately sloping, poorly drained soil is on side slopes along drainageways in the uplands. Individual areas are long and narrow and range from 3 to 200 acres in size.

Typically, the surface layer is mixed very dark grayish brown and grayish brown, friable silt loam about 8 inches thick. It has been thinned by erosion. The subsoil to a depth of more than 60 inches is mottled clay loam. The upper part is grayish brown and friable, and the lower part is gray and firm. In some areas the subsoil has less clay. In other areas it has less sand.

Included with this soil in mapping are small areas of the somewhat poorly drained Atlas soils and the moderately well drained Harrison soils. Atlas soils are in positions on the landscape similar to those of the Coatsburg soil. Harrison soils are upslope from the Coatsburg soil. Included soils make up 5 to 10 percent of the unit.

Water and air move through the Coatsburg soil at a very slow rate. In cultivated areas surface runoff is

seasonal high water table and the shrink-swell potential are limitations. Installing either tile drains near the foundations or interceptor drains upslope from the buildings helps to lower the water table. Extending the footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

The seasonal high water table and the very slow permeability are limitations if this soil is used as a site for septic tank absorption fields. Alternative sewage disposal systems, including mound systems, may be needed.

The land capability classification is IIIe.

684B—Broadwell silt loam, 2 to 5 percent slopes. This gently sloping, well drained soil is on dunelike ridgetops and side slopes in the uplands. Individual areas are rounded or irregular in shape and range from 5 to 250 acres in size.

Typically, the surface layer and subsurface layer are

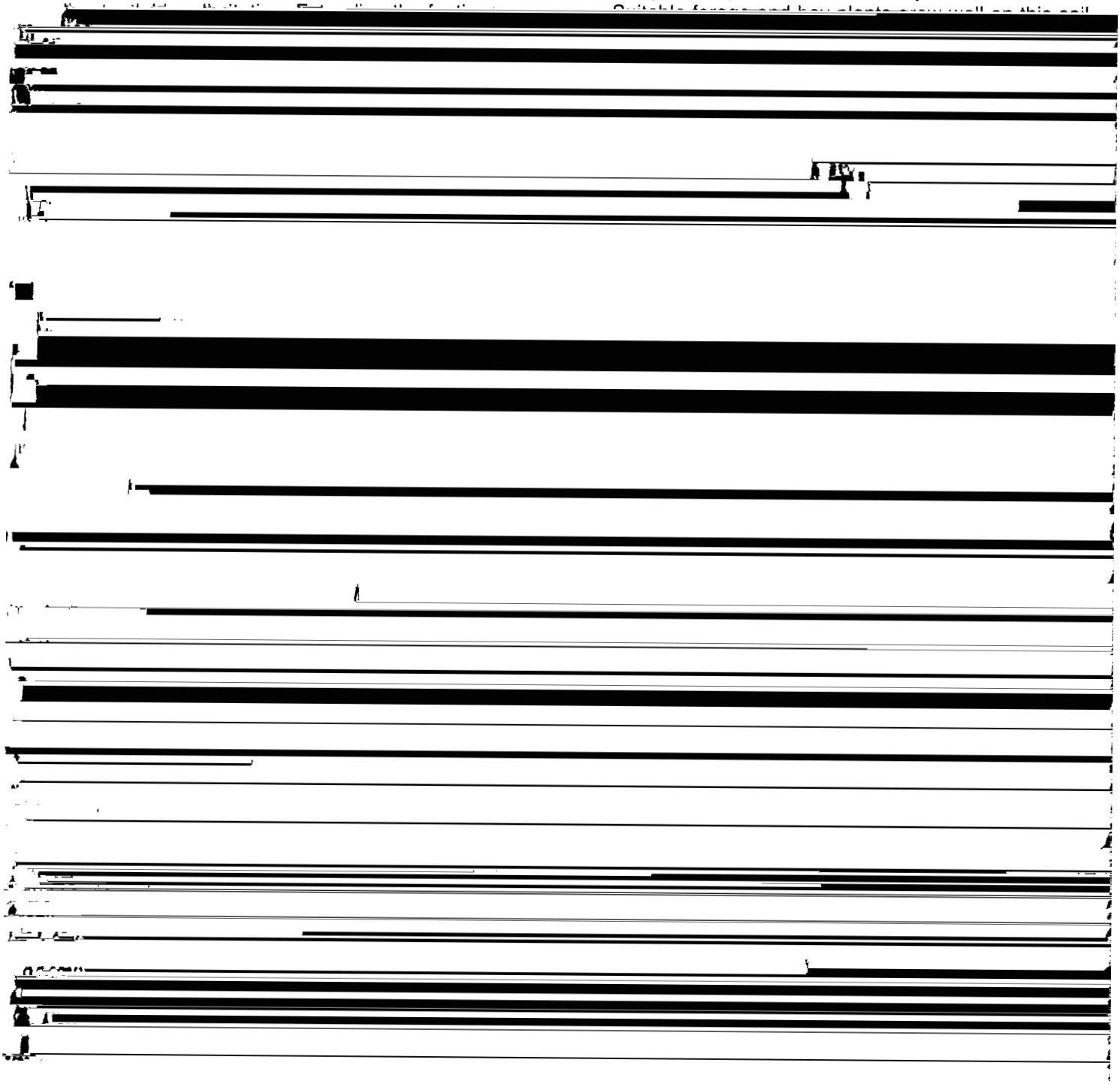
moderately suited to dwellings.

In areas used for corn, soybeans, or small grain, erosion is a hazard. It can be controlled by a conservation tillage system that leaves crop residue on the surface after planting, by contour farming, or by terraces. Returning crop residue to the soil and regularly adding other organic material help to maintain tilth and fertility.

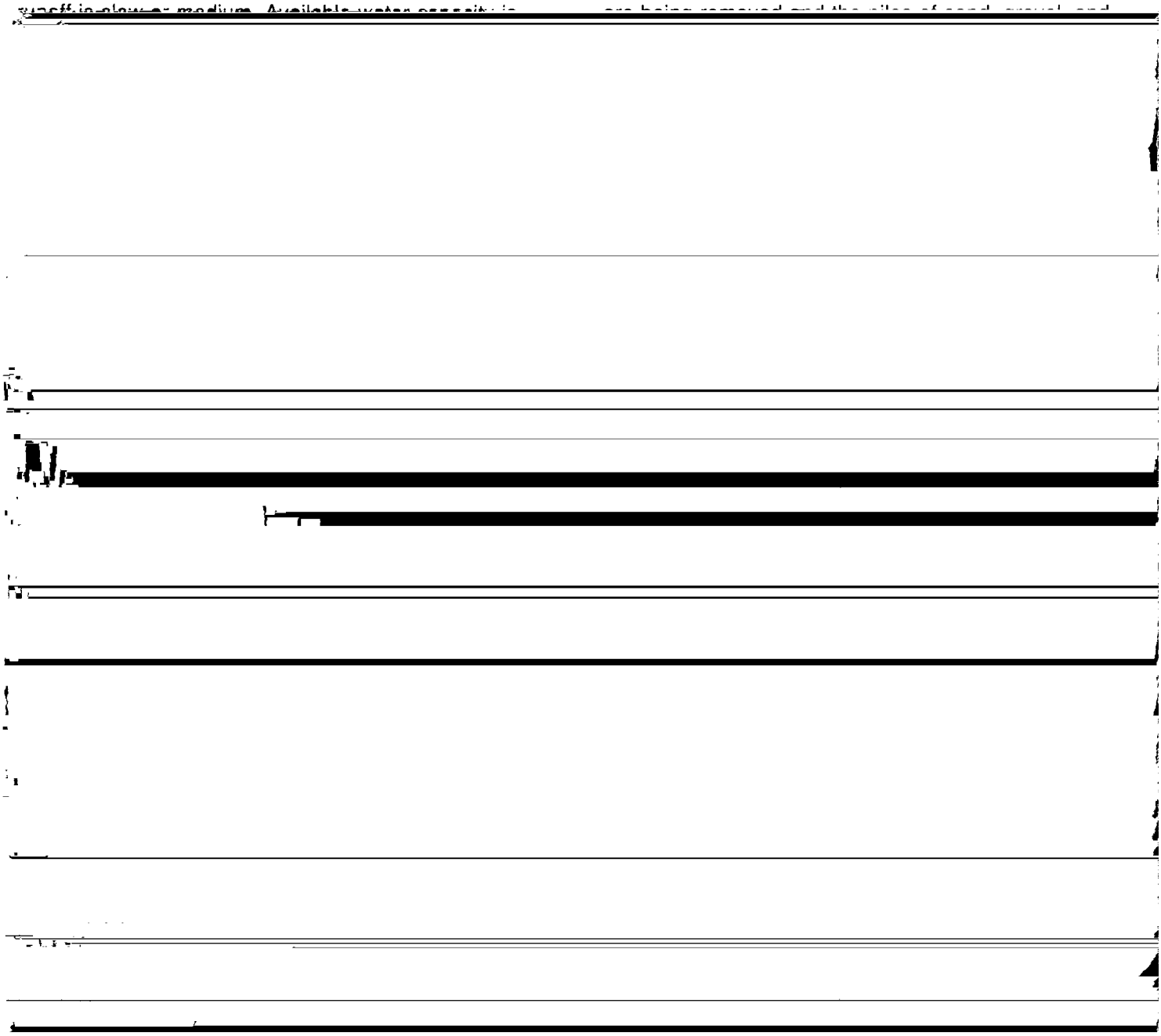
If this soil is used as a site for dwellings, the shrink-

absorption fields. It is moderately suited to woodland and to dwellings.

In areas used for corn, soybeans, or small grain, erosion is a hazard. It can be controlled by a conservation tillage system that leaves crop residue on the surface after planting, by contour farming, or by terraces. Returning crop residue to the soil and regularly adding other organic material help to prevent crusting and improve tilth and fertility.



Water and air move through the Orthents at varying rates because of the diverse soil textures. Surface runoff is slow or medium. Available water capacity is



moderate or low. Organic matter content generally is low.

Most of the acreage of these soils is idle land. Onsite investigation is needed to determine the limitations or hazards affecting the development of specific areas.

This map unit has not been assigned a land capability classification.

804B—Orthents, acid, rolling. These somewhat poorly drained to well drained soils are on stream

865—Pits, gravel. This map unit consists of excavations from which sand and gravel have been or are being removed and the piles of sand, gravel, and spoil material surrounding the excavations. In places the soil material is thick enough to support vegetation. Individual areas are circular or irregular in shape and range from less than 2 acres to 10 acres in size.

Included in this unit in mapping are some small areas of natural soils on haulage roads or lanes.

Surface runoff is slow. Ponding occurs on the bottom of the excavations.

Most of the acreage of this unit currently is idle land. Grading, shaping, and filling the pits increases the

contains more sand. In some areas the depth to a seasonal high water table is less than 1 foot. In other areas it is more than 3 feet.

Included with these soils in mapping are small areas of the poorly drained Cowden soils. These included soils are lower on the landscape than the Oconee and Darmstadt soils. They make up 2 to 10 percent of the unit.

Water and air move through the Oconee soil at a slow rate and through the Darmstadt soil at a very slow rate. In cultivated areas surface runoff is slow on both soils. The seasonal high water table is at a depth of 1 to 3 feet during winter and spring. Available water capacity is high in the Oconee soil and moderate in the Darmstadt soil. Organic matter content is moderate in the Oconee soil and moderately low in the Darmstadt soil. The surface layer of both soils tends to crust and puddle after hard rains. The shrink-swell potential is

995—Herrick-Piasa silt loams. These nearly level soils are on broad ridges and in depressions in the uplands. The somewhat poorly drained Herrick soil is on the ridges. The poorly drained Piasa soil is in the depressions (fig. 18). Individual areas are irregular in shape and range from 10 to more than 100 acres in size. They are about 40 to 60 percent Herrick soil and 20 to 35 percent Piasa soil. The two soils occur as areas so closely intermingled that mapping them separately is not practical.

Typically, the Herrick soil has a surface layer of very dark gray, friable silt loam about 10 inches thick. The subsurface layer is very dark grayish brown, friable silt loam about 4 inches thick. The subsoil is brown, mottled silty clay loam about 36 inches thick. The upper part is friable, the next part is firm, and the lower part is friable. The underlying material to a depth of 60 inches or more is grayish brown, mottled, friable silt loam. In some

Figure 18.—An area of Herrick-Piasa silt loams. The poorly drained Piasa soil is in depressions. It has a high content of sodium.

rains. The shrink-swell potential and the potential for frost action are high in both soils.

Most areas are used for cultivated crops. A few small areas are used as sites for dwellings and septic tank absorption fields. These soils are moderately suited to cultivated crops. They are poorly suited to dwellings and septic tank absorption fields.

Corn, soybeans, and small grain can be grown in most areas because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. Surface drains, subsurface tile, and surface inlet tile function satisfactorily if suitable outlets are available. Because of the high content of sodium in the Piasa soil, the tile lines may become clogged. The sodium limits the availability of water and thus causes moisture stress late in the growing season and excess moisture during wet periods. It also limits the availability and uptake of some plant nutrients. Applying a conservation tillage system that leaves crop residue on the surface after planting and regularly adding other organic material help to prevent surface crusting, improve tilth and fertility, and increase the rate of water intake.

The seasonal high water table and the shrink-swell potential are limitations if these soils are used as sites for dwellings. Reinforcing the footings and foundations helps to prevent the structural damage caused by shrinking and swelling. Installing subsurface drains around the footings helps to lower the water table. Elevating the floor of dwellings without basements above the surrounding ground level, grading, and diverting surface water also help to overcome the wetness.

The seasonal high water table and the restricted permeability are limitations if these soils are used as sites for septic tank absorption fields. Alternative

sewage disposal systems, including mound systems, may be needed.

The land capability classification is IIIw.

2036B—Tama-Urban land complex, 2 to 5 percent slopes. This map unit occurs as areas of a gently sloping, moderately well drained Tama soil intermingled with areas of Urban land. The unit is on convex ridgetops and side slopes. Individual areas are irregular in shape and range from 80 to 240 acres in size. They are 45 to 55 percent Tama soil and 30 to 40 percent Urban land. The Tama soil and Urban land occur as areas so intricately mixed that mapping them separately is not practical.

Typically, the Tama soil has a surface layer of black, friable silt loam about 3 inches thick. The subsurface layer is very dark grayish brown, friable silt loam about 13 inches thick. The subsoil is about 38 inches thick. The upper part is dark yellowish brown, friable silt loam and firm silty clay loam; the next part is yellowish brown, friable silty clay loam; and the lower part is yellowish brown, friable silt loam. The underlying material to a depth of 60 inches or more is brown, mottled, friable silt loam. Some areas have been altered by scraping and leveling or by filling during construction. In some places the surface layer is lighter in color. In other places a very firm, clayey buried soil is within a depth of 40 inches.

The Urban land is covered by streets, parking lots, buildings, and other structures that so obscure the soils that identification of the soil series is not practical.

Included in this unit in mapping are small areas of the somewhat poorly drained Ipava and poorly drained Sable soils. These soils are on low ridges and in drainageways below the Tama soil. They make up 5 to 10 percent of the unit.

Water and air move through the Tama soil at a moderate rate. Surface runoff is medium on the Tama soil and rapid on the Urban land. The seasonal high water table is 4 to 6 feet below the surface of the Tama

Installing tile drains near the foundations lowers the water table.

Most homes and buildings in areas of this unit are connected to a sanitary sewer system and treatment facility. If the Tama soil is used as a site for septic tank absorption fields, the seasonal high water table is a limitation. Subsurface tile can lower the water table.

This map unit has not been assigned a land capability classification.

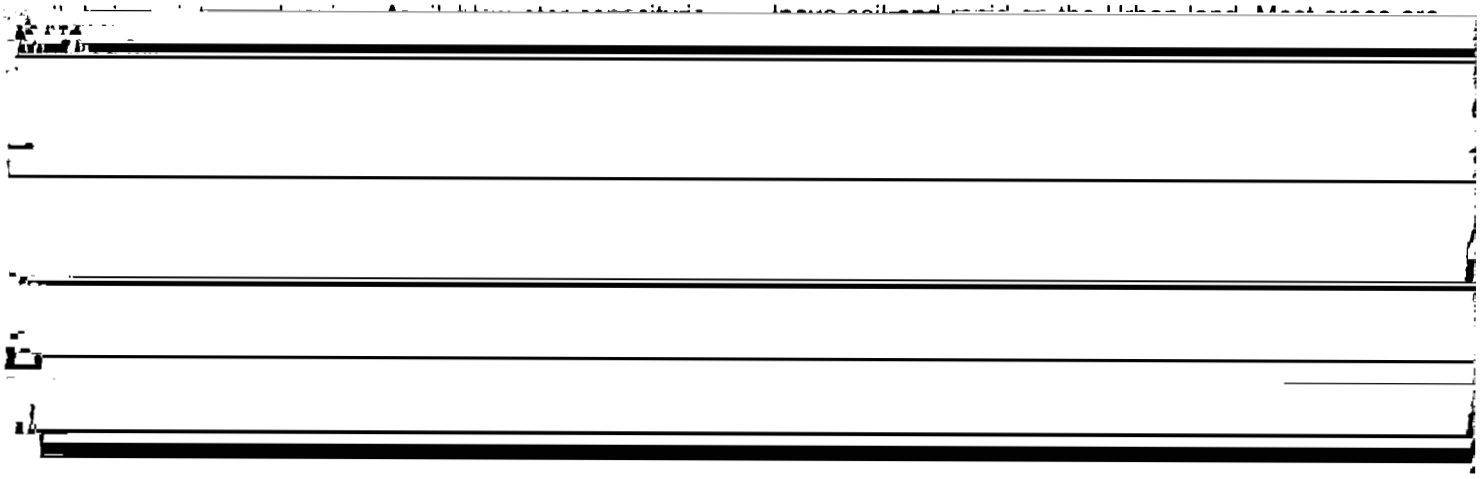
2043—Ipava-Urban land complex. This map unit occurs as areas of a nearly level, somewhat poorly drained Ipava soil intermingled with areas of Urban land. The unit is on low, broad ridges in the uplands. Individual areas are irregular in shape and range from 10 to 300 acres in size. They are 55 to 65 percent Ipava soil and 35 to 45 percent Urban land. The Ipava soil and Urban land occur as areas so intricately mixed that mapping them separately is not practical.

Typically, the Ipava soil has a surface layer and subsurface layer of black, friable silt loam. The combined thickness of these layers is about 18 inches. The subsoil is mottled, firm silty clay loam about 25 inches thick. The upper part is brown, and the lower part is grayish brown. The underlying material to a depth of 60 inches or more is light brownish gray, mottled, friable silt loam. Some areas have been altered by scraping and leveling or by filling during construction. In places the depth to a seasonal high water table is more than 3 feet.

The Urban land is covered by streets, parking lots, buildings, and other structures that so obscure the soils that identification of the soil series is not practical.

Included in this unit in mapping are small areas of the poorly drained Sable soils and the moderately well drained Tama soils. Sable soils are in low areas. Tama soils are on the more sloping parts of the landscape. Included soils make up 10 to 15 percent of the unit.

Water and air move through the Ipava soil at a moderately slow rate. Surface runoff is slow on the



foundations helps to overcome the wetness. Extending the footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

Most homes and buildings in areas of this unit are connected to a sanitary sewer system and treatment facility. If the Ipava soil is used as a site for septic tank absorption fields, the seasonal high water table and the moderately slow permeability are limitations. Alternative sewage disposal systems, including mound systems, may be needed.

This map unit has not been assigned a land capability classification.

2046—Herrick-Urban land complex. This map unit occurs as areas of a nearly level, somewhat poorly drained Herrick soil intermingled with areas of Urban land. The unit is on low ridges in the

areas are irregular in shape and range from 10 to 200 acres in size. They are 50 to 60 percent Herrick soil and 30 to 40 percent Urban land. The Herrick soil and Urban land occur as areas so intricately mixed that

septic tank absorption fields. It is poorly suited to those uses.

If the Herrick soil is used as a site for dwellings, the seasonal high water table and the shrink-swell potential are limitations. Installing subsurface tile drains near the foundations helps to overcome the wetness. Extending the footings below the subsoil or reinforcing the foundations helps to prevent the structural damage caused by shrinking and swelling.

Most homes and buildings in areas of this unit are connected to a sanitary sewer system and treatment facility. If the Herrick soil is used as a site for septic tank absorption fields, the seasonal high water table and the moderately slow permeability are limitations. Alternative sewage disposal systems, including mound systems, may be needed.

This map unit has not been assigned a land

2050—Virden-Urban land complex. This map unit occurs as areas of a nearly level, poorly drained Virden

on the Virden soil and rapid on the Urban land. Most areas are drained through storm sewers, gutters, and [illegible] tile. Areas of the Virden soil that

construction. Some small areas have been cut, built up, or smoothed.

The Urban land is covered by streets, parking lots

Douglas soil and 35 to 45 percent Urban land. The Douglas soil and Urban land occur as areas so intricately mixed that mapping them separately is not practical.

Typically, the Douglas soil has a surface layer of very dark grayish brown, friable silt loam about 15 inches thick. The subsoil extends to a depth 60 inches or more. The upper part is dark yellowish brown, friable silt loam and firm silty clay loam; the next part is dark yellowish brown, friable silt loam; and the lower part is brown, friable silt loam and loam. In some areas the surface layer is thinner and lighter in color. Some areas have been altered by scraping and leveling or by filling during construction. In places the subsoil contains more sand.

The Urban land is covered by streets, parking lots, buildings, and other structures that so obscure the soils that identification of the soil series is not practical.

Included in this unit in mapping are small areas of the somewhat poorly drained Oconee soils. These soils are on foot slopes downslope from the Douglas soil. They make up 5 to 10 percent of the unit.

Water and air move through the Douglas soil at a moderate rate. Surface runoff is medium on the Douglas soil and rapid on the Urban land. Available

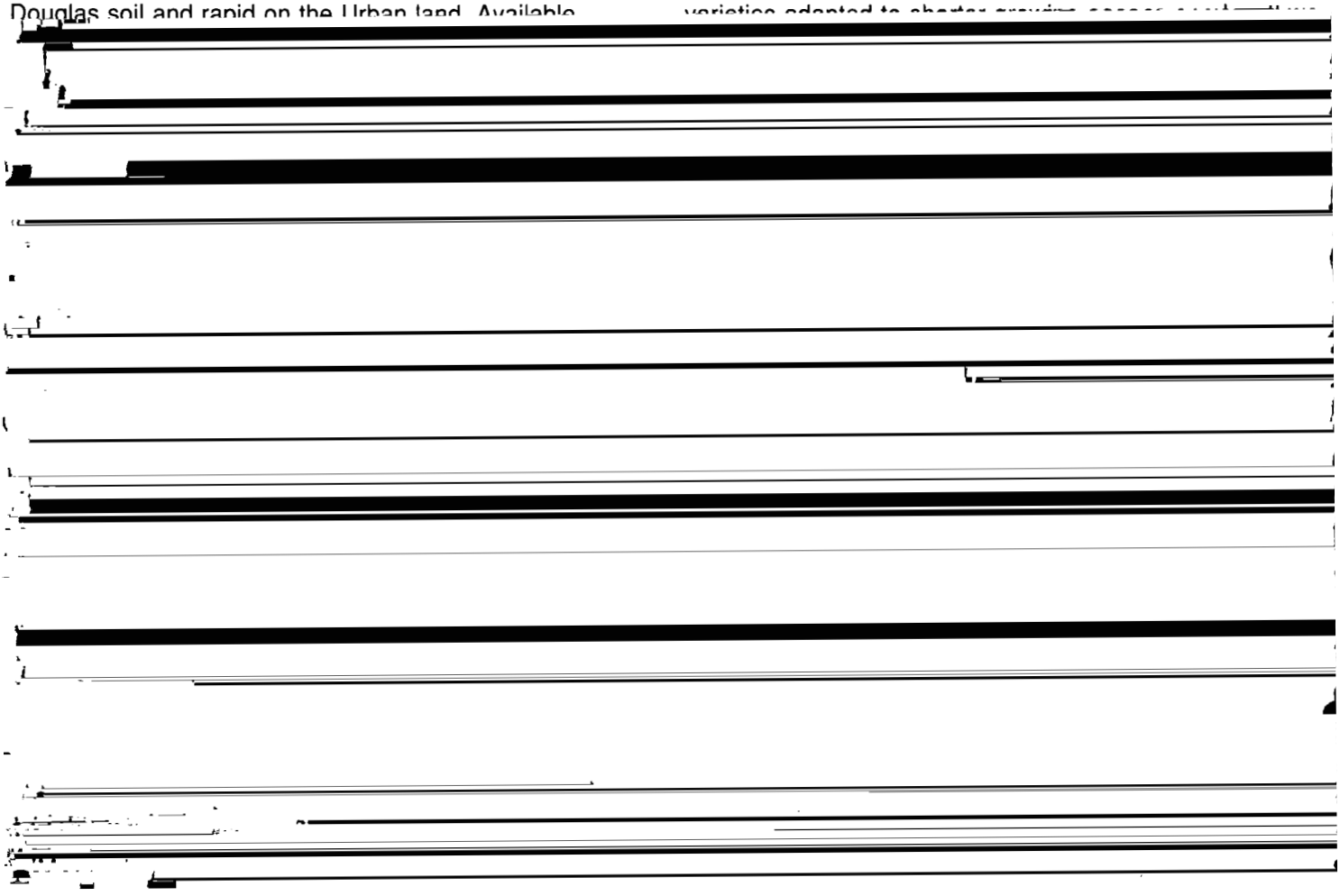
very dark grayish brown, mottled, friable loam and fine sandy loam. In some areas the surface layer is thinner or lighter in color. In other areas the soil contains more sand. In places the depth to a seasonal high water table is less than 4 feet.

Included with this soil in mapping are small areas of the somewhat poorly drained Tice and poorly drained Sawmill soils. These soils are slightly lower on the flood plains than the Ross soil. They make up less than 10 percent of the unit.

Water and air move through the Ross soil at a moderate rate. In cultivated areas surface runoff is slow. The seasonal high water table is 4 to 6 feet below the surface during winter and spring. Available water capacity is moderate. Organic matter content is high. The shrink-swell potential and the potential for frost action are moderate.

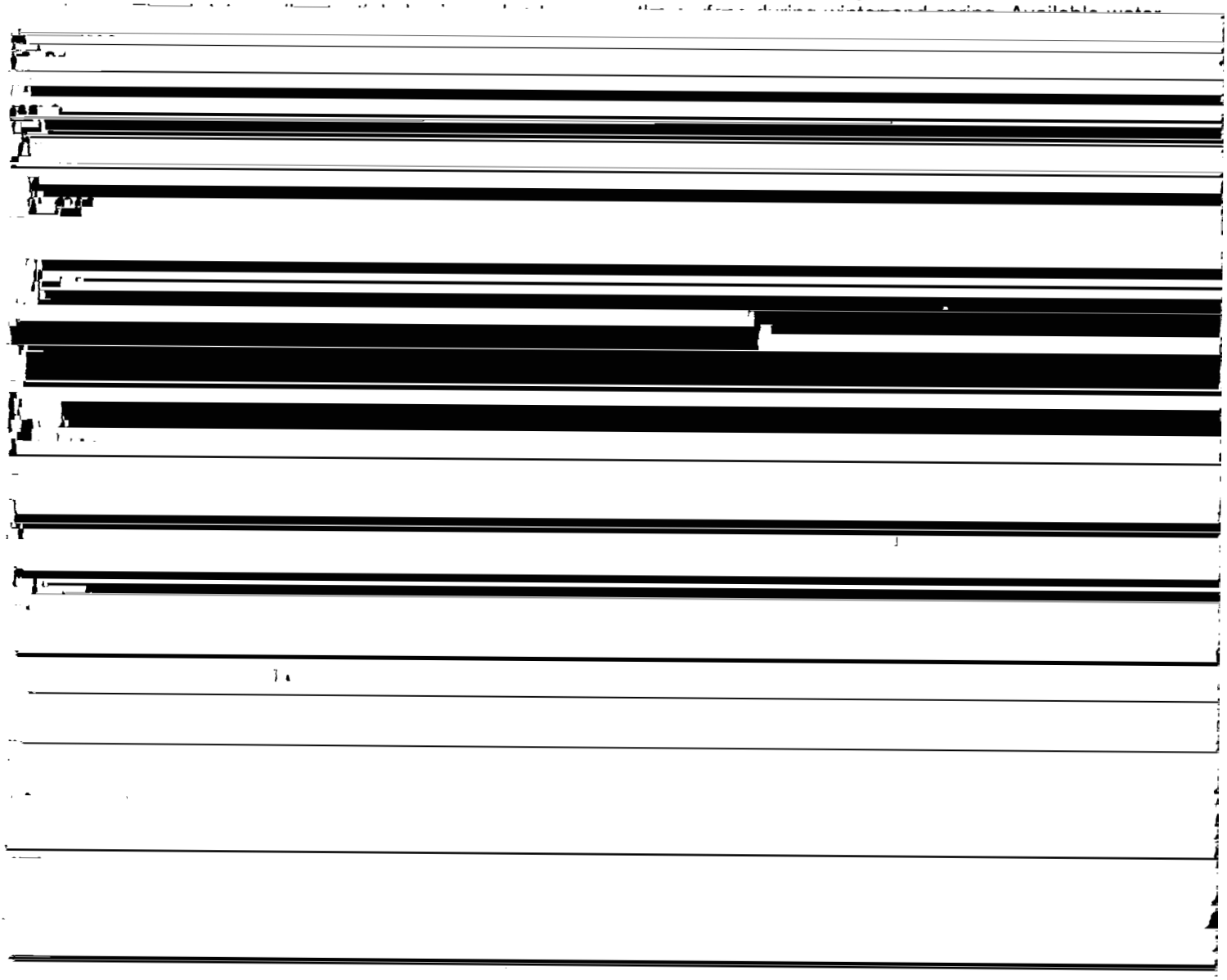
Most areas are cultivated. This soil is well suited to cultivated crops. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding.

In areas used for corn or soybeans, the flooding is a hazard. Dikes or diversions can reduce the extent of the crop damage caused by floodwater. Selecting crop



the surface during winter and spring. Available water capacity is very high. Organic matter content is

moderate rate. In cultivated areas surface runoff is slow. The seasonal high water table is within 2 feet of



and the potential for frost action is high.

Most areas are used for cultivated crops. Some areas are used for pasture and hay. This soil is well suited to cultivated crops. It is moderately suited to pasture and hay. It generally is unsuited to dwellings and septic tank absorption fields because of the flooding.

Corn, soybeans, and small grain can be grown in most areas because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. Surface drains and

capacity is high. Organic matter content also is high. The surface layer is firm and sticky when wet and hard and cloddy when dry. The shrink-swell potential is moderate, and the potential for frost action is high.

Most areas are used for cultivated crops. Some areas are used for pasture and hay. A few small areas are used as woodland. This soil is well suited to cultivated crops and poorly suited to pasture and hay. It is moderately suited to woodland. It generally is unsuited to dwellings and septic tank absorption fields because of the flooding.

Figure 19.—Flooding in an area of Sawmill silty clay loam, frequently flooded.

mechanical means. Excluding livestock from the woodland helps to prevent destruction of the leaf mulch and of desirable young trees, compaction of the soil, and damage to tree roots. Measures that protect the woodland from fire are needed.

The land capability classification is IIIw.

grayish brown. In some areas the surface soil is thicker. In a few areas the lower part of the subsoil contains more sand. In places the upper part of the soil is grayer.

Included with this soil in mapping are small areas of the well drained Ross soils. These soils are slightly higher on the landscape than the Tice soil. They make

3284—Tice silty clay loam, frequently flooded. This nearly level, somewhat poorly drained soil is on broad rises on flood plains. It is frequently flooded for brief periods during winter and spring. Individual areas are

up 5 to 8 percent of the unit.

Water and air move through the Tice soil at a moderate rate. In cultivated areas surface runoff is slow. The seasonal high water table is 1.5 to 3.0 feet

is well suited to cultivated crops, pasture, hay, and woodland. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding.

Corn and soybeans can be grown in most areas because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. Surface drains and subsurface tile function satisfactorily if suitable outlets are available. Flooding is a hazard. It occurs more often than once every 2 years during the growing season. Dikes or diversions can reduce the extent of the crop damage caused by floodwater. Tilling when the soil is wet causes surface

Included with this soil in mapping are small areas of the somewhat poorly drained Kendall soils. These soils are lower on the landscape than the Proctor soil. They make up 3 to 7 percent of the unit.

Water and air move through the Proctor soil at a moderate rate. In cultivated areas surface runoff is slow. Available water capacity is high. Organic matter content is moderate. The shrink-swell potential also is moderate, and the potential for frost action is high.

Most areas are used for cultivated crops. Some areas are used for pasture and hay. This soil is well suited to cultivated crops, pasture, and hay. It generally

conservation tillage system that leaves crop residue on the surface after planting and regularly adding other organic material help to prevent surface compaction and crusting, improve tilth and fertility, and increase the rate of water intake.

If this soil is used for pasture or hay, the flooding is a hazard and the seasonal wetness is a limitation. Dikes

fields because of the flooding.

No major limitations affect the use of this soil for corn, soybeans, or small grain. A conservation tillage system that leaves crop residue on the surface after planting helps to maintain tilth and fertility.

Suitable forage and hay plants grow well on this soil. Overgrazing reduces forage yields and causes surface

Most areas are used for cultivated crops. Some areas are used for pasture, hay, or woodland. This soil is well suited to cultivated crops, pasture, and hay. It is moderately suited to woodland. It is generally unsuited to dwellings and septic tank absorption fields because of the flooding.

Corn, soybeans, and small grain can be grown in most areas because a drainage system has been installed. Measures that maintain or improve the drainage system are needed. Surface drain

subsurface layer is darker. In places the surface layer is lighter in color.

Included with this soil in mapping are small areas of the somewhat poorly drained Elburn and Kendall soils, the well drained Camden soils, and the poorly drained Sawmill soils. Elburn, Kendall, and Camden soils are slightly higher on the landscape than the Thorp soil. Sawmill soils have a dark surface layer that is thicker than that of the Thorp soil. They are on flood plains

subsurface tile, and surface inlet tile function satisfactorily if suitable outlets are available. Land grading helps to control ponding. Tilling when the soil is wet causes surface compaction, cloddiness, and crusting. Applying a conservation tillage system that

percent of the unit.

Water and air move through the upper part of the Thorp soil at a slow rate and through the lower part at a moderately rapid rate. In cultivated areas surface runoff is slow or ponded. The seasonal high water table is

and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is the land that is best suited to food, feed, forage, fiber, and oilseed crops. It may be cultivated land, pasture, woodland, or other land, but it is not urban or built-up land or water areas. It either is used for food or fiber crops or is available for those crops. The soil qualities, growing season, and moisture supply are those needed for a well managed soil to produce a sustained high yield of crops in an economic matter. Prime farmland produces the highest yields with minimal expenditure of energy and economic resources, and farming it results in the least damage to the environment.

Prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The level of acidity or alkalinity is acceptable. Prime farmland has few or no rocks and is permeable to water and air. It is not excessively erodible or saturated with water for long periods and is not frequently flooded during the growing season. The slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Soil Conservation Service.

About 407,250 acres in Christian County, or nearly 89 percent of the total acreage, meets the requirements for prime farmland. This land generally is used for crops, mainly corn and soybeans, which account for most of the local farm income each year.

The map units in Christian County that are considered prime farmland are listed in table 5. This list does not constitute a recommendation for a particular land use. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps at the back of this publication. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

Some soils that have a seasonal high water table and all soils that are frequently flooded during the growing season qualify as prime farmland only in areas where these limitations have been overcome by drainage measures or flood control. The need for these measures is indicated after the map unit name in table 5. Onsite evaluation is needed to determine whether or not these limitations have been overcome by corrective measures. An adequate drainage system has been installed in most of the naturally wet soils in Christian County.

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the limitations of each soil for specific land uses and to help to prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed Soil Map Units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

Approximately 382,955 acres in Christian County was used as farmland in 1982 *(10)*. About 13,000 acres of this farmland was used for pasture and hay. The acreage used for pasture and hay has been decreasing because livestock confinement systems have been increasing in number and more land is being used for row crops. Corn and soybeans, the main row crops, are grown on about 350,000 acres in the county. About 12,000 acres is used for winter wheat, the most common close-growing crop. Forage crops include smooth bromegrass, alfalfa, and red clover.

The concerns in managing the cropland and pasture in the county are water erosion, soil blowing, wetness, flooding, fertility, tilth, and limited soil moisture.

Water erosion is a major management concern on about 26 percent of the land in the county. Where the slope is more than 2 percent, erosion is a hazard. Tama, Harrison, Rozetta, and Elco are examples of erodible soils that are used for crops and pasture in the county.

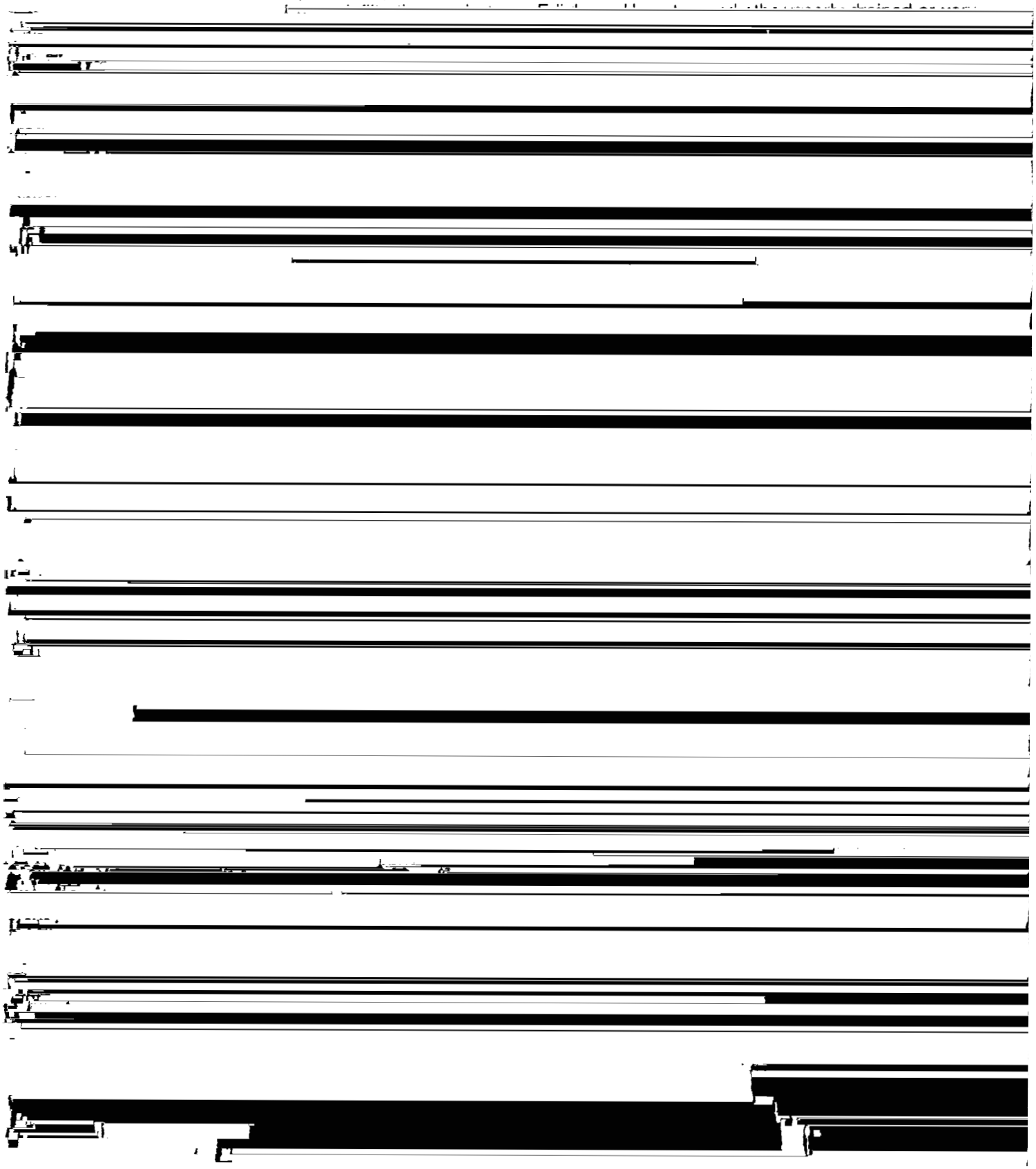
Loss of the surface layer through erosion is damaging for two reasons. First, productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on soils having a subsoil that is unfavorable for plant growth, such as Atlas and Coatsburg soils, and on soils that tend to be droughty, such as Alvin soils. Second, erosion on farmland results in sedimentation in streams and other bodies of water. Control of erosion minimizes this pollution and improves the quality of water available for municipal and recreational uses and for fish and wildlife.

Preparing a good seedbed and tilling are difficult on clayey spots in many fields because the original friable surface layer has been lost through erosion. Such spots

are common in areas of Atlas and Hickory soils.

Measures that control erosion provide a protective

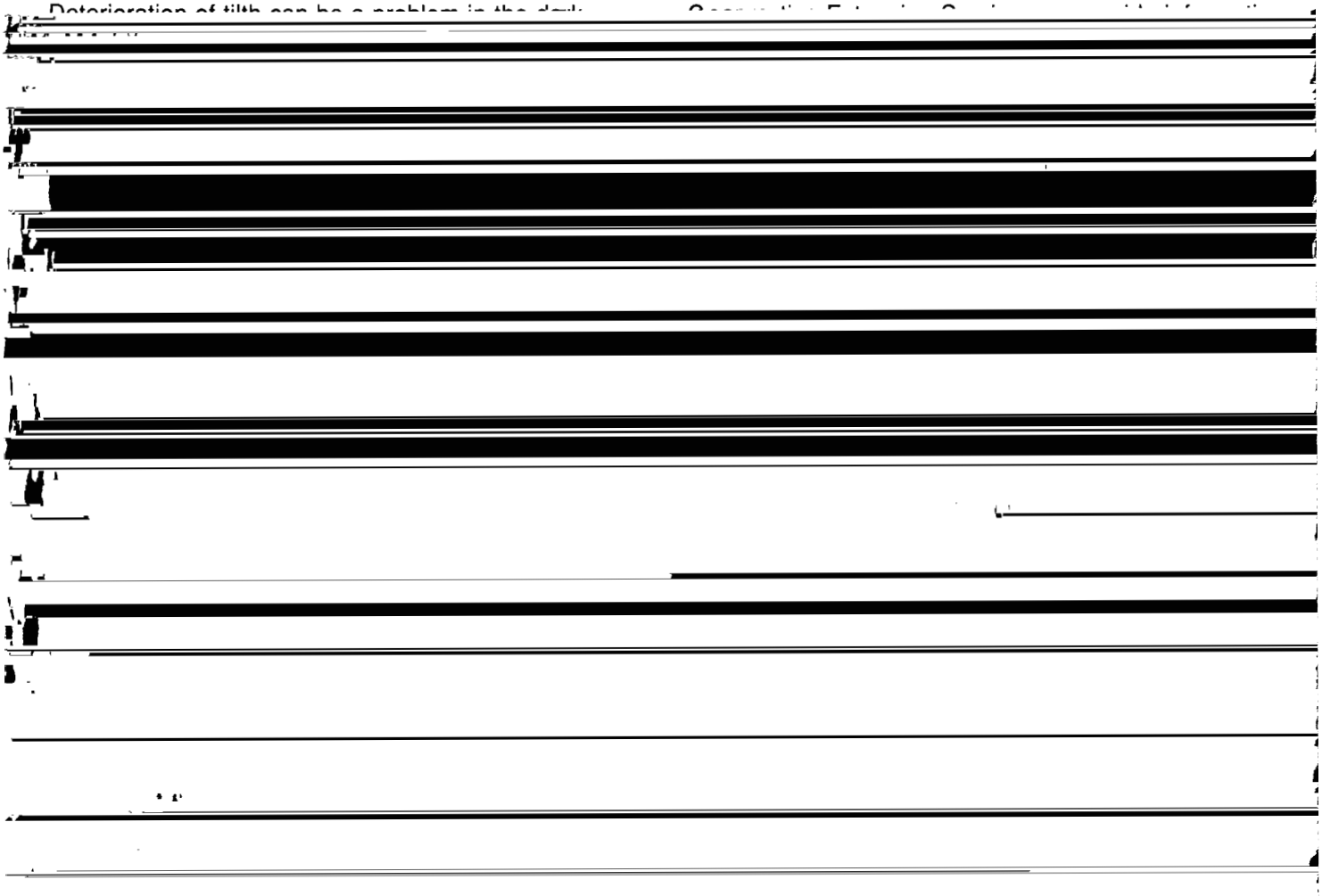
crops generally would not be possible without a drainage system. These are Cowden, Denny, Ebbert,



Natural phosphorus levels in the soils on loess-covered uplands are high. On all soils, the kind and amount of lime and fertilizer to be applied should be based on the results of soil tests, the needs of the crop, and the desired level of yields. The Cooperative Extension Service can help in determining the kind and amount needed.

Tilth affects the germination of seeds and the rate of water infiltration. Some of the soils in Christian County have a surface layer of silt loam that is low in content of organic matter. Generally, tillage has weakened the structure of these soils. A crust forms on the surface during periods of intensive rainfall. The crust is hard when dry and is nearly impervious to water. It reduces the infiltration rate and increases the runoff rate and the susceptibility to erosion. Regular additions of crop residue, manure, and other organic material improve soil structure and help to prevent crusting. A conservation tillage system that leaves crop residue on the surface after planting also helps to prevent crusting.

Deterioration of tilth can be a problem in the dark



very poorly drained Edinburg soils and the poorly drained Harpster, Hartsburg, Sable, Sawmill, and Virden

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

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

Crops other than those shown in table 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the

about the management and productivity of the soils for those crops.

choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

table lists the ordination symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for an indicator tree species. The number indicates the volume, in cubic meters per hectare per year, which the indicator species can produce. The number 1 indicates

equipment that can be used or the season of use. If the soil is wet, the wetness restricts equipment use for more than 3 months.

Seedling mortality refers to the death of naturally occurring or planted tree seedlings, as influenced by the kinds of soil, soil wetness, or topographic conditions. The factors used in rating the soils for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the period when the water table is high, rock fragments in the surface layer, effective rooting depth, and slope aspect. A rating of *slight* indicates that seedling mortality is not likely to be a problem under normal conditions. Expected mortal-

Windbreaks and Environmental Plantings

Windbreaks protect livestock, buildings, and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low- and high-growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil. Field windbreaks protect cropland and crops from wind, help to keep snow on the fields, and provide food and cover for wildlife.

flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is

to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is

In table 10, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

Wildlife Habitat

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

other information in this survey, for example, interpretations for septic tank absorption fields in table 13 and interpretations for dwellings without basements and for local roads and streets in table 12.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few

plants.

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

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or

that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, flooding, and slope. Soil temperature and soil moisture also are considerations. Examples of grasses and legumes are fescue, lovegrass, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, and flooding. Soil temperature and soil moisture also are considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, wheatgrass, and grama.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwoods and shrubs are depth of the root zone,

field sparrow, cottontail, and red fox.

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

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

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities,

potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and

soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of

Table 13 also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, and flooding affect

absorption of the effluent. Large stones interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly

content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in table 13 are based on soil properties,

Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth

soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

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

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index

indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is as much as 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation

limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or

effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity,

reported in table 19.

Estimates of soil properties are based on field

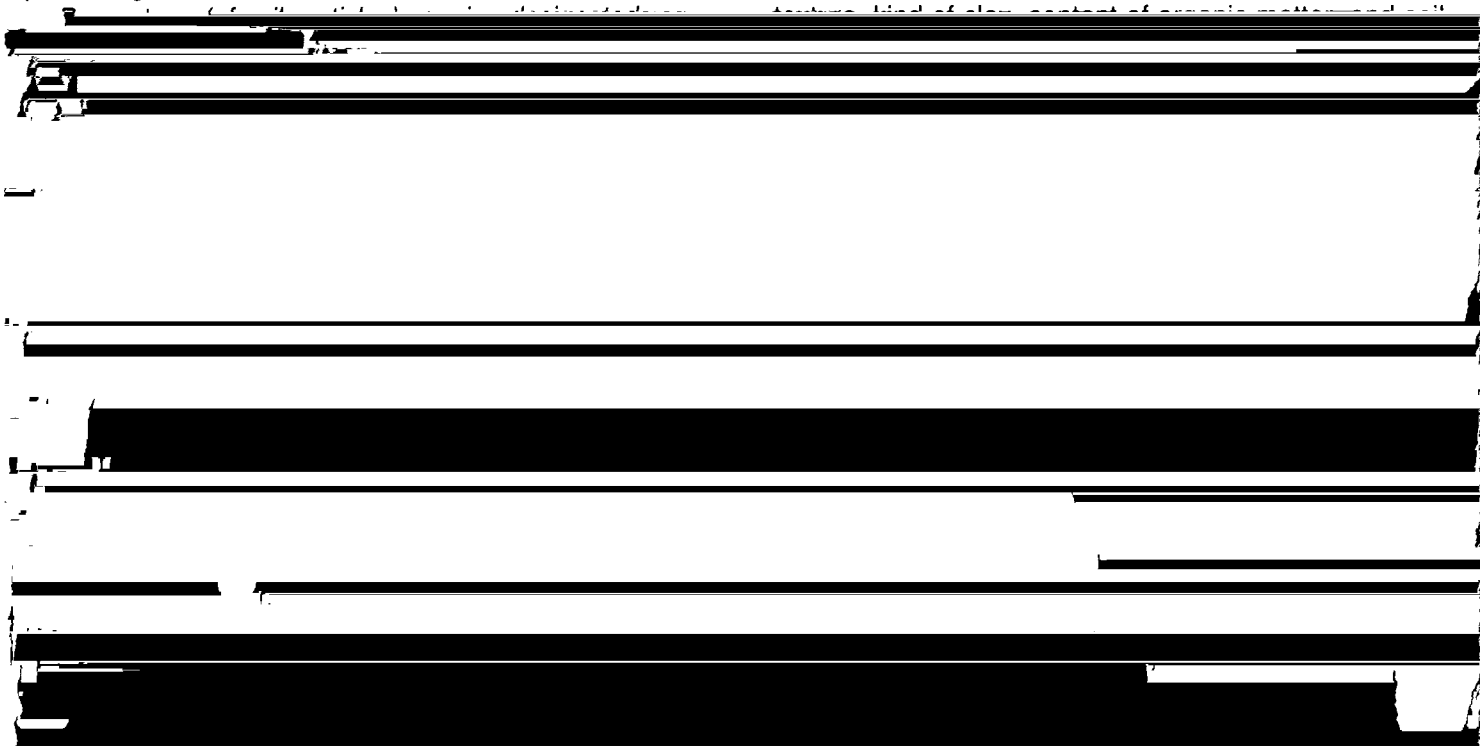
percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the "Glossary."

Classification of the soils is determined according to the Unified soil classification system *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution

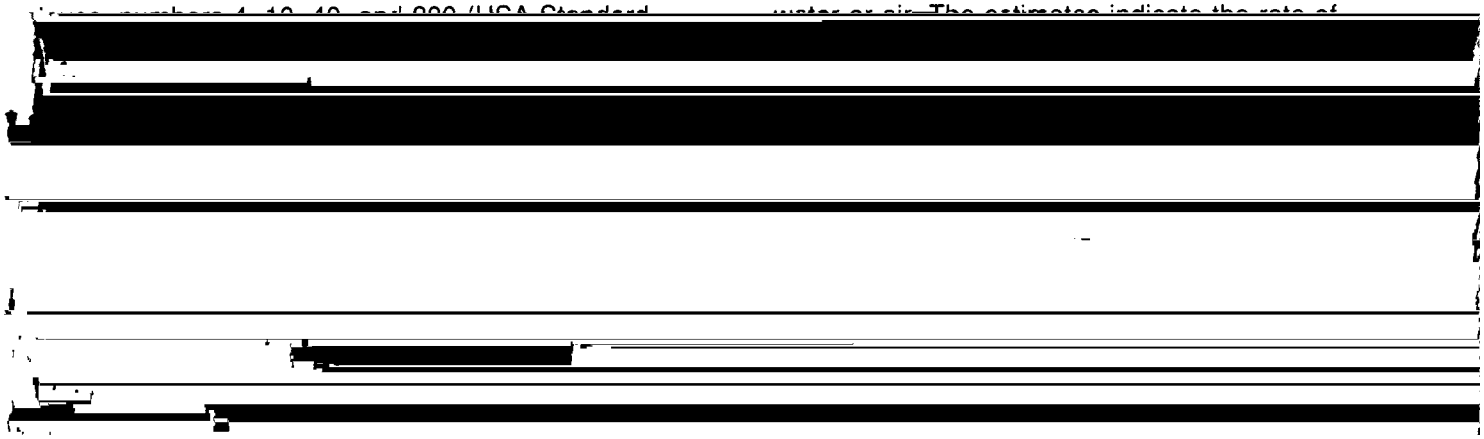
according to plasticity index, liquid limit, and organic

percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.



sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The

the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by



structure.

Permeability refers to the ability of a soil to transmit

moderate, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.05 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to soil blowing in cultivated areas. The groups indicate the susceptibility to soil blowing. Soils are grouped according to the following distinctions:

1. Coarse sands, sands, fine sands, and very fine sands. These soils are generally not suitable for crops. They are extremely erodible, and vegetation is difficult to establish.

2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, and sandy soil material

[redacted]

These soils are very highly erodible. Crops can be grown if intensive measures to control soil blowing are used.

3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible. Crops can be grown if intensive measures to control soil blowing are used.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams. These soils are erodible. Crops can be

[redacted]

than 35 percent clay, and fibric soil material. These soils are very slightly erodible. Crops can be grown if ordinary measures to control soil blowing are used.

8. Soils that are not subject to soil blowing because of coarse fragments on the surface or because of surface wetness.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 17, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 18 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the infiltration of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

[redacted]

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of

[redacted]

If a soil is assigned to two hydrologic groups in table 18, the first letter is for drained areas and the second is for undrained areas.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent

are indicated. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

Potential frost action is the likelihood of upward or

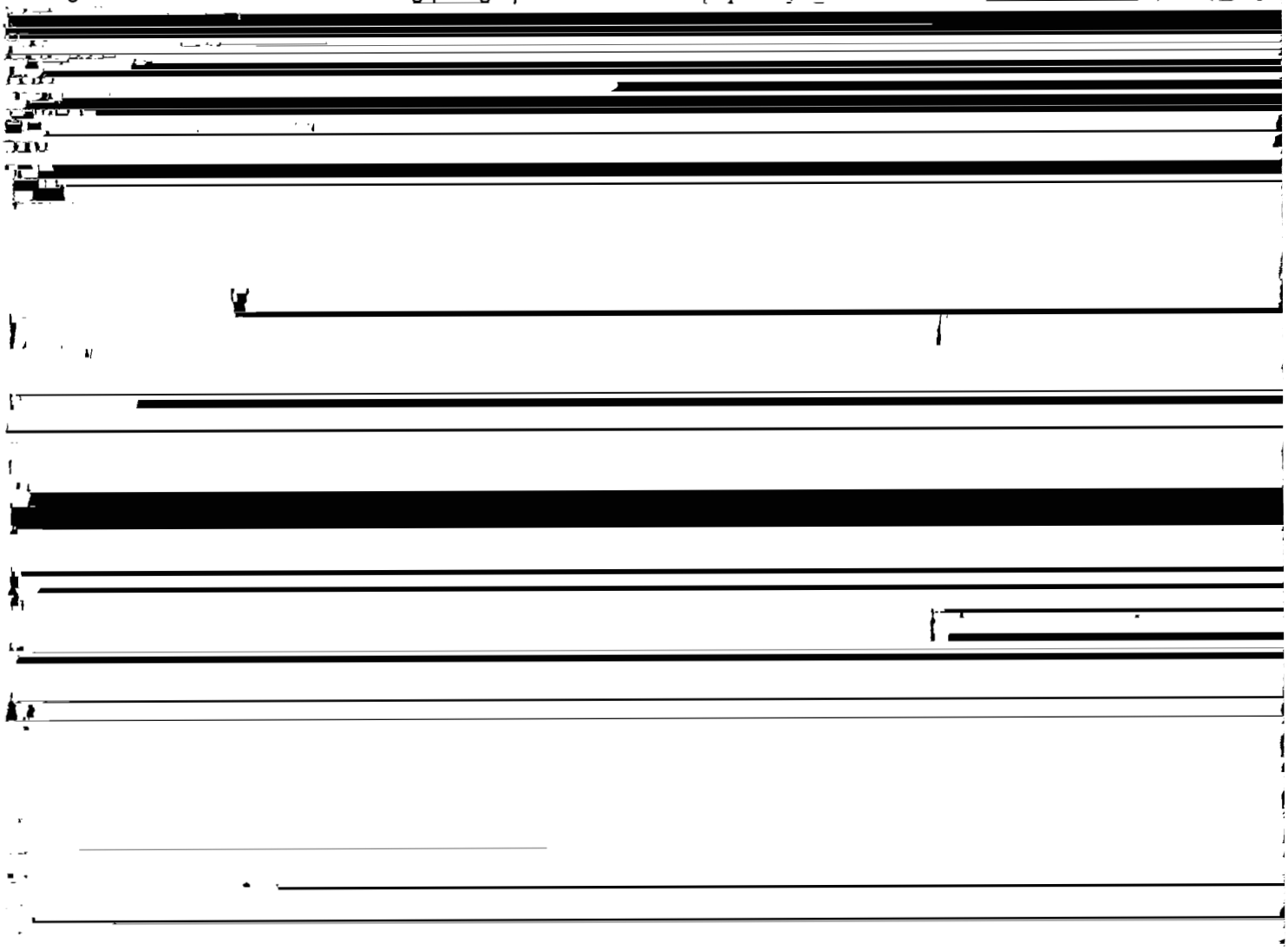
American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

The tests and methods are AASHTO classification—M 145 (AASHTO), D 3282 (ASTM); Unified classification—D 2487 (ASTM); Mechanical analysis—T 88 (AASHTO), D 422 (ASTM), D 2217 (ASTM); Liquid limit—T 89 (AASHTO), D 4318 (ASTM); Plasticity index—T 90 (AASHTO), D 4318 (ASTM); and Moisture density—T 99 (AASHTO), D 698 (ASTM).

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(9)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 20 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of



uplands. These soils formed in loamy and sandy material. Slope ranges from 4 to 10 percent.

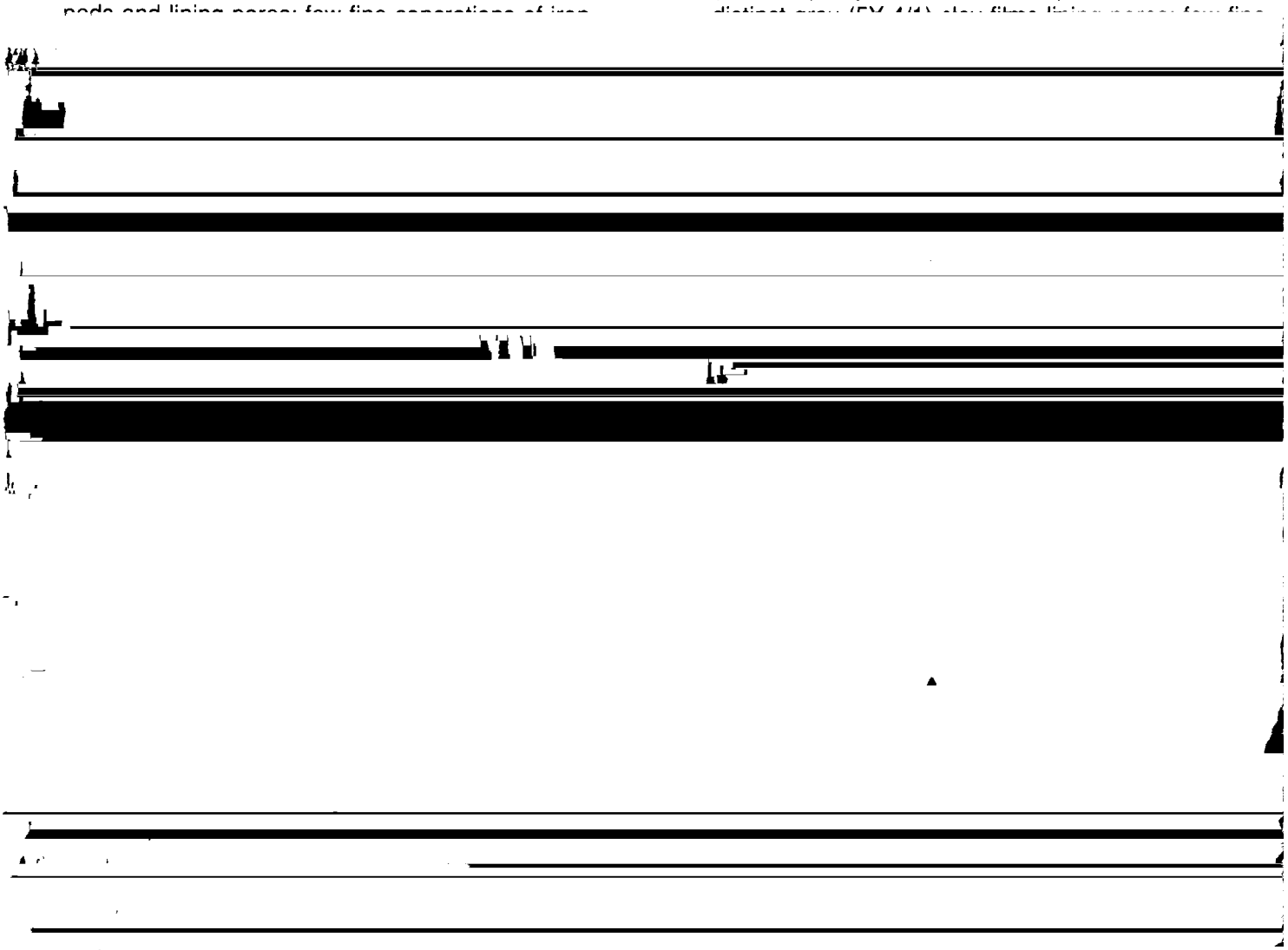
Typical pedon of Alvin fine sandy loam, 4 to 10

Assumption Series

The Assumption series consists of moderately well

3Btg3—42 to 60 inches; grayish brown (10YR 5/2) clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few faint brown (10YR 5/3) and dark grayish brown (10YR 4/2) clay films on faces of

common fine prominent dark yellowish brown (10YR 4/6) and few fine distinct olive brown (2.5Y 5/6) mottles; weak medium prismatic structure parting to moderate medium subangular blocky; very firm; few very fine roots; common faint dark grayish brown (2.5Y 4/2) clay films on faces of peds and few



and manganese oxide; few small pebbles; slightly acid.

The solum ranges from 48 to more than 60 inches in thickness. The A horizon is 6 to 10 inches thick. The loess ranges from 20 to 40 inches in thickness.

The Ap horizon has chroma of 2 or 3. The Bt horizon has value of 4 or 5 and chroma of 3 to 5. The 2Bt and 3Bt horizons have chroma of 1 or 2. The content of clay in the Bt and 2Bt horizons ranges from 25 to 35 percent.

Atlas Series

rounded concretions of iron and manganese oxide; medium acid; clear smooth boundary.

Btg3—27 to 44 inches; gray (5Y 5/1) clay; few fine faint light gray (5Y 6/1), few fine prominent olive (5Y 5/6), and common fine prominent dark yellowish brown (10YR 4/6) mottles; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few faint dark gray (5Y 4/1) and common faint olive gray (5Y 4/2) clay films on faces of peds; few fine rounded concretions of iron and manganese oxide; medium acid; clear smooth boundary.

Btg4—44 to 51 inches; gray (5Y 5/1) clay; few fine faint light gray (5Y 6/1), few fine prominent yellowish

Typical pedon of Broadwell silt loam, 2 to 5 percent slopes, 2,540 feet north and 460 feet west of the center of sec. 11, T. 15 N., R. 2 W.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, brown (10YR 5/3) dry; weak fine granular structure; friable; common very fine and few fine roots; medium acid; clear smooth boundary.

A—9 to 15 inches; very dark grayish brown (10YR 3/2) silt loam, brown (10YR 5/3) dry; moderate fine granular structure; friable; few very fine and fine roots; slightly acid; clear smooth boundary.

Bt1—15 to 18 inches; dark brown (10YR 3/3) silty clay loam, yellowish brown (10YR 5/4) dry; weak very fine and fine subangular blocky structure; friable; few very fine and fine roots; many faint very dark grayish brown (10YR 3/2) organic coatings on faces of peds; slightly acid; clear smooth boundary.

Bt2—18 to 25 inches; brown (10YR 4/3) silty clay loam; moderate fine subangular blocky structure; firm; few very fine and fine roots; common faint very dark chroma of 1 to 3. The Bt horizon has value of 4 or 5 and chroma of 3 to 5. The 2BC horizon has value of 4 or 5. The content of clay in the control section ranges from 27 to 35 percent.

Brooklyn Series

The Brooklyn series consists of poorly drained, slowly permeable soils in depressions in the uplands. These soils formed in loess and in the underlying stratified, loamy outwash. Slope is less than 1 percent.

Typical pedon of Brooklyn silt loam, 174 feet east and 2,544 feet north of the southwest corner of sec. 17, T. 15 N., R. 2 W.

Ap—0 to 9 inches; very dark gray (10YR 3/2) silt loam, gray (10YR 5/1) dry; weak very fine granular structure; friable; few very fine roots; common fine concretions of iron and manganese oxide; medium acid; abrupt smooth boundary.

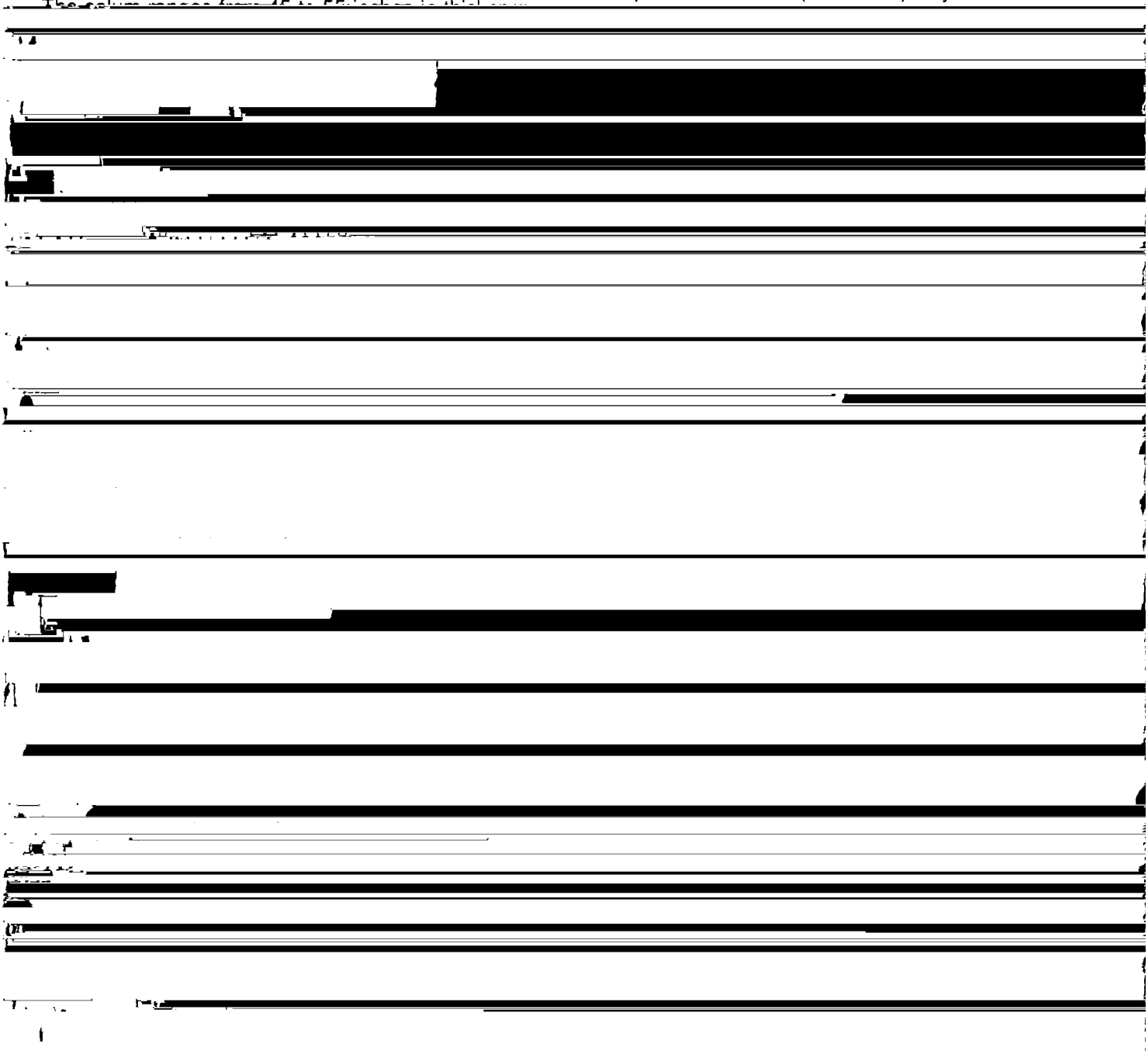
Eg—9 to 19 inches; grayish brown (10YR 5/2) silt loam;

structure; firm; common distinct gray (10YR 5/1) clay films on faces of peds; common fine concretions of iron and manganese oxide; strongly acid; clear smooth boundary.

2Cg—50 to 60 inches; grayish brown (10YR 5/2) clay loam; common medium prominent strong brown (7.5YR 5/6) mottles; massive; friable; few faint gray (10YR 5/1) clay films lining pores; common fine concretions of iron and manganese oxide; strongly acid.

clay loam; moderate medium subangular blocky structure; firm; few very fine roots; common prominent brown (7.5YR 4/4) clay films and common distinct white (10YR 8/2 dry) silt coatings on faces of peds; few fine concretions of iron and manganese oxide; medium acid; clear smooth boundary.

Bt3—31 to 37 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; few very fine roots; common prominent brown (7.5YR 4/4) clay films on faces of



fragments of gray (10YR 5/1) silt loam; weak fine granular structure; friable; few fine roots; few fine concretions of iron and manganese oxide; slightly acid; abrupt smooth boundary.

E—9 to 16 inches; gray (10YR 5/1) silt loam; few fine prominent yellowish brown (10YR 5/6) mottles; weak medium platy structure; friable; few fine roots; few fine concretions of iron and manganese oxide; strongly acid; clear smooth boundary.

Bt—16 to 25 inches; yellowish brown (10YR 5/4) silty clay loam; few fine distinct yellowish brown (10YR 5/8)

and light brownish gray (10YR 6/2) mottles; moderate fine subangular blocky structure; firm; few fine roots; many distinct dark gray (10YR 4/1) and very dark grayish brown (10YR 3/2) clay films on faces of peds; many distinct light brownish gray (10YR 6/2 dry) silt coatings on faces of peds in the upper part; few fine concretions of iron and manganese oxide; strongly acid; clear smooth boundary.

Btg1—25 to 35 inches; light brownish gray (10YR 6/2) silty clay loam; common fine prominent yellowish brown (10YR 5/8) and many fine distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; common faint dark gray (10YR 4/1) clay films on

The solum ranges from 45 to more than 60 inches in thickness. The Ap horizon has chroma of 1 or 2. The E horizon has value of 4 or 5 and chroma of 1 or 2. The Bt and Btg horizons have hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 3. They are silty clay loam or silty clay. The content of clay in the control section ranges from 35 to 45 percent.

Coatsburg Series

The Coatsburg series consists of poorly drained, very

slowly permeable soils on side slopes in the uplands. These soils formed in less than 20 inches of loess and in the underlying paleosol, which formed in Illinoian till. Slope ranges from 5 to 10 percent.

The Coatsburg soils in this survey area have a dark surface soil that is thinner than is definitive for the series. This difference, however, does not significantly affect the use and management of the soils.

Typical pedon of Coatsburg silt loam, 5 to 10 percent slopes, eroded, 2,240 feet north and 200 feet east of the southwest corner of sec. 20, T. 12 N., R. 2 W.

Ap—0 to 8 inches; mixed very dark grayish brown (10YR 3/2) and grayish brown (2.5Y 5/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular

about 5 percent gravel; slightly acid; clear smooth boundary.

2Btg4—29 to 45 inches; gray (5Y 5/1) clay loam; few fine prominent yellowish brown (10YR 5/6) and common fine prominent light olive brown (2.5Y 5/4) mottles; firm; few very fine roots; many distinct dark gray (10YR 4/1) clay films on faces of peds; few fine concretions of iron and manganese oxide; about 5 percent gravel; slightly acid; clear smooth boundary.

2Btg5—45 to 55 inches; gray (5Y 5/1) clay loam; few fine prominent yellowish brown (10YR 5/4) and common fine prominent light olive brown (2.5Y 5/4) mottles; moderate medium subangular blocky structure; firm; common distinct dark gray (10YR 4/1) clay films on faces of peds; few fine concretions of iron and manganese oxide; about 5 percent gravel; slightly acid; clear smooth boundary.

2Btg6—55 to 65 inches; gray (10YR 6/1) clay loam; common fine prominent yellowish brown (10YR 5/6) and common fine distinct pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; firm; common faint dark gray (10YR 4/1) clay films lining pores; few fine concretions of iron and manganese oxide; about 8 percent gravel; slightly acid.

The solum is more than 60 inches thick. The loess is less than 20 inches thick.

The Ap horizon has value of 2 or 3 and chroma of 1 or 2. The 2Btg horizon has hue of 10YR, 2.5Y, or 5Y or is neutral in hue. It has value of 4 to 6 and chroma of 0 to 2. It is silty clay loam, silty clay, or clay. The content of clay in the control section ranges from 35 to 45 percent.

Cowden Series

The Cowden series consists of poorly drained, slowly permeable soils on broad flats in the uplands. These soils formed in loess. Slope ranges from 0 to 2 percent.

grayish brown (10YR 3/2) organic coatings on faces of peds; few fine concretions of iron and manganese oxide; medium acid; clear smooth boundary.

Eg2—13 to 18 inches; light brownish gray (10YR 6/2) silt loam; common fine prominent yellowish brown (10YR 5/8) mottles; moderate thin platy structure; friable; few very fine roots; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; few fine concretions of iron and manganese oxide; strongly acid; clear smooth boundary.

Btg1—18 to 23 inches; gray (10YR 5/1) silty clay; common fine prominent yellowish brown (10YR 5/8) mottles; moderate fine subangular blocky structure; firm; few very fine roots; many faint dark gray (10YR 4/1) clay films on faces of peds; common fine and medium concretions of iron and manganese oxide; strongly acid; clear smooth boundary.

Btg2—23 to 31 inches; olive gray (5Y 5/2) silty clay; common fine prominent yellowish brown (10YR 5/8) and common fine faint grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; firm; few very fine roots; many distinct dark gray (10YR 4/1) clay films on faces of peds; common fine and medium concretions of iron and manganese oxide; strongly acid; clear smooth boundary.

Btg3—31 to 41 inches; gray (5Y 5/1) silty clay loam; common fine prominent light olive brown (2.5Y 5/4) and few fine prominent yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; friable; few very fine roots; many distinct dark gray (10YR 4/1) clay films on faces of peds; common fine and medium concretions of iron and manganese oxide; very dark gray (10YR 3/1) krotovinas; strongly acid; clear smooth boundary.

Btg4—41 to 51 inches; gray (5Y 6/1) silty clay loam; common fine prominent yellowish brown (10YR 5/6)

chroma of 1 or 2. The E horizon has value of 4 to 6 and chroma of 1 or 2. The Btg and Cg horizons have hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 or 2. The Btg horizon is silty clay loam or silty clay. The Cg horizon is silty clay loam or silt loam. The content of clay in the control section ranges from 35 to 42 percent.

Darmstadt Series

The Darmstadt series consists of somewhat poorly drained, very slowly permeable soils on the broad tops of ridges in the uplands. These soils formed in loess. Slope ranges from 0 to 2 percent.

Typical pedon of Darmstadt silt loam, in an area of Oconee-Darmstadt silt loams, 1,020 feet west and 1,398 feet south of the northeast corner of sec. 26, T. 11 N., R. 1 E.

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; friable; common very fine roots; neutral; abrupt smooth boundary.

E1—7 to 9 inches; grayish brown (10YR 5/2) and dark grayish brown (10YR 4/2) silt loam; weak medium platy structure; friable; few very fine roots; few fine concretions of iron and manganese oxide; slightly acid; clear smooth boundary.

E2—9 to 13 inches; grayish brown (10YR 5/2) and light brownish gray (10YR 6/2) silt loam; few fine faint brown (10YR 5/3) mottles; weak medium platy structure; friable; few very fine roots; common fine concretions of iron and manganese oxide; slightly acid; clear smooth boundary.

Bt—13 to 19 inches; brown (10YR 5/3) silty clay loam; common fine faint light brownish gray (10YR 6/2) and common fine distinct dark yellowish brown (10YR 4/6) and yellowish brown (10YR 5/6) mottles; moderate fine subangular blocky structure; firm; few very fine roots; common distinct dark grayish brown (10YR 4/2) and dark gray (10YR 4/1) clay films on faces of peds; common fine concretions of iron and

(10YR 5/6), and dark yellowish brown (10YR 4/6) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds and many distinct dark gray (10YR 4/1) clay films lining pores; few fine and medium concretions of iron and manganese oxide; moderately alkaline; clear smooth boundary.

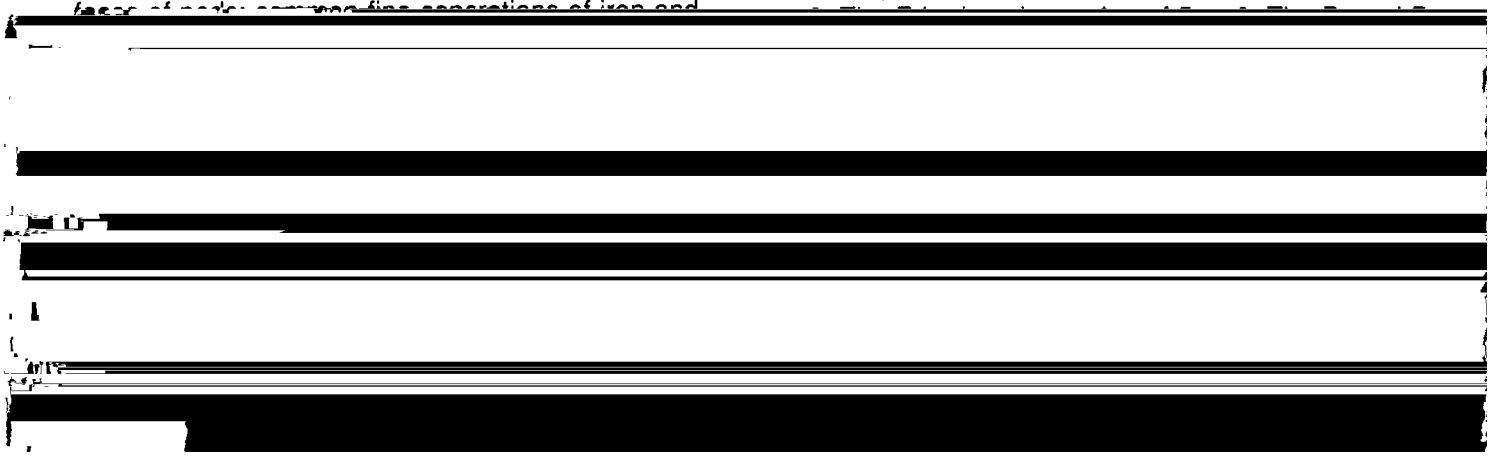
Btg3—34 to 43 inches; light brownish gray (2.5Y 6/2) silty clay loam; common fine prominent dark yellowish brown (10YR 4/6) and yellowish brown (10YR 5/6) mottles; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots; few distinct gray (10YR 5/1) and dark gray (10YR 4/1) clay films on faces of peds; few fine and medium concretions of iron and manganese oxide; strongly alkaline; clear smooth boundary.

BCg—43 to 54 inches; light brownish gray (2.5Y 6/2) silty clay loam; common fine prominent yellowish brown (10YR 5/8) and dark yellowish brown (10YR 4/6) mottles; weak medium prismatic structure parting to weak coarse subangular blocky; firm; few distinct gray (10YR 5/1) clay films on faces of peds; few prominent dark gray (10YR 4/1) clay films lining pores; few fine and medium concretions of iron and manganese oxide; strongly alkaline; clear smooth boundary.

2Cg—54 to 60 inches; light brownish gray (2.5Y 6/2) silty clay loam; common fine prominent dark yellowish brown (10YR 4/6) and yellowish brown (10YR 5/6) mottles; massive; friable; common fine concretions of iron and manganese oxide; about 10 percent sand; moderately alkaline.

The solum ranges from 35 to more than 60 inches in thickness. Depth to the natric horizon ranges from 8 to 16 inches.

The Ap horizon has value of 3 to 5 and chroma of 2



Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; few very fine roots; few fine concretions of iron and manganese oxide; medium acid; abrupt smooth boundary.

Eg1—9 to 13 inches; gray (10YR 5/1) silt loam; common fine prominent dark yellowish brown (10YR 4/6) mottles; moderate thin platy structure; friable; few very fine roots; common faint very dark grayish brown (10YR 3/2) organic coatings on faces of peds; few fine concretions of iron and manganese oxide; strongly acid; clear smooth boundary.

Eg2—13 to 23 inches; light gray (10YR 6/1) silt loam; common fine prominent yellowish brown (10YR 5/6) mottles; moderate thin platy structure; friable; few very fine roots; few distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; common fine and medium concretions of iron and manganese oxide; strongly acid; clear smooth boundary.

Btg1—23 to 28 inches; grayish brown (2.5Y 5/2) silty clay loam; common fine prominent dark yellowish brown (10YR 4/6) mottles; moderate fine subangular blocky structure; friable; few very fine roots; many distinct gray (10YR 5/1) clay films and common distinct white (10YR 8/1 dry) silt coatings on faces of peds; common fine and medium concretions of iron and manganese oxide; very strongly acid; clear smooth boundary.

Btg2—28 to 39 inches; grayish brown (2.5Y 5/2) silty clay loam; common fine prominent dark yellowish brown (10YR 4/6) mottles; moderate medium subangular blocky structure; friable; few very fine roots; many distinct gray (10YR 5/1) clay films on faces of peds; very strongly acid; clear smooth boundary.

Btg3—39 to 52 inches; light brownish gray (2.5Y 6/2) silty clay loam; common fine prominent yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; friable; few very fine roots; common distinct gray (10YR 5/1) clay films on faces of peds; strongly acid; clear smooth boundary.

Cg—52 to 60 inches; light brownish gray (10YR 6/2) silt loam; common fine distinct yellowish brown (10YR 5/8) and common fine faint brown (10YR 5/3) mottles; massive; friable; common fine concretions of iron and manganese oxide; medium acid.

The solum ranges from 50 to more than 60 inches in thickness. The Ap horizon has value of 2 or 3 and chroma of 1 or 2. The E horizon has value of 4 to 6 and chroma of 1 or 2. The Btg and Cg horizons have hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 or 2. The Btg horizon is silty clay loam or silty clay. The content of clay in the control section ranges from 35 to 45 percent.

Douglas Series

The Douglas series consists of well drained, moderately permeable soils on ridgetops and side slopes in the uplands. These soils formed in loess and in the underlying glacial drift. Slope ranges from 2 to 10 percent.

Typical pedon of Douglas silt loam, 2 to 5 percent slopes, 1,320 feet west and 700 feet north of the southeast corner of sec. 10, T. 11 N., R. 1 W.

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, brown (10YR 5/3) dry; weak fine granular structure; friable; few very fine roots; slightly acid; abrupt smooth boundary.

A—7 to 13 inches; very dark grayish brown (10YR 3/2) silt loam, brown (10YR 5/3) dry; moderate fine granular structure; friable; few very fine roots; medium acid; clear smooth boundary.

Bt1—13 to 18 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine subangular blocky structure; friable; few very fine roots; many distinct very dark grayish brown (10YR 3/2) clay films on faces of peds; medium acid; clear smooth boundary.

Bt2—18 to 28 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; friable; few very fine roots; many distinct very dark grayish brown (10YR 3/2) clay films on faces of peds; few fine concretions of iron and manganese oxide; medium acid; clear smooth boundary.

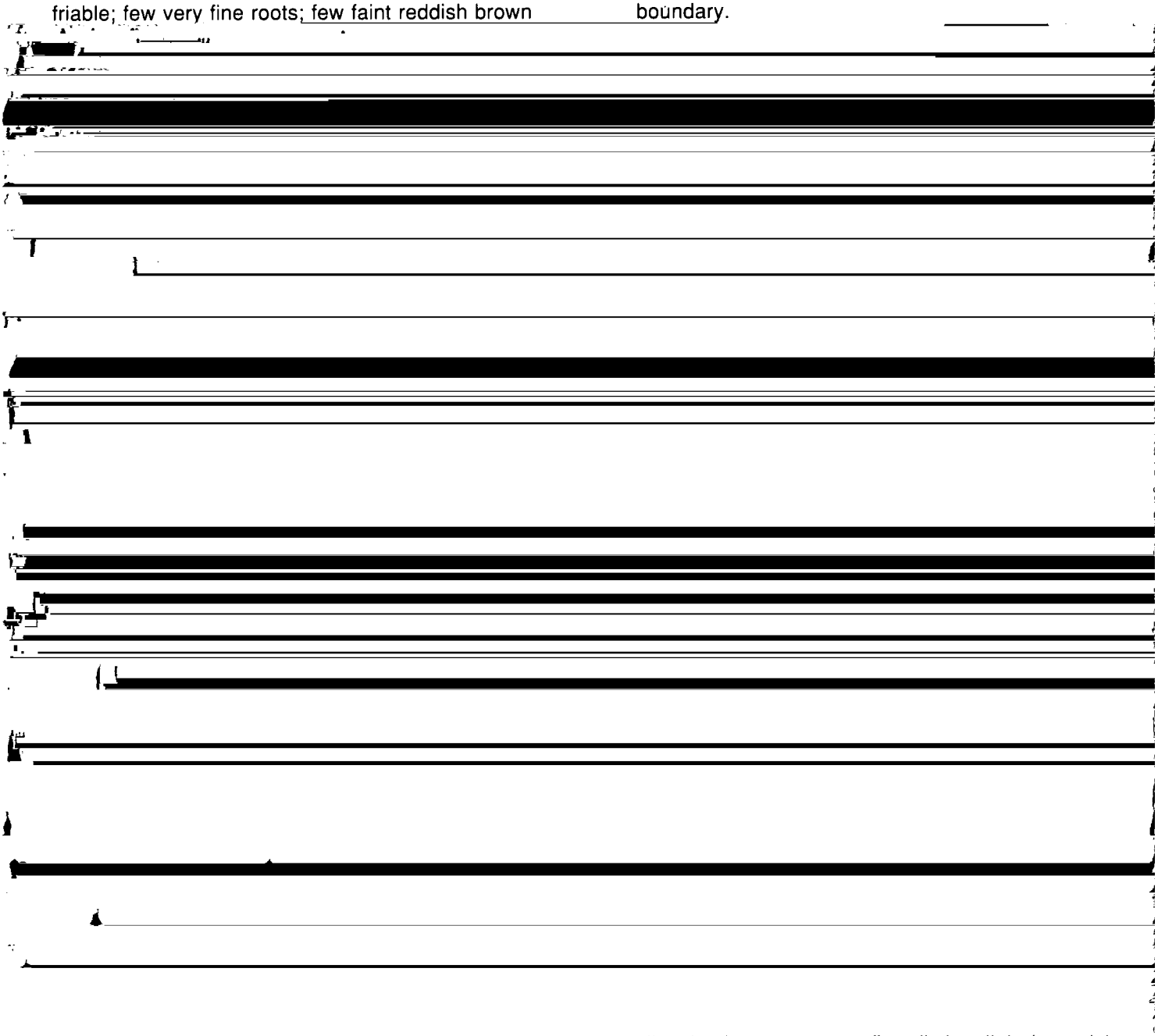
Bt3—28 to 34 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; friable; few very fine roots; common faint brown (10YR 4/3) clay films on faces of peds; few fine concretions of iron and manganese oxide; medium acid; clear smooth boundary.

Bt4—34 to 43 inches; dark yellowish brown (10YR 4/4) silt loam; few fine distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; few very fine roots; common faint brown (10YR 4/3) clay films on faces of peds; few fine concretions of iron and manganese oxide; medium acid; clear smooth boundary.

2Bt5—43 to 46 inches; brown (7.5YR 5/4) loam; few fine prominent yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; friable; few very fine roots; common faint dark brown (7.5YR 4/4) clay films on faces of peds; few

fine concretions of iron and manganese oxide; about 2 percent gravel; medium acid; clear smooth boundary.

2BC—46 to 60 inches; dark brown (7.5YR 4/4) loam; common medium faint brown (7.5YR 5/4) mottles; moderate medium subangular blocky structure; friable; few very fine roots; few faint reddish brown silty clay loam; common fine distinct yellowish brown (10YR 5/8) mottles; moderate fine and medium subangular blocky structure; firm; few very fine roots; common faint brown (10YR 4/3) clay films on faces of peds; few fine concretions of iron and manganese oxide; strongly acid; clear smooth boundary.



concretions of iron and manganese oxide; about 5 percent gravel; medium acid.

The solum ranges from 60 to more than 70 inches in thickness. Depth to the Illinoian drift ranges from 40 to 60 inches. The mollic epipedon ranges from 10 to 16

silty clay loam; common fine distinct light brownish gray (10YR 6/2) and yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; firm; few very fine roots; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; common fine concretions of iron and

A—8 to 16 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; common fine prominent light olive brown (2.5Y 5/4) mottles; weak fine granular structure; firm; common fine roots; few fine concretions of iron and manganese oxide; slightly acid; clear smooth boundary.

Bg1—16 to 20 inches; dark grayish brown (2.5Y 4/2) silty clay loam; common fine distinct light olive brown (2.5Y 5/4) and few fine distinct light olive brown (2.5Y 5/6) mottles; weak fine subangular blocky structure; firm; few fine roots; common distinct very dark gray (10YR 3/1) organic coatings on faces of peds; few medium concretions of iron and manganese oxide; slightly acid; clear smooth boundary.

Bg2—20 to 25 inches; grayish brown (2.5Y 5/2) silty clay loam; common fine distinct light olive brown (2.5Y 5/6) mottles; weak fine subangular blocky structure; firm; few fine roots; common prominent very dark gray (10YR 3/1) organic coatings on faces of peds; few fine concretions of iron and manganese oxide; neutral; clear smooth boundary.

Bg3—25 to 32 inches; grayish brown (2.5Y 5/2) silty clay loam; many medium prominent yellowish brown (10YR 5/8) mottles; moderate fine subangular blocky structure; firm; few fine roots; common prominent very dark gray (10YR 3/1) organic coatings on faces of peds; few fine concretions of iron and manganese oxide; very dark gray (10YR 3/1) krotovinas; neutral; clear smooth boundary.

Bg4—32 to 40 inches; light olive gray (5Y 6/2) silty clay loam; common medium prominent yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; firm; few fine roots; common prominent very dark gray (10YR 3/1) organic

The solum ranges from 42 to more than 60 inches in thickness. The mollic epipedon is 10 to 20 inches thick. Depth to the stratified outwash ranges from 40 to 60 inches.

The Ap horizon has hue of 10YR or 2.5Y or is neutral in hue. It has value of 2 or 3 and chroma of 0 to 2. The Bg horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 or 2. The 2Bg horizon has hue of 10YR, 2.5Y, or 5Y or is neutral in hue. It has value of 4 to 6 and chroma of 0 to 2. It is stratified silt loam, loam, clay loam, or fine sandy loam. The content of clay in the control section ranges from 20 to 35 percent.

Ebbert Series

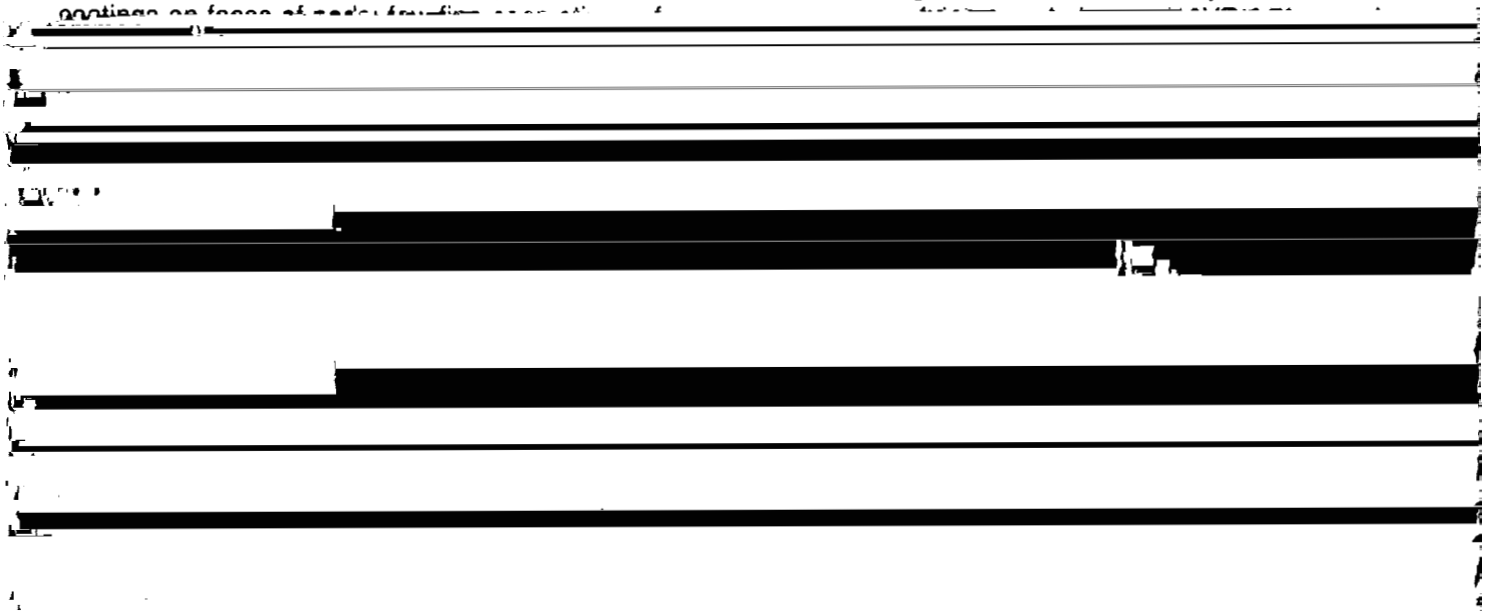
The Ebbert series consists of very poorly drained, slowly permeable soils in depressions in the uplands. These soils formed in loess. Slope ranges from 0 to 2 percent.

Typical pedon of Ebbert silt loam, 660 feet south and 198 feet west of the center of sec. 31, T. 11 N., R. 3 W.

Ap—0 to 8 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; weak fine granular structure; friable; few fine and very fine roots; medium acid; clear smooth boundary.

A—8 to 11 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; weak very fine subangular blocky structure; friable; few fine and few very fine roots; slightly acid; abrupt smooth boundary.

Eg—11 to 16 inches; dark gray (10YR 4/1) silt loam; few fine distinct brown (10YR 5/3) and few fine prominent dark yellowish brown (10YR 4/6) mottles; weak medium platy structure parting to weak medium granular; friable; few very fine roots;



mottles; moderate fine and medium subangular medium granular structure; firm; few very fine roots;

thickness. The mollic epipedon ranges from 15 to 24 inches in thickness.

The Ap horizon has value of 2 or 3 and chroma of 1 or 2. The Btg horizon has hue of 10YR, 2.5YR, or 5Y, value of 3 to 5, and chroma of 1 or 2. It is silty clay loam or silty clay. The Cg horizon has hue of 10YR, 2.5Y, or 5Y, value of 5 or 6, and chroma of 1 or 2. The

iron and manganese oxide; neutral; clear smooth boundary.

Bt4—36 to 43 inches; light olive brown (2.5Y 5/4) silty clay loam; common medium prominent yellowish brown (10YR 5/6) and common medium prominent brownish yellow (10YR 6/6) mottles; moderate

in loess and in the underlying paleosol, which formed in Illinoian till. They are moderately permeable in the upper part and slowly permeable in the paleosol. Slope ranges from 5 to 10 percent.

Typical pedon of Elco silt loam, 5 to 10 percent slopes, eroded, 1,200 feet west and 420 feet north of the southeast corner of sec. 12, T. 13 N., R. 3 W.

Ap—0 to 6 inches; mixed dark grayish brown (10YR 4/2) and dark yellowish brown (10YR 4/4) silt loam, pale brown (10YR 6/3) dry; moderate fine granular structure; friable; few very fine roots; medium acid; abrupt smooth boundary.

Bt1—6 to 17 inches; dark yellowish brown (10YR 4/4) silty clay loam; few fine distinct dark yellowish brown (10YR 4/6) and few fine distinct yellowish brown (10YR 5/6) mottles; moderate fine subangular blocky structure; firm; few very fine roots; common faint brown (10YR 4/3) clay films on faces of peds; few fine concretions of iron and manganese oxide; strongly acid; clear smooth boundary.

Bt2—17 to 22 inches; dark yellowish brown (10YR 4/4) silty clay loam; common fine distinct yellowish brown (10YR 5/6) mottles; moderate fine and medium subangular blocky structure; firm; few very fine roots; common faint brown (10YR 4/3) clay films on faces of peds; few fine concretions of iron and manganese oxide; medium acid; clear smooth boundary.

Bt3—22 to 28 inches; dark yellowish brown (10YR 4/4) silty clay loam; common fine faint yellowish brown (10YR 5/4) and few fine distinct grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; firm; few very fine roots; common faint brown (10YR 4/3) clay films on faces of peds; few fine concretions of iron and manganese oxide;

dry) silt coatings on faces of peds; medium acid; clear smooth boundary.

2Btg3—50 to 60 inches; gray (5Y 5/1) clay loam; common medium prominent yellowish brown (10YR 5/6) mottles; moderate medium and coarse subangular blocky structure; firm; few distinct light gray (10YR 7/1 dry) silt coatings on faces of peds; neutral.

The solum is more than 60 inches thick. The loess ranges from 20 to 40 inches in thickness.

The Ap horizon has value of 3 or 4 and chroma of 2 or 3. The Bt horizon has value of 4 or 5 and chroma of 3 to 6. The 2Btg horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 to 4. It is clay loam, silty clay loam, or silty clay. The content of clay in the control section ranges from 23 to 45 percent.

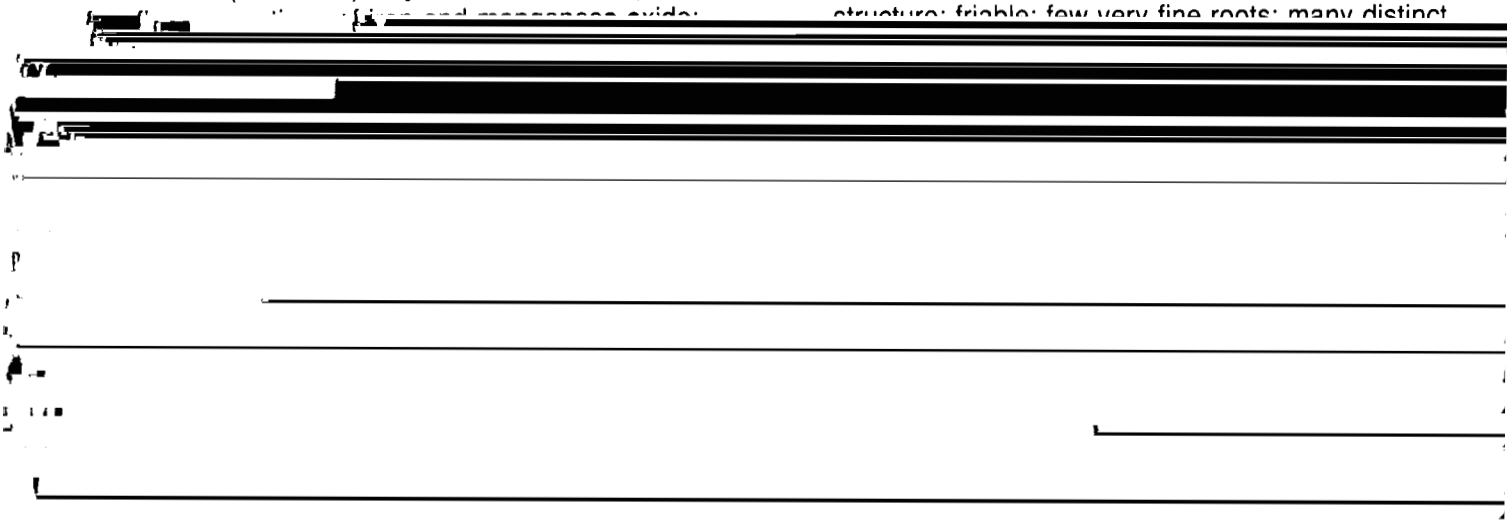
El Dara Series

The El Dara series consists of well drained and moderately well drained, moderately permeable soils on side slopes in the uplands. These soils formed in outwash. Slope ranges from 10 to 30 percent.

Typical pedon of El Dara sandy loam, 10 to 15 percent slopes, eroded, 46 feet south and 1,600 feet west of the northeast corner of sec. 17, T. 12 N., R. 2 W.

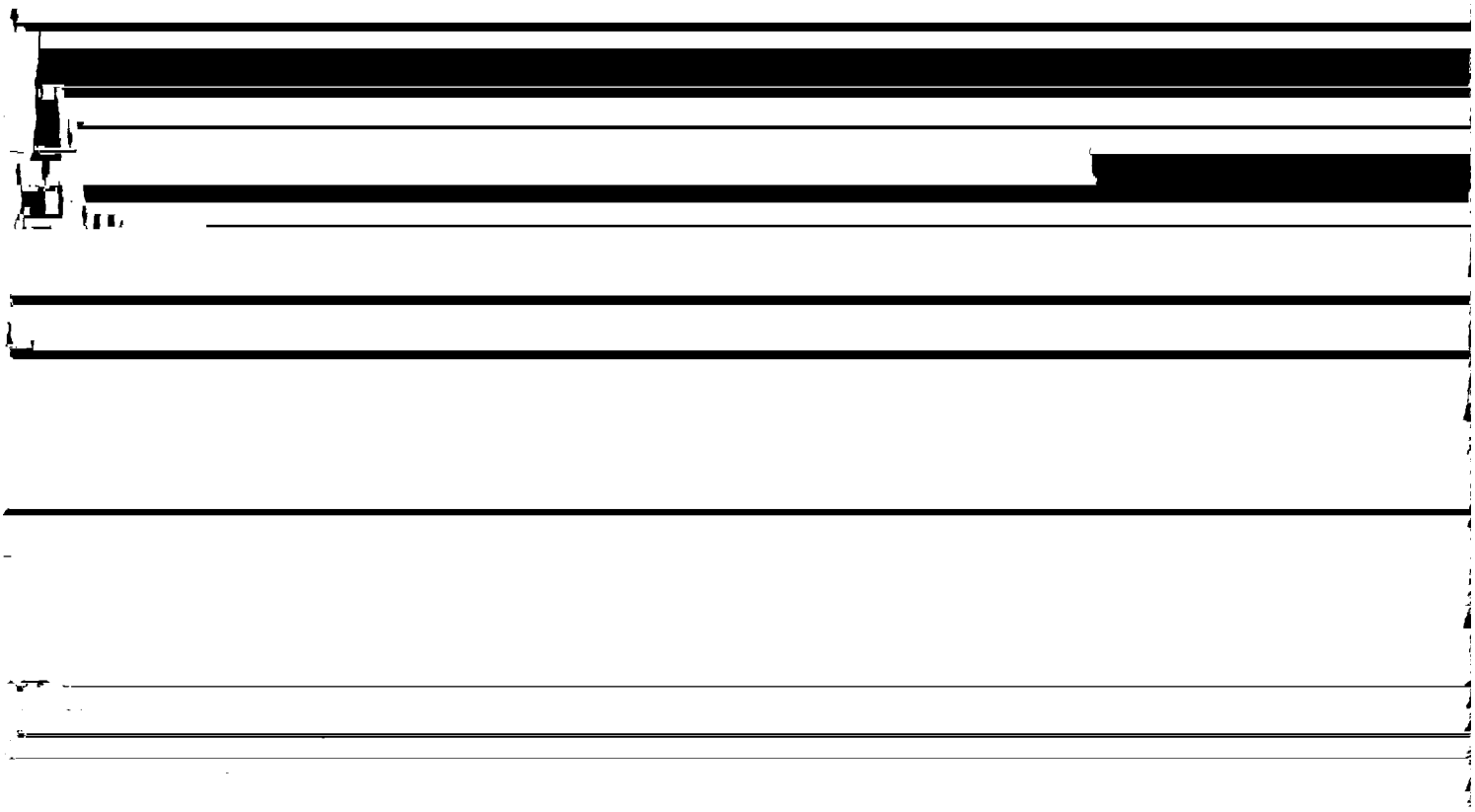
Ap—0 to 10 inches; mixed dark grayish brown (10YR 4/2) and yellowish brown (10YR 5/6) sandy loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; very friable; common very fine roots; strongly acid; abrupt smooth boundary.

Bt1—10 to 17 inches; yellowish brown (10YR 5/6) sandy clay loam; moderate fine subangular blocky structure; friable; few very fine roots; many distinct



iron and manganese oxide; very strongly acid; clear smooth boundary.

Bt4—34 to 44 inches; yellowish brown (10YR 5/4) fine sandy loam; few fine distinct light brownish gray (2.5Y 6/2) and common fine distinct yellowish brown (10YR 5/8) mottles; moderate medium subangular



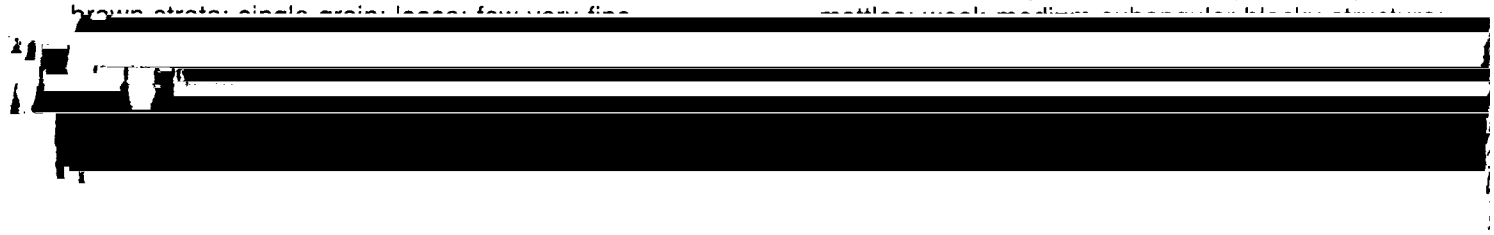
blocky structure; friable; few very fine roots; few faint dark yellowish brown (10YR 4/4) clay films on faces of peds; few fine concretions of iron and manganese oxide; very strongly acid; clear smooth boundary.

BC—44 to 59 inches; yellowish brown (10YR 5/6), stratified fine sandy loam and loamy fine sand; common medium distinct light yellowish brown (10YR 6/4) mottles; weak medium subangular blocky structure; very friable; few distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; few fine concretions of iron and manganese oxide; strongly acid; clear smooth boundary.

C—59 to 63 inches; pale brown (10YR 6/3), stratified loamy fine sand and fine sand; few thin yellowish brown strata; single grain; loose; few very fine

granular structure; friable; few very fine roots; medium acid; abrupt smooth boundary.

Bt1—8 to 12 inches; dark yellowish brown (10YR 4/4) silt loam; weak very fine subangular blocky structure; friable; few very fine roots; many faint brown (10YR 4/3) clay films on faces of peds;



slightly acid; clear smooth boundary.

Bt2—12 to 21 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine subangular blocky structure; friable; few very fine roots; many faint brown (10YR 4/3) clay films on faces of peds; few fine concretions of iron and manganese oxide; slightly acid; clear smooth boundary.

Bt3—21 to 26 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak medium subangular blocky structure; friable; few very fine roots; common faint brown (10YR 4/3) clay films on faces of peds; few fine concretions of iron and manganese oxide; neutral; clear smooth boundary.

BC—26 to 29 inches; brown (10YR 5/3) silt loam; few fine distinct dark yellowish brown (10YR 4/6) mottles; weak medium subangular blocky structure;

north and 1,100 feet east of the southwest corner of

coarse subangular blocky structure; friable; few fine

Akp—0 to 8 inches; black (10YR 2/1) silty clay loam, dark gray (10YR 4/1) dry; weak fine granular

calcium carbonate; slight effervescence; moderately alkaline; clear smooth boundary.

Cn—57 to 61 inches; gray (10YR 6/1) silt loam;

blocky; firm; few very fine roots; common faint very dark grayish brown (10YR 3/2) clay films on faces

Hartsburg Series

The Hartsburg series consists of poorly drained

medium prominent brownish yellow (10YR 6/6) and yellowish brown (10YR 5/6) and few fine distinct olive (5Y 5/4) mottles; weak coarse subangular blocky structure; friable; few very fine roots; few distinct very dark gray (5Y 3/1) organic coatings lining root channels; many fine and medium concretions and accumulations of calcium carbonate; few fine concretions of iron and manganese oxide; violent effervescence; moderately alkaline; clear smooth boundary.

Cg—43 to 60 inches; gray (5Y 6/1) silt loam; common medium prominent strong brown (7.5YR 5/8) and brownish yellow (10YR 6/6) mottles; massive; friable; few very fine roots; few fine and medium concretions of iron and manganese oxide; slight effervescence; mildly alkaline.

The solum ranges from 30 to 49 inches in thickness. The mollic epipedon ranges from 10 to 20 inches in thickness. The depth to free carbonates ranges from 15 to 35 inches.

The Ap horizon has value of 2 or 3 and chroma of 0 to 2. The Bg horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 or 5, and chroma of 1 or 2. It is silty clay loam or silt loam. The Cg horizon has hue of 2.5Y or 5Y, value of 5 or 6, and chroma of 1 or 2. The content of clay in the control section ranges from 27 to 35 percent.

Herrick Series

The Herrick series consists of somewhat poorly drained, moderately slowly permeable soils on broad, low ridges in the uplands. These soils formed in loess. Slope ranges from 0 to 2 percent.

Typical pedon of Herrick silt loam, 1,260 feet south and 60 feet west of the northeast corner of sec. 1, T. 11 N., R. 3 W.

Ap1—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate very fine granular structure; very friable; common fine and very fine roots; common wormcasts and worm channels; very dark gray (10YR 3/1) organic coatings on faces of peds and lining channels; light brownish gray (10YR 6/2 dry) silt coatings and common very fine concretions of iron and manganese oxide on the surface; slightly acid; clear wavy boundary.

Ap2—7 to 11 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak coarse subangular blocky structure parting to weak fine granular; very friable; few fine and medium roots; common wormcasts and worm channels; few faint very dark gray (10YR 3/1) organic coatings lining channels; few very fine accumulations of iron and manganese oxide; slightly acid; abrupt smooth boundary.

E—11 to 15 inches; very dark grayish brown (10YR 3/2) silt loam, gray (10YR 5/1) dry; discontinuous weak thick platy structure parting to weak medium granular; friable; few fine roots; few medium worm channels; continuous grayish brown (10YR 5/2) silt coatings on faces of all peds, light gray (10YR 7/1) dry; few fine concretions of iron and manganese oxide and common soft yellowish brown accumulations that streak with tools on cut faces; medium acid; clear smooth boundary.

Bt1—15 to 19 inches; dark grayish brown (10YR 4/2) silty clay loam; few very fine distinct faint yellowish brown (10YR 5/4) mottles; weak very fine and fine prismatic structure parting to moderate fine and medium subangular blocky; friable; few fine roots; thin discontinuous very dark grayish brown (10YR 3/2) clay and organic films on horizontal and vertical faces of peds; continuous light gray (10YR 7/1 dry) silt coatings on faces of all peds; few fine concretions and stains of iron and manganese oxide; medium acid; clear smooth boundary.

Bt2—19 to 25 inches; brown (10YR 5/3) silty clay loam; common fine distinct yellowish brown (10YR 5/6) and brown (7.5YR 4/4) and few fine faint grayish brown (10YR 5/2) mottles; moderate medium prismatic structure parting to moderate medium subangular and angular blocky; firm; few fine and very fine roots, dominantly in the cracks between peds; thin continuous very dark grayish brown (10YR 3/2) and dark brown (10YR 4/3) clay films on vertical and horizontal faces of peds; nearly continuous very dark gray (10YR 3/1) organic coatings on faces of peds; few fine concretions of iron and manganese oxide; medium acid; gradual smooth boundary.

Bt3—25 to 35 inches; yellowish brown (10YR 5/6) silty clay loam; common medium prominent and distinct brown (7.5YR 4/4) and few fine distinct grayish brown (10YR 5/2) mottles; moderate medium and coarse prismatic structure parting to weak coarse subangular blocky; very firm; few fine and very fine roots, dominantly in the cracks between peds; medium continuous very dark gray (10YR 3/1) clay and organic films on vertical and horizontal faces of peds; few concretions of iron and manganese oxide; medium acid; gradual smooth boundary.

Bt4—35 to 47 inches; yellowish brown (10YR 5/6) silty clay loam; common fine prominent and distinct grayish brown (2.5Y 5/2) mottles; moderate coarse prismatic structure parting to weak coarse

subangular blocky; firm; few very fine roots; few very fine continuous vertical tubular pores; thin very dark grayish brown (10YR 3/2) clay films, which are continuous on vertical faces of peds and in pores and are discontinuous on horizontal faces of peds; strongly acid; clear smooth boundary.

Bt1—9 to 15 inches; dark yellowish brown (10YR 4/4) clay loam; moderate fine subangular blocky structure; firm; few very fine and few fine roots; few faint brown (10YR 4/3) clay films on faces of peds;

Ipava Series

The Ipava series consists of somewhat poorly drained, moderately slowly permeable soils on low, broad ridges in the uplands. These soils formed in loess. Slope ranges from 0 to 2 percent.

Typical pedon of Ipava silt loam, 2,140 feet west and 186 feet south of the northeast corner of sec. 19, T. 14 N., R. 1 E.

Ap—0 to 9 inches; black (10YR 2/1) silt loam, dark gray (10YR 4/1) dry; moderate fine granular structure; friable; few very fine roots; medium acid; abrupt smooth boundary.

A—9 to 18 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; moderate fine granular structure; friable; few very fine roots; common distinct black (10YR 2/1) organic coatings on faces of peds; medium acid; clear smooth boundary.

Bt1—18 to 24 inches; brown (10YR 5/3) silty clay loam; many fine distinct yellowish brown (10YR 5/6), few yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few very fine roots; few prominent dark grayish brown (10YR 4/2) clay films lining root channels; few fine concretions of iron and manganese oxide; neutral; clear smooth boundary.

Cg—58 to 62 inches; light brownish gray (2.5Y 6/2) silt loam; many medium prominent strong brown (7.5Y 5/8) and common medium prominent yellowish brown (10YR 5/6) mottles; massive; friable; few very fine roots; few prominent dark grayish brown (10YR 4/2) clay films lining root channels; few fine concretions of iron and manganese oxide; moderately alkaline.

The solum ranges from 40 to more than 62 inches in

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oxide; very strongly acid; clear smooth boundary.
Btg3—29 to 39 inches; grayish brown (10YR 5/2) silty clay loam; many medium prominent yellowish brown (10YR 5/8) and few fine faint light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; firm; few very fine roots; few faint

A—0 to 4 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; friable; few very fine roots; slightly acid; clear smooth boundary.
E—4 to 8 inches; brown (10YR 4/3) loam; weak thin platy structure; friable; few very fine roots; medium

Ap—0 to 8 inches; grayish brown (10YR 5/2) silt loam, pale brown (10YR 6/3) dry; weak very fine granular structure; friable; common very fine roots; few fine concretions of iron and manganese oxide; slightly acid; abrupt smooth boundary.

Bt1—8 to 12 inches; yellowish brown (10YR 5/4) silt loam; moderate very fine subangular blocky structure; firm; few very fine roots; common faint brown (10YR 4/3) clay films and few distinct light gray (10YR 7/2 dry) silt coatings on faces of peds; common fine concretions of iron and manganese oxide; slightly acid; clear smooth boundary.

Bt2—12 to 17 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine subangular blocky structure; firm; few very fine roots; common faint brown (10YR 4/3) clay films on faces of peds; common fine concretions of iron and manganese oxide; strongly acid; clear smooth boundary.

Bt3—17 to 25 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine and medium subangular blocky structure; firm; few very fine roots; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; common fine concretions of iron and manganese oxide; very strongly acid; clear smooth boundary.

Bt4—25 to 33 inches; yellowish brown (10YR 5/4) silty clay loam; few fine distinct light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; firm; few very fine roots; few faint dark yellowish brown (10YR 4/4) clay films on faces of peds; common fine concretions of iron and manganese oxide; very strongly acid; clear smooth boundary.

Bt5—33 to 44 inches; yellowish brown (10YR 5/4) silty clay loam; few fine distinct light brownish gray (10YR 6/2) and common fine distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; few very fine roots; few faint brown (10YR 5/3) clay films on faces of peds; common fine concretions of iron and manganese oxide; very strongly acid; clear smooth

sandy loam; few fine distinct grayish brown (10YR 5/2) and few fine distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few very fine roots; few faint dark yellowish brown (10YR 4/4) clay films on faces of peds; few fine concretions of iron and manganese oxide; strongly acid; clear smooth boundary.

2BC—56 to 60 inches; yellowish brown (10YR 5/6) loamy fine sand; weak medium subangular blocky structure; very friable; strongly acid.

The solum ranges from 45 to more than 60 inches in thickness. The loess ranges from 40 to 60 inches in thickness.

The Ap horizon has value of 4 or 5 and chroma of 2 or 3. The Bt and 2Bt horizons have value of 4 or 5 and chroma of 4 to 6. The Bt horizon is silty clay loam or clay loam. The 2Bt horizon is fine sandy loam or loamy fine sand. The content of clay in the control section ranges from 20 to 35 percent.

Oconee Series

The Oconee series consists of somewhat poorly drained, slowly permeable soils on ridges and knolls in the uplands. These soils formed in loess. Slope ranges from 0 to 5 percent.

Typical pedon of Oconee silt loam, 0 to 2 percent slopes, 700 feet west and 168 feet south of the northeast corner of sec. 36, T. 12 N., R. 1 E.

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, brown (10YR 5/3) dry; weak fine granular structure; friable; few very fine roots; neutral; abrupt smooth boundary.

E1—7 to 11 inches; grayish brown (10YR 5/2) silt loam mixed with some very dark grayish brown (10YR 3/2) silt loam; moderate thin and medium platy structure; friable; few very fine roots; few fine concretions of iron and manganese oxide; neutral;

peds and few faint very dark grayish brown (10YR 3/2) clay films lining root channels; common fine concretions of iron and manganese oxide; strongly acid; clear smooth boundary.

Bt2—20 to 32 inches; grayish brown (10YR 5/2) silty clay; common fine distinct yellowish brown (10YR 5/6) and common fine faint grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; firm; few very fine roots; common faint dark grayish brown (10YR 4/2) clay films on faces of peds and few faint very dark grayish brown (10YR 3/2) clay films lining root channels; common fine concretions of iron and manganese oxide; very strongly acid; clear smooth boundary.

Btg1—32 to 44 inches; grayish brown (10YR 5/2) silty clay loam; common fine faint brown (10YR 5/3) and common fine distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few very fine roots; common faint dark grayish brown (10YR 4/2) clay films on faces of peds and few faint very dark grayish brown (10YR 3/2) clay films lining root channels; common fine concretions of iron and manganese oxide; very strongly acid; clear smooth boundary.

Btg2—44 to 54 inches; light brownish gray (10YR 6/2) silty clay loam; common fine distinct yellowish brown (10YR 5/6) and few fine distinct brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; firm; few very fine roots; common faint dark grayish brown (10YR 4/2) and grayish brown (10YR 5/2) clay films on faces of peds and few distinct very dark grayish brown (10YR 3/2) clay films lining root channels; common fine concretions of iron and manganese oxide; very strongly acid; clear smooth boundary.

BC—54 to 62 inches; light brownish gray (10YR 6/2) silt loam; common fine prominent yellowish brown (10YR 5/8) and common fine distinct brownish yellow (10YR 6/6) mottles; weak medium subangular blocky structure; friable; few very fine roots; few faint dark grayish brown (10YR 4/2) clay films on faces of peds and few distinct very dark grayish brown (10YR 3/2) clay films lining root channels; few fine concretions of iron and manganese oxide; strongly acid.

The solum ranges from 40 to more than 60 inches in thickness. The Ap horizon has value of 2 or 3 and chroma of 1 or 2. The E horizon has value of 4 to 6 and chroma of 1 or 2. The Bt horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4. It is silty clay loam or silty clay. The content of clay in the control section ranges from 35 to 42 percent.

Pana Series

The Pana series consists of well drained, moderately rapidly permeable soils on narrow ridgetops and side slopes in the uplands. These soils formed in glacial drift. Slope ranges from 5 to 10 percent.

The Pana soils in this survey area have a dark surface soil that is thinner than is definitive for the series. This difference, however, does not significantly affect the use and management of the soils.

Typical pedon of Pana loam, 5 to 10 percent slopes, eroded, 1,815 feet east and 1,089 feet north of the southwest corner of sec. 27, T. 11 N., R. 1 W.

Ap—0 to 9 inches; mixed very dark grayish brown (10YR 3/2) and dark brown (7.5YR 4/4) loam, brown (10YR 5/3) dry; weak fine granular structure; friable; common very fine and few fine roots; strongly acid; gravel covering about 5 percent of the surface; abrupt smooth boundary.

Bt1—9 to 15 inches; dark brown (7.5YR 4/4) silt loam; moderate very fine and fine subangular blocky structure; firm; few very fine roots; many distinct dark brown (10YR 4/3) clay films and few distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; strongly acid; clear smooth boundary.

Bt2—15 to 25 inches; dark brown (7.5YR 4/4) silt loam; moderate fine subangular blocky structure; firm; few very fine roots; common distinct dark brown (10YR 4/3 and 3/3) clay films on faces of peds; strongly acid; clear smooth boundary.

Bt3—25 to 32 inches; dark brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure; firm; few very fine roots; common distinct dark brown (10YR 4/3) and very few distinct dark brown (10YR 3/3) clay films on faces of peds; strongly acid; clear smooth boundary.

Bt4—32 to 49 inches; dark brown (7.5YR 4/4) loam; moderate medium and coarse subangular blocky structure; firm; few very fine roots; few distinct dark brown (10YR 3/3) clay films lining pores; strongly acid; clear smooth boundary.

BC—49 to 60 inches; dark brown (7.5YR 4/4) loam; weak coarse subangular blocky structure; firm; strongly acid.

The solum ranges from 50 to more than 60 inches in thickness. The Ap horizon has value and chroma of 2 or 3. It is loam or clay loam. The Bt horizon has hue of 7.5YR or 5YR, value of 3 to 6, and chroma of 2 to 5. It is silt loam, clay loam, or gravelly clay loam. The content of clay in the control section ranges from 18 to 33 percent.

Piasa Series

The Piasa series consists of poorly drained, very slowly permeable soils on broad flats in the uplands. These soils formed in loess. Slope ranges from 0 to 2 percent.

Typical pedon of Piasa silt loam, 1,782 feet east and 132 feet north of the center of sec. 22, T. 11 N., R. 1 W.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, gray (10YR 5/1) dry; weak fine subangular blocky structure parting to weak fine granular; friable; few very fine roots; neutral; abrupt smooth boundary.

E—9 to 14 inches; dark grayish brown (10YR 4/2) silt loam; weak medium platy structure parting to weak fine subangular blocky; friable; few very fine roots; common faint very dark grayish brown (10YR 3/2) organic coatings on faces of peds; mildly alkaline; clear smooth boundary.

Btg1—14 to 26 inches; dark grayish brown (2.5Y 4/2) silty clay loam; few fine distinct dark yellowish brown (10YR 4/4) mottles; weak coarse prismatic structure; friable; few very fine roots; common distinct very dark gray (10YR 3/1) and dark gray (10YR 4/1) clay films on faces of peds; few fine rounded concretions of iron and manganese oxide; common coarse concretions of calcium carbonate; moderately alkaline; gradual smooth boundary.

Btg2—26 to 36 inches; dark grayish brown (2.5Y 4/2) silty clay loam; few fine faint grayish brown (2.5Y 5/2) and few fine distinct dark yellowish brown (10YR 4/4) mottles; weak coarse prismatic structure parting to weak fine subangular blocky; firm; few very fine roots; common distinct dark gray (10YR

manganese oxide; strongly alkaline; clear smooth boundary.

Cg—53 to 60 inches; light brownish gray (2.5Y 6/2) silt loam; few fine prominent yellowish brown (10YR 5/8) mottles; massive; friable; few fine rounded concretions of iron and manganese oxide; moderately alkaline.

The solum ranges from 40 to more than 60 inches in thickness. Depth to the natric horizon ranges from 12 to 20 inches.

The Ap horizon has value of 2 or 3 and chroma of 1 or 2. The E horizon has value of 4 or 5 and chroma of 1 or 2. The Btg horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 or 2. It is silty clay loam or silty clay. The Cg horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 or 2. The content of clay in the control section ranges from 35 to 43 percent.

Plano Series

The Plano series consists of moderately well drained, moderately permeable soils on convex ridgetops and side slopes in the uplands. These soils formed in loess and in the underlying stratified, loamy outwash. Slope ranges from 1 to 5 percent.

Typical pedon of Plano silt loam, 1 to 5 percent slopes, 840 feet west and 2,600 feet north of the southeast corner of sec. 25, T. 14 N., R. 1 E.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; common very fine roots; neutral; abrupt smooth boundary.

dark brown (10YR 4/3) clay films on faces of peds; few fine concretions of iron and manganese oxide; slightly acid; clear smooth boundary.

silt loam, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; common very fine roots; very strongly acid; clear smooth boundary.

content of clay in the control section ranges from 22 to 35 percent.

Radford Series

The Radford series consists of somewhat poorly drained, moderately permeable soils on flood plains. These soils formed in silty alluvium overlying an older, buried soil. Slope ranges from 0 to 2 percent.

Typical pedon of Radford silt loam, frequently flooded, 2,178 feet west and 1,155 feet north of the southeast corner of sec. 8, T. 12 N., R. 2 W.

Ap—0 to 8 inches; very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; very dark grayish brown (10YR 3/2) spots; weak fine granular structure; friable; common fine concretions of iron and manganese oxide; few very fine roots; mildly alkaline; clear smooth boundary.

A—8 to 11 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; few fine faint dark grayish brown (10YR 4/2) mottles; weak fine granular structure; friable; common fine concretions of iron and manganese oxide; few very fine roots; mildly alkaline; clear smooth boundary.

C—11 to 24 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; thin, parallel, platy layers of dark grayish brown (10YR 4/2) material; weak fine granular structure; friable; common fine concretions of iron and manganese

The Ap horizon has value of 2 or 3 and chroma of 1 or 2. The C horizon has value of 2 to 4 and chroma of 1 or 2. The Ab horizon has value of 2 to 5 and chroma 0 or 1. The content of clay in the control section ranges from 18 to 35 percent.

Ross Series

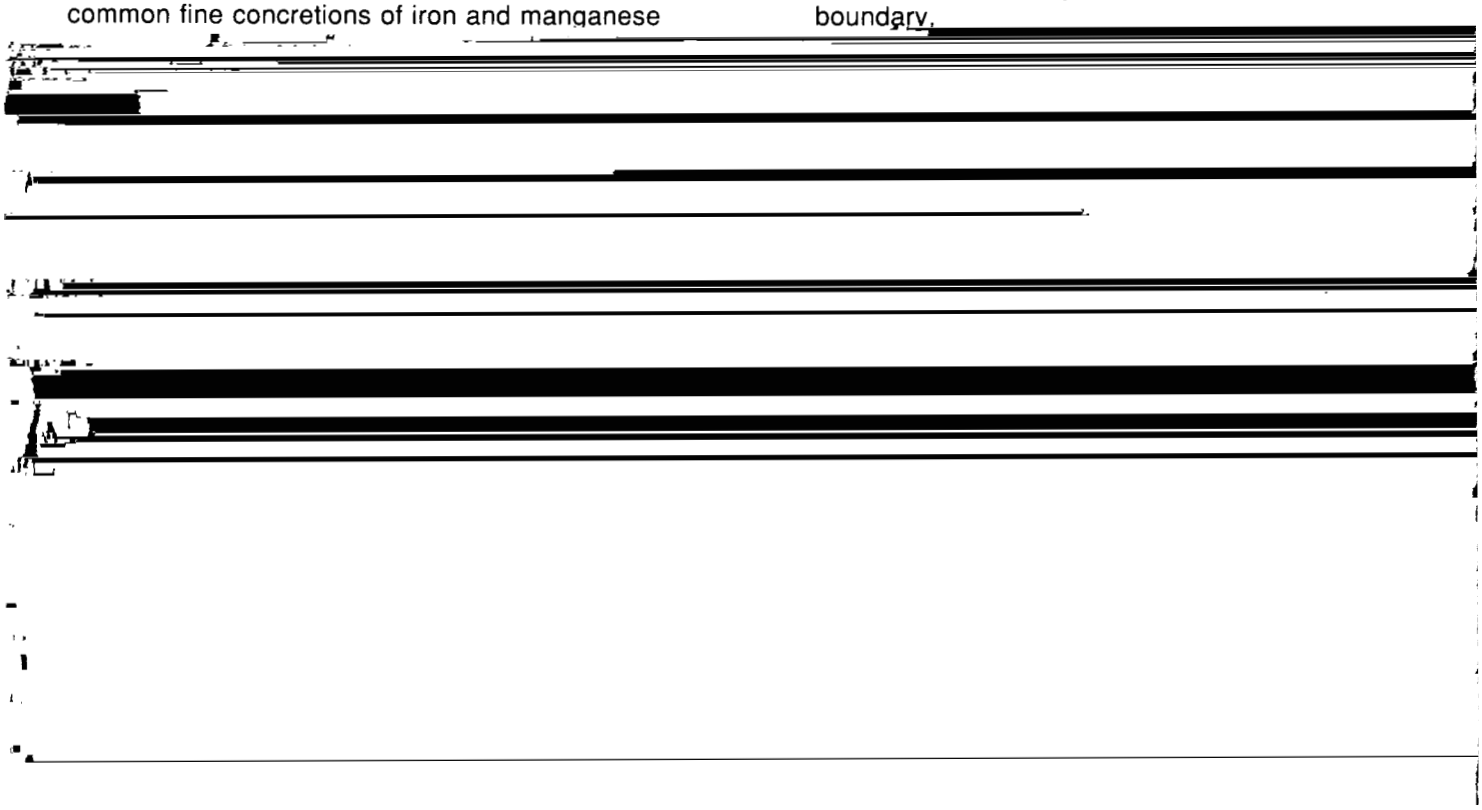
The Ross series consists of well drained, moderately permeable soils on flood plains. These soils formed in alluvium. Slope ranges from 0 to 2 percent.

Typical pedon of Ross silty clay loam, frequently flooded, 840 feet north and 400 feet west of the southeast corner of sec. 19, T. 16 N., R. 1 W.

Ap—0 to 10 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; moderate fine granular structure; friable; few very fine roots; neutral; abrupt smooth boundary.

AB—10 to 15 inches; very dark grayish brown (10YR 3/2) silt loam, brown (10YR 5/3) dry; moderate medium subangular blocky structure; friable; few very fine roots; mildly alkaline; clear smooth boundary.

Bw1—15 to 26 inches; very dark grayish brown (10YR 3/2) loam, brown (10YR 5/3) dry; few thin strata of dark brown (10YR 3/3) fine sandy loam; moderate medium subangular blocky structure; friable; few very fine roots; mildly alkaline; clear smooth boundary.



The mollic epipedon ranges from 24 to 40 inches in thickness.

The Ap horizon has value of 2 or 3 and chroma of 1 or 2. The Bw horizon has value of 3 to 5 and chroma of 2 to 4. The C horizon has value of 4 to 6 and chroma of 2 to 4. It is stratified loam and fine sandy loam. The content of clay in the control section ranges from 18 to 32 percent.

Rozetta Series

The Rozetta series consists of moderately well drained, moderately permeable soils on ridges and side slopes in the uplands. These soils formed in loess. Slope ranges from 2 to 5 percent.

Typical pedon of Rozetta silt loam, 2 to 5 percent slopes, 495 feet west and 528 feet south of the northeast corner of sec. 9, T. 14 N., R. 3 W.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) and brown (10YR 4/3) silt loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; friable; common very fine roots; few fine rounded concretions of iron and manganese oxide; medium acid; clear smooth boundary.

Bt1—9 to 15 inches; brown (10YR 4/3) silty clay loam; moderate fine subangular blocky structure; firm; few very fine roots; many faint dark brown (10YR 4/3) clay films on faces of peds; few fine rounded concretions of iron and manganese oxide; medium acid; clear smooth boundary.

Bt2—15 to 22 inches; dark yellowish brown (10YR 4/4) silty clay loam; few fine distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular subangular blocky structure; firm; few very fine roots; few faint brown (10YR 4/3) clay films on faces of peds and common faint dark grayish brown (10YR 4/2) clay films lining pores; strongly acid; clear smooth boundary.

C—53 to 60 inches; yellowish brown (10YR 5/4) silt loam; many fine and medium distinct yellowish brown (10YR 5/6), few fine distinct dark yellowish brown (10YR 4/6), and few fine distinct light brownish gray (10YR 6/2) mottles; massive; friable; common fine accumulations of iron and manganese oxide; medium acid.

The solum ranges from 40 to more than 60 inches in thickness. The Ap horizon has value of 4 or 5 and chroma of 2 or 3. The Bt horizon has value of 4 or 5 and chroma of 3 or 4. The C horizon has value of 4 or 5 and chroma of 2 to 4. The content of clay in the control section ranges from 27 to 35 percent.

Sable Series

The Sable series consists of poorly drained, moderately permeable soils on broad flats in the uplands. These soils formed in loess. Slope ranges from 0 to 2 percent.

Typical pedon of Sable silty clay loam, 1,089 feet east and 132 feet north of the southwest corner of sec. 35, T. 16 N., R. 1 W.

Ap—0 to 8 inches; very dark gray (N 3/0) silty clay loam, very dark grayish brown (10YR 3/2) dry; moderate fine and medium granular structure; firm; common very fine roots; neutral; clear smooth

peds; few fine rounded concretions of iron and manganese oxide; neutral; clear smooth boundary.

Btg1—20 to 26 inches; grayish brown (2.5Y 5/2) silty clay loam; few fine prominent dark yellowish brown (10YR 4/6) and common fine distinct olive brown (2.5Y 5/4) mottles; weak fine [illegible]

Typical pedon of Sawmill silty clay loam, frequently flooded, 66 feet east and 495 feet north of the center of sec. 30, T. 16 N., R. 1 W.

Ap—0 to 7 inches; very dark gray (10YR 3/1) silty clay loam, dark gray (10YR 4/1) dry; weak fine granular

thickness. The mollic epipedon is 24 to 36 inches thick.

The Ap horizon has hue of 10YR or 2.5Y or is neutral in hue. It has value of 2 or 3 and chroma of 0 to 2. The Bg horizon has hue of 10YR, 2.5Y, or 5Y or is neutral in hue. It has value of 4 or 5 and chroma of 0 to 2. The content of clay in the control section ranges from 27 to 35 percent.

Shiloh Series

The Shiloh series consists of poorly drained, moderately slowly permeable soils in depressions in the uplands. These soils formed in loess. Slope ranges from 0 to 2 percent.

Typical pedon of Shiloh silty clay loam, 2,600 feet east and 132 feet south of the northwest corner of sec. 34, T. 16 N., R. 1 W.

Ap—0 to 7 inches; black (10YR 2/1) silty clay loam, dark gray (10YR 4/1) dry; moderate fine granular structure; firm; few very fine roots; few fine concretions of iron and manganese oxide; slightly acid; abrupt smooth boundary.

A—7 to 15 inches; black (N 2/0) silty clay loam, very dark gray (10YR 3/1) dry; moderate very fine subangular blocky structure; firm; few very fine roots; few fine concretions of iron and manganese oxide; neutral; clear smooth boundary.

Bg1—15 to 27 inches; black (N 2/0) silty clay, very dark gray (10YR 3/1) dry; moderate very fine angular blocky structure; firm; few very fine roots; few fine concretions of iron and manganese oxide; neutral; clear smooth boundary.

Bg2—27 to 32 inches; olive gray (5Y 5/2) silty clay; few fine prominent yellowish brown (10YR 5/6) mottles; moderate fine subangular blocky structure; firm; few very fine roots; many prominent very dark gray (10YR 3/1) pressure faces on peds; neutral; clear smooth boundary.

Bg3—32 to 39 inches; olive gray (5Y 5/2) silty clay loam; many fine prominent yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; few very fine roots; many distinct dark grayish brown (10YR 4/2) pressure faces on peds; few prominent very dark gray (10YR 3/1) organic coatings lining pores; few fine concretions and manganese oxide; neutral; clear smooth boundary.

BCg—52 to 60 inches; olive gray (5Y 5/2) silt loam; many medium prominent yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few very fine roots; few prominent very dark gray (10YR 3/1) organic coatings lining pores; neutral.

The solum ranges from 45 to more than 60 inches in thickness. The mollic epipedon is 24 to 36 inches thick.

The Ap and A horizons have hue of 10YR or 2.5Y or are neutral in hue. They have value of 2 or 3 and chroma of 0 to 2. They are silty clay loam or silty clay. The Bg horizon has hue of 10YR, 2.5Y, or 5Y or is neutral in hue. It has value of 2 to 6 and chroma of 0 to 2. It is silty clay or silty clay loam. The content of clay in the control section ranges from 35 to 45 percent.

Tama Series

The Tama series consists of moderately well drained, moderately permeable soils on ridges and side slopes in the uplands. These soils formed in loess. Slope ranges from 1 to 5 percent.

Typical pedon of Tama silt loam, 1 to 5 percent slopes, 2,445 feet west and 300 feet south of the northeast corner of sec. 34, T. 16 N., R. 1 W.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure parting to weak fine granular; friable; few very fine roots; slightly acid; abrupt smooth boundary.

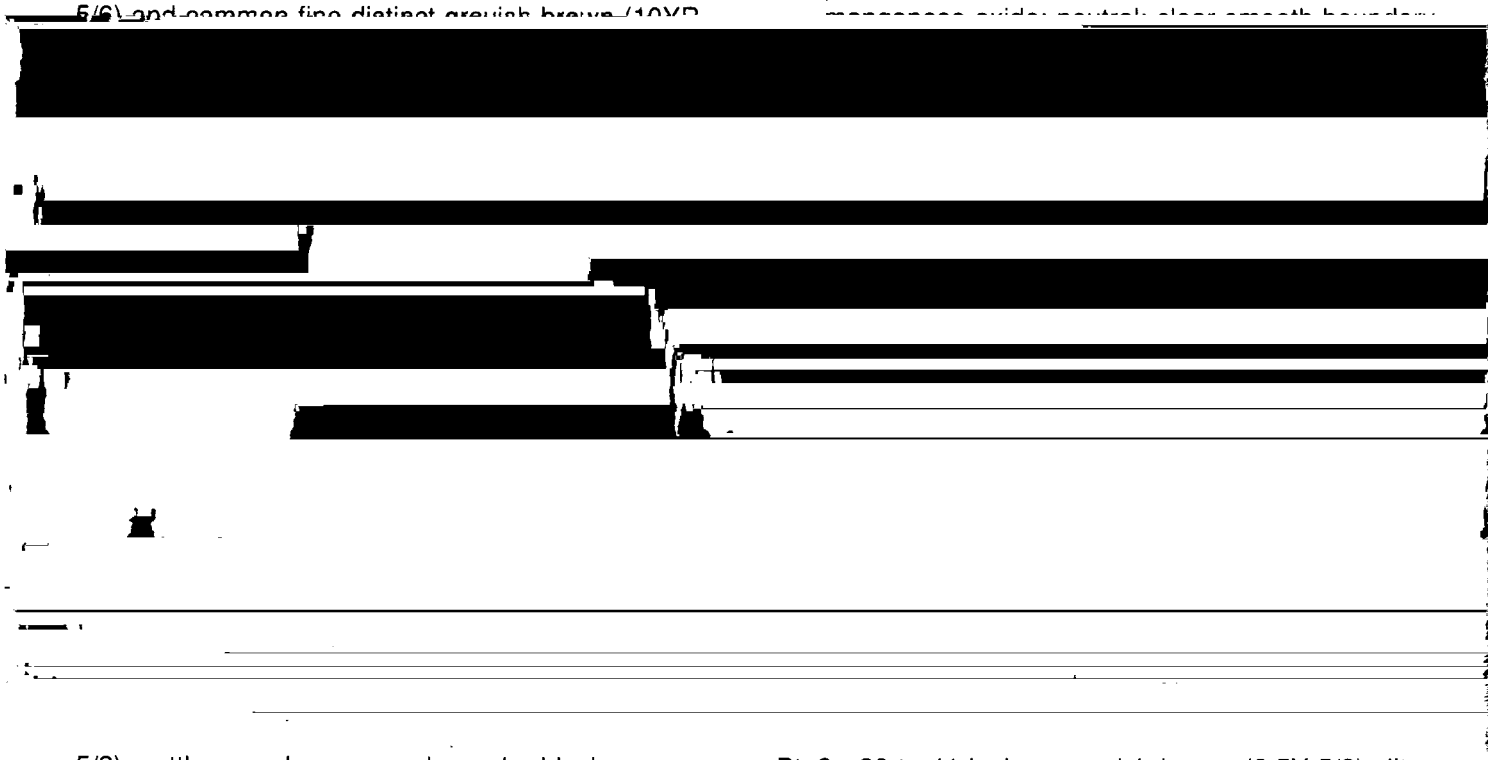
AB—9 to 14 inches; very dark grayish brown (10YR 3/2) silty clay loam, very dark grayish brown (10YR 3/2) dry; moderate fine and medium subangular blocky structure; friable; few very fine roots; slightly acid; clear smooth boundary.

Bt1—14 to 21 inches; brown (10YR 4/3) silty clay loam; moderate fine subangular blocky structure; friable; few very fine roots; many distinct very dark gray (10YR 3/1) clay films on faces of peds; slightly acid; clear smooth boundary.

Bt2—21 to 29 inches; brown (10YR 4/3) silty clay loam; few fine distinct yellowish brown (10YR 5/6) and few

common fine faint brown (10YR 5/3) mottles; weak medium prismatic structure parting to weak medium subangular blocky; friable; few very fine roots; common faint very dark grayish brown (10YR 3/2) clay films on faces of peds; few fine concretions of iron and manganese oxide; neutral; clear smooth boundary.

BC—41 to 52 inches; yellowish brown (10YR 5/4) silt loam; few medium distinct yellowish brown (10YR 5/6) and common fine distinct grayish brown (10YR



5/2) mottles; weak coarse subangular blocky structure; friable; few very fine roots; few fine concretions of iron and manganese oxide; neutral; clear smooth boundary.

C—52 to 60 inches; yellowish brown (10YR 5/4) silt loam; few medium distinct yellowish brown (10YR 5/6) and common fine distinct grayish brown (10YR 5/2) mottles; massive; friable; few very fine roots; few fine concretions of iron and manganese oxide; mildly alkaline.

The solum ranges from 36 to more than 60 inches in thickness. The mollic epipedon ranges from 10 to 20 inches in thickness. The Ap horizon has chroma of 1 or

platy structure; friable; few very fine roots; few fine and medium concretions of iron and manganese oxide; slightly acid; clear smooth boundary.

Btg1—23 to 30 inches; gray (5Y 5/1) silty clay loam; common fine prominent yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; few very fine roots; common distinct dark gray (10YR 4/1) clay films on faces of peds; common fine concretions of iron and

Btg2—30 to 41 inches; grayish brown (2.5Y 5/2) silty clay loam; common fine prominent yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; few very fine roots; common distinct dark gray (5Y 4/1) clay films on faces of peds; neutral; clear smooth boundary.

Btg3—41 to 54 inches; grayish brown (2.5Y 5/2) silty clay loam; common fine prominent yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; few very fine roots; few distinct dark gray (5Y 4/1) clay films on faces of peds; common medium and large concretions of iron and manganese oxide; neutral; clear smooth boundary.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; weak fine granular structure; firm; few very fine roots; few fine concretions of iron and manganese oxide; slightly acid; abrupt smooth boundary.

A—8 to 14 inches; very dark grayish brown (10YR 3/2) [illegible] silty clay loam, grayish brown (10YR 5/2) dry; few fine faint brown (10YR 4/3) mottles; weak fine and medium granular structure; firm; few very fine roots; few distinct very dark gray (10YR 3/1) organic coatings on faces of peds; few fine concretions of iron and manganese oxide; slightly acid; clear smooth boundary.

BA—14 to 19 inches; brown (10YR 4/3) silty clay loam; common fine distinct yellowish brown (10YR 5/6) mottles; weak fine subangular blocky structure; firm; few very fine roots; few distinct very dark gray (10YR 3/1) organic coatings lining pores and common faint very dark grayish brown (10YR 3/2) organic coatings on faces of peds; few fine concretions of iron and manganese oxide; medium [illegible] and manganese oxide; medium acid; clear smooth boundary.

BCg—52 to 60 inches; grayish brown (10YR 5/2) silty clay loam; many medium prominent yellowish brown (10YR 5/8) and many medium distinct dark yellowish brown (10YR 4/4) mottles; weak coarse [illegible] subangular blocky structure; firm; very few distinct light gray (10YR 7/1 dry) silt coatings and few faint dark grayish brown (10YR 4/2) clay films on faces of peds; common fine and medium concretions of iron and manganese oxide; about 15 percent sand; slightly acid.

The solum ranges from 30 to more than 60 inches in thickness. The mollic epipedon is 10 to 20 inches thick.

The Ap horizon has value of 2 or 3 and chroma of 1 or 2. The Bw horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 or 3. The content of clay in the control section ranges from 22 to 35 percent.

Virden Series

on faces of peds; few fine accumulations and rounded concretions of iron and manganese oxide; neutral; clear smooth boundary.

Btg3—21 to 29 inches; dark grayish brown (2.5Y 4/2) silty clay loam; common fine distinct light olive brown (2.5Y 5/4) mottles; weak fine prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots; common distinct very dark gray (5Y 3/1) and common faint very dark gray (2.5Y 3/1) clay films on faces of peds; few fine and medium rounded concretions of iron and manganese oxide; neutral; clear smooth boundary.

Btg4—29 to 40 inches; olive gray (5Y 4/2) silty clay loam; common fine prominent light olive brown (2.5Y 5/4) and few fine prominent dark yellowish brown (10YR 4/6) mottles; weak fine prismatic structure parting to moderate medium subangular blocky; firm; few very fine roots; common faint very dark gray (5Y 3/1) and dark gray (5Y 4/1) clay films on faces of peds; few fine accumulations and rounded concretions of iron and manganese oxide; neutral; clear smooth boundary.

BCg—40 to 52 inches; olive gray (5Y 5/2) silty clay loam; common fine prominent dark yellowish brown (10YR 4/6) and few fine prominent light olive brown (2.5Y 5/4) mottles; weak coarse subangular blocky structure; firm; few very fine roots; few faint dark gray (5Y 4/1) clay films on faces of peds; few fine accumulations of iron and manganese oxide; neutral; clear smooth boundary.

Cg—52 to 60 inches; light olive gray (5Y 6/2) silt loam; few fine prominent dark yellowish brown (10YR 4/6) and common medium prominent light olive brown (2.5Y 5/4) mottles; massive; firm; few very fine roots; very few faint dark gray (5Y 4/1) clay films lining pores; few fine accumulations of iron and manganese oxide; neutral.

The solum ranges from 40 to more than 60 inches in thickness. The mollic epipedon ranges from 12 to 24 inches in thickness.

The Ap horizon has value of 2 or 3 and chroma of 1 or 2. The Btg and Cg horizons have hue of 10YR, 2.5Y, or 5Y or are neutral in hue. The Btg horizon has value of 3 to 5 and chroma of 0 to 2. The Cg horizon has value of 4 to 6 and chroma of 0 to 2. It is silt loam or silty clay loam. The content of clay in the control section ranges from 35 to 42 percent.

Formation of the Soils

Soil characteristics are determined by the physical and mineralogical composition of the parent material; the climate under which the soil formed; the plant and animal life on and in the soil; the relief, or lay of the land; and the length of time that the forces of soil formation have acted on the parent material.

Climate and plant and animal life are the active factors of soil formation. They act on the parent material and slowly change it into a natural body that has genetically related horizons. The factors of soil formation are so closely interrelated in their effects on the soil that few generalizations can be made regarding the effects of any one factor unless the effects of the other factors are understood.

Parent Material

Parent material is the geologic material in which a soil forms. Most of the parent material in Christian County is a direct result of the Illinoian and Wisconsinan Glaciations *(11)*. The properties of the parent material vary greatly, depending on the method of deposition. The dominant kinds of parent material in the county are glacial till, glacial outwash, loess, sandy eolian material, and alluvium.

Glacial till is material that was deposited directly by glaciers. It consists of mixed particles of different sizes. Soils that formed in glacial till of Illinoian age generally are on strongly sloping to steep side slopes. An example is Hickory soils.

In some areas a very firm layer that is high in content of clay is in the upper part of the glacial till. This layer is a paleosol that formed when the glacial till was the surface deposit. Loess deposits buried the paleosol. Atlas soils are an example of soils that formed in a thin layer of loess and in the underlying till that has a paleosol.

Glacial outwash was deposited by running water from melting glaciers. The size of the particles in the outwash varies, depending on the speed of the streams

of sandy loam and loam. In most areas it is covered with loess. Camden, Kendall, and Plano are examples of soils that formed in loess and in the underlying outwash. These soils are on stream terraces and uplands along the Sangamon River and its major tributaries.

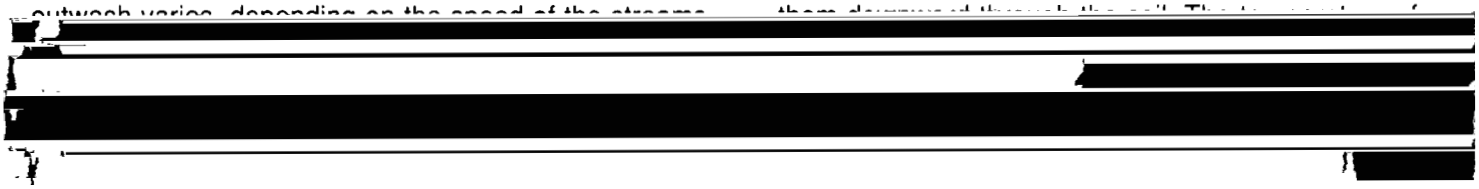
Loess was deposited directly by the wind. It consists of very uniform, silt-sized particles. In Christian County the major sources of loess were the valleys of the Illinois and Mississippi Rivers. Predominantly southwesterly winds picked up the loess from the river valleys and transported it many miles. The thickness of the loess on nearly level uplands ranges from about 10 feet in the northern part of the county to about 4 feet in the southeastern part. Most of the soils on uplands in the county formed in loess. Examples are Ipava, Tama, Sable, and Herrick soils.

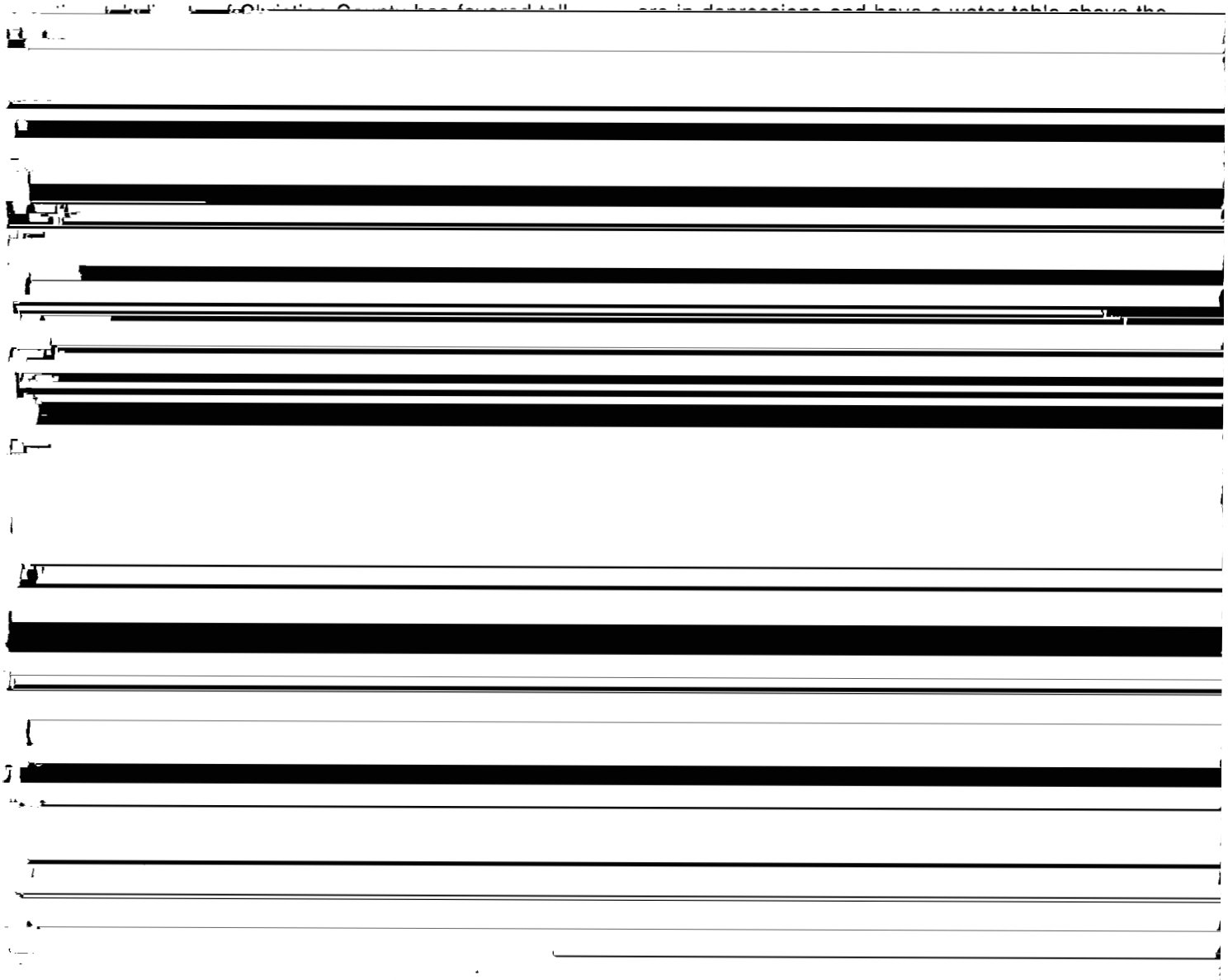
In some areas along the Sangamon River and its major tributaries, Alvin and other soils formed in sandy eolian material. In some areas loess has covered the windblown sandy material. Middletown and Broadwell are examples of soils that formed in loess and in the underlying windblown sandy material in these areas.

Alluvial sediments were deposited mainly during periods of stream overflow. The source of these sediments is material eroded from the uplands. Most of the soils on bottom land are still receiving sediments. Radford, Ross, and Sawmill are examples of soils that formed in alluvial sediments.

Climate

Climate affects soil formation through its effects on weathering, plant and animal life, and erosion. Water from rains and melting snow seeps slowly downward through the soil and causes physical and chemical changes. As the water moves downward, clay is moved from the surface soil to the subsoil, where it accumulates. The water dissolves minerals and moves





prairie grasses and deciduous hardwood forests. It also has favored the accumulation of organic matter in most of the soils.

surface or close to the surface much of the year. The soil pores contain much water, which restricts the circulation of air in the soils. Under these conditions, naturally occurring iron and manganese compounds are chemically reduced. As a result, the subsoil is dull gray

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.

Ablation till. Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Argillic horizon. A subsoil horizon characterized by an accumulation of clay.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Basal till. Compact glacial till deposited beneath the ice.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation-exchange capacity.

Bedding planes. Fine stratifications, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediments.

Bedding system. A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on the contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Blowout. A shallow depression from which all or most of the soil material has been removed by the wind. A blowout has a flat or irregular floor formed by a resistant layer or by an accumulation of pebbles or cobbles. In some blowouts the water table is exposed.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds

capillary water in the soil.

Catena. A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Coarse textured soil. Sand or loamy sand.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused

by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during much of the growing season. The soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, for example, fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay in the soil. The soil is not a source of gravel or sand for construction purposes.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fine textured soil. Sandy clay, silty clay, or clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

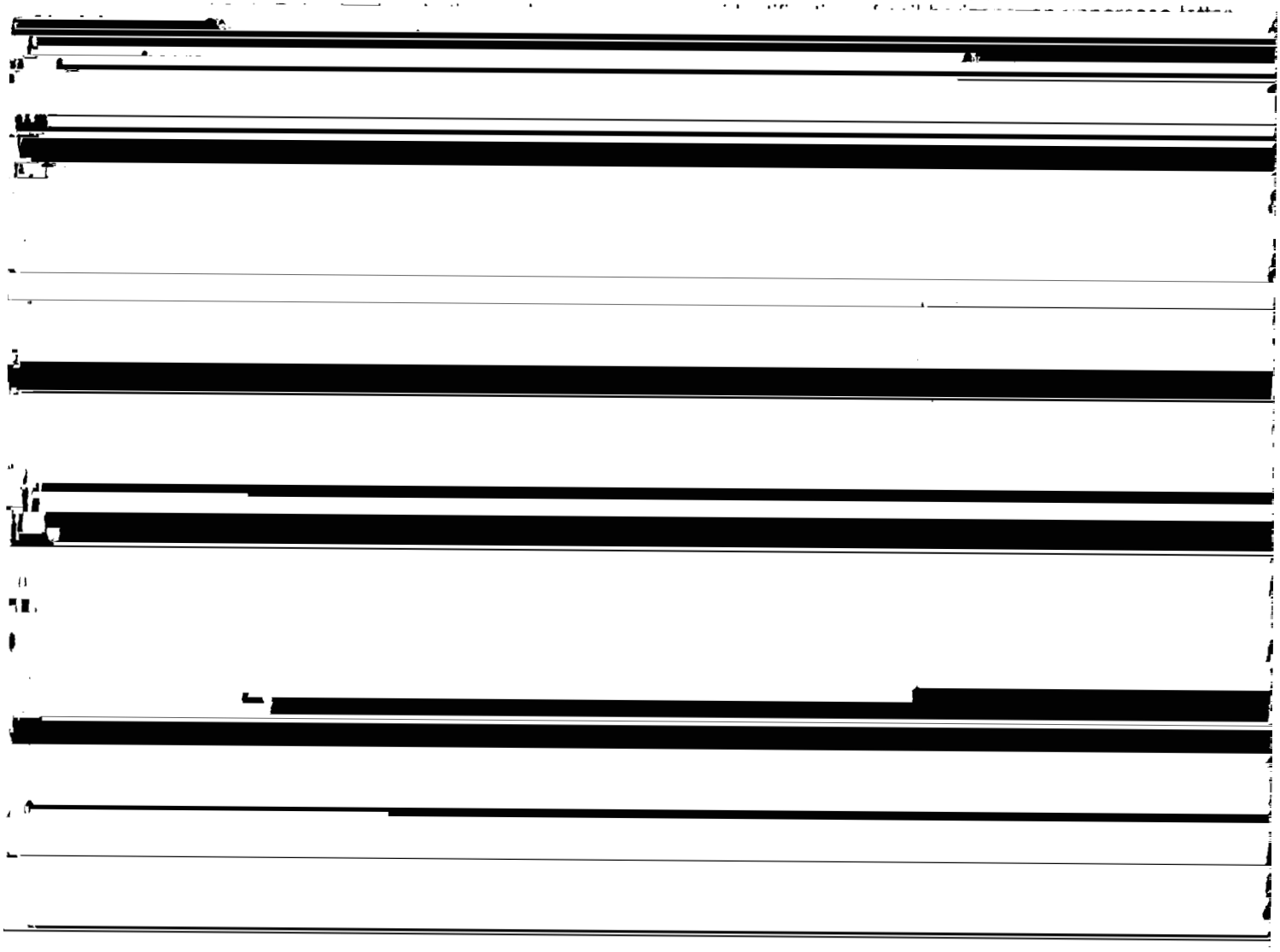
grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water (geology). Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric material.

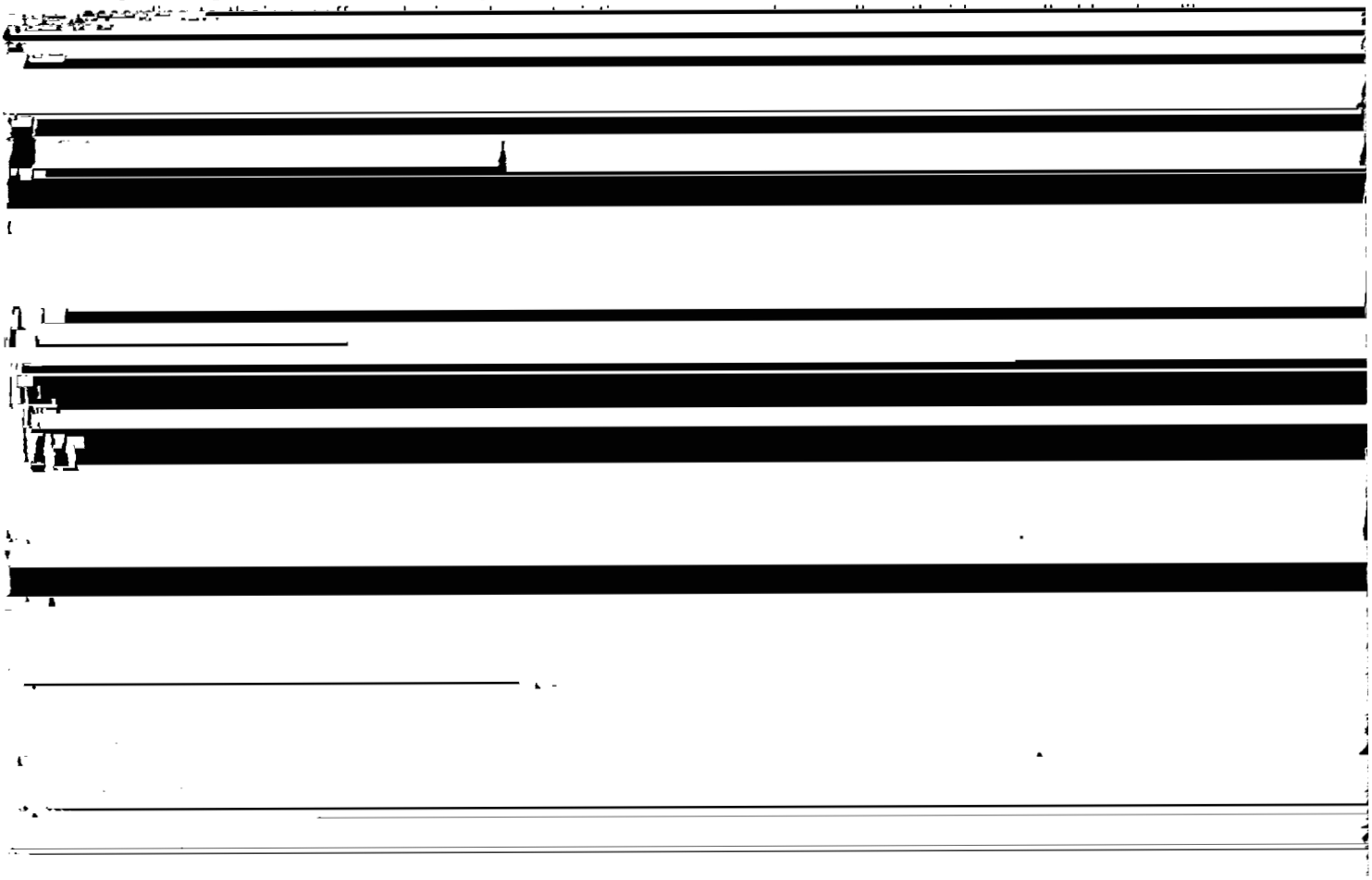
Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the



soil. The bedrock commonly underlies a C horizon but can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped



The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally,

production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled

borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to

production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

generally low in relief.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan.*

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to

same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

sand and not more than 10 percent clay.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

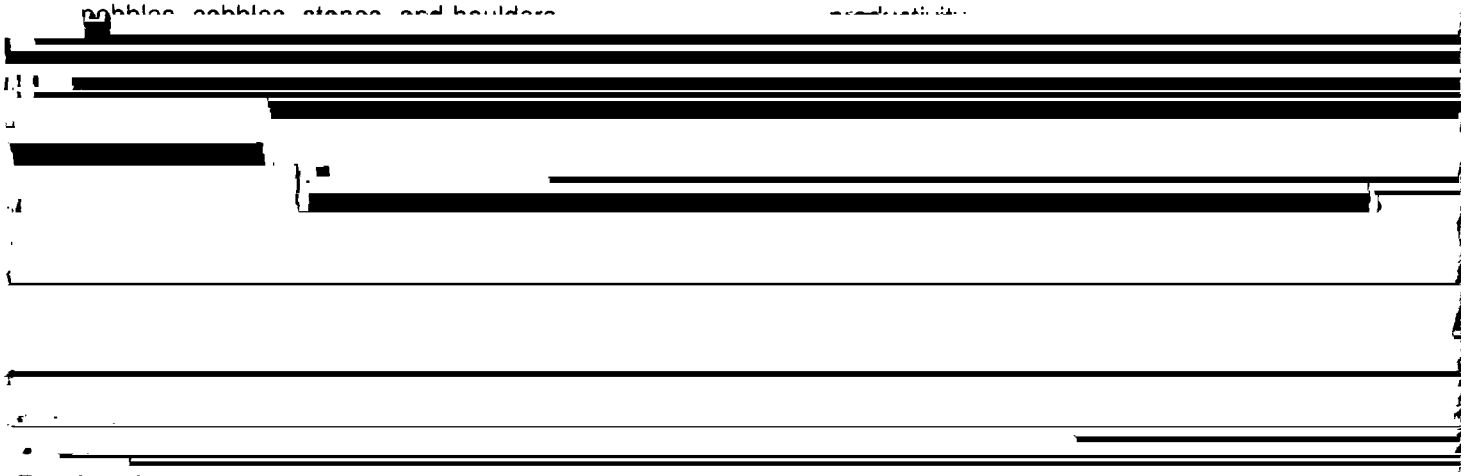
Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil is generally silty or clayey, is slippery when wet, and is low in



Rooting depth (in tables). Shallow root zone. The soil

Slope. The inclination of the land surface from the

[redacted]

extremely small amounts. They are essential to plant growth.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1951-80 at Decatur, Illinois)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January	34.4	17.8	26.1	63	-14	18	1.99	0.61	3.11	4	5.5
February	39.4	22.0	30.7	67	-6	34	2.15	1.05	3.10	5	4.9
March	52.1	32.6	42.4	80	8	171	3.68	2.12	5.07	7	3.5
April	65.2	43.0	54.1	86	23	432	3.71	1.99	5.23	7	.3
May	74.5	52.8	63.6	90	33	735	4.05	2.03	5.82	7	.0
June	83.1	61.6	72.4	95	45	970	3.94	2.01	5.63	6	.0
July	86.3	65.6	76.0	98	51	1,115	4.29	2.50	5.89	6	.0
August	83.8	63.3	73.6	97	48	1,039	3.38	1.63	4.89	5	.0
September	78.0	56.4	67.2	93	37	812	3.26	1.45	4.81	5	.0
October	66.4	45.1	55.7	86	26	489	2.86	1.45	4.09	5	.1
November	52.6	34.9	43.8	77	13	180	3.36	1.56	4.91	6	1.4
December	39.0	23.5	31.3	66	-7	42	3.54	1.46	5.30	5	4.7
Yearly:											
Average	62.9	43.2	53.1	---	---	---	---	---	---	---	---
Extreme	104.0	-21.0	---	99	-15	---	---	---	---	---	---
Total	---	---	---	---	---	6,037	40.21	34.31	45.89	68	20.4

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1951-80 at Decatur, Illinois)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 10	Apr. 20	May 1
2 years in 10 later than--	Apr. 5	Apr. 15	Apr. 26
5 years in 10 later than--	Mar. 26	Apr. 5	Apr. 16
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 26	Oct. 18	Oct. 2
2 years in 10 earlier than--	Oct. 31	Oct. 23	Oct. 8
5 years in 10 earlier than--	Nov. 10	Nov. 2	Oct. 19

TABLE 3.--GROWING SEASON

(Recorded in the period 1951-80 at Decatur, Illinois)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	194	183	159
8 years in 10	202	191	168
5 years in 10	219	207	185
2 years in 10	235	222	202
1 year in 10	244	230	211

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
7C2	Atlas silt loam, 5 to 10 percent slopes, eroded	4,925	1.1
7C3	Atlas silty clay loam, 5 to 10 percent slopes, severely eroded	205	*
8D2	Hickory loam, 10 to 15 percent slopes, eroded	6,495	1.4
8D3	Hickory clay loam, 10 to 15 percent slopes, severely eroded	390	0.1

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
7148	Proctor silt loam, rarely flooded	580	0.1
7242	Kendall silt loam, rarely flooded	340	0.1
8206	Thorp silt loam, occasionally flooded	925	0.2
	Water	4,300	0.9
	Total	458,340	100.0

* Less than 0.1 percent.

TABLE 5.--PRIME FARMLAND

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
17	Keomah silt loam (where drained)
36B	Tama silt loam, 1 to 5 percent slopes
43	Ipava silt loam
45	Denny silt loam (where drained)
46	Herrick silt loam
48	Ebbert silt loam (where drained)
50	Virden silty clay loam (where drained)
67	Harpster silty clay loam (where drained)
68	Sable silty clay loam (where drained)
113A	Oconee silt loam, 0 to 2 percent slopes (where drained)
113B	Oconee silt loam, 2 to 5 percent slopes (where drained)
127B	Harrison silt loam, 2 to 5 percent slopes
128B	Douglas silt loam, 2 to 5 percent slopes
131C2	Alvin fine sandy loam, 4 to 10 percent slopes, eroded
134B	Camden silt loam, 2 to 5 percent slopes
136	Brooklyn silt loam (where drained)
138	Shiloh silty clay loam (where drained)
152	Drummer silty clay loam (where drained)
198	Elburn silt loam
199B	Plano silt loam, 1 to 5 percent slopes
242	Kendall silt loam (where drained)
244	Hartsburg silty clay loam (where drained)
249	Edinburg silty clay loam (where drained)
257	Clarksdale silt loam (where drained)
279B	Rozetta silt loam, 2 to 5 percent slopes
372	Kendall silt loam, sandy substratum (where drained)
386B	Downs silt loam, 2 to 5 percent slopes
684B	Broadwell silt loam, 2 to 5 percent slopes
685B	Middletown silt loam, 2 to 5 percent slopes
3073	Ross silty clay loam, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
3074	Radford silt loam, frequently flooded (where protected from flooding or not frequently flooded during the growing season)
3107	Sawmill silty clay loam, frequently flooded (where drained and either protected from flooding or

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability	Corn	Soybeans	Winter wheat	Oats	Orchardgrass-alfalfa hay	Bromegrass-alfalfa
		Bu	Bu	Bu	Bu	Tons	AUM*
7C2---------- Atlas	IIIe	52	16	19	44	2.2	3.6
7C3---------- Atlas	IVe	43	14	16	36	1.8	3.0
8D2---------- Hickory	IIIe	72	23	26	50	2.7	4.5
8D3---------- Hickory	IVe	66	22	24	---	2.5	4.1
8F---------- Hickory	VIe	---	---	---	---	2.4	4.0
17---------- Keomah	IIw	129	39	52	72	5.2	8.8
27G---------- Miami	VIIe	---	---	---	---	---	---
36B---------- Tama	IIe	153	46	61	88	5.8	9.7
43---------- Ipava	I	163	52	66	91	6.1	10.1
45---------- Denny	IIIw	113	37	47	62	---	---
46---------- Herrick	IIw	141	45	61	---	5.5	9.2
48---------- Ebbert	IIIw	130	42	54	---	---	---
50----------	IIw	138	46	57	72	---	---
67---------- Harpster	IIw	136	44	52	74	---	---
68---------- Sable	IIw	156	51	61	85	---	---
112---------- Cowden	IIw	120	37	53	---	---	---
113A---------- Oconee	IIw	120	36	54	---	5.0	8.3
113B---------- Oconee	IIe	119	36	53	---	4.9	8.2

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Winter wheat	Oats	Orchardgrass-alfalfa hay	Bromegrass-alfalfa
		Bu	Bu	Bu	Bu	Tons	AUM*
127B---------- Harrison	IIe	135	42	58	75	---	8.7
128B---------- Douglas	IIe	134	42	58	75	5.2	8.7
128C2---------- Douglas	IIIe	127	39	55	71	5.0	8.3
131C2---------- Alvin	IIIe	90	35	44	---	3.6	6.6
134B---------- Camden	IIe	124	39	54	71	5.0	8.2
134C2---------- Camden	IIIe	117	37	52	68	4.7	7.8
136---------- Brooklyn	IIw	108	35	44	58	---	---
138---------- Shiloh	IIw	139	46	56	70	---	---
152---------- Drummer	IIw	154	51	61	83	---	9.2
198---------- Elburn	I	161	50	63	94	6.1	10.2
199B---------- Plano	IIe	150	45	59	89	---	9.6
242---------- Kendall	IIw	135	41	55	75	---	8.7
244---------- Hartsburg	IIw	145	47	56	79	---	---
249---------- Edinburg	IIIw	132	43	55	72	---	---
256C2---------- Pana	IIIe	102	33	42	58	3.9	6.6
257---------- Clarksdale	I	140	43	57	79	5.3	8.5
259C2---------- Assumption	IIIe	120	37	52	72	4.7	7.8
264D2---------- El Dara	IVe	78	28	36	50	3.2	5.2
264F---------- El Dara	VIe	---	---	---	---	---	4.8
279B---------- Rozetta	IIe	130	40	53	72	5.1	8.6

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Winter wheat	Oats	Orchardgrass-alfalfa hay	Bromegrass-alfalfa
		Bu	Bu	Bu	Bu	Tons	AUM*
372---------- Kendall	IIw	135	41	55	75	---	8.7
386B---------- Downs	IIe	147	43	58	82	---	9.2
474---------- Piasa	IIIw	77	28	37	48	---	5.2
533**. Urban land							
567C2---------- Elkhart	IIIe	123	37	49	68	4.7	7.9
660C2---------- Coatsburg	IIIe	73	23	25	40	2.9	4.8
684B---------- Broadwell	IIe	144	44	58	83	5.5	9.2
685B---------- Middletown	IIe	116	34	52	71	4.7	7.7
802B. Orthents							
804B. Orthents							
864**, 865**. Pits							
916**---------- Oconee-Darmstadt	IIIw	99	32	47	---	4.1	6.7
995**---------- Herrick-Piasa	IIIw	115	38	51	---	4.4	---
2036B**. Tama-Urban land							
2043**. Ipava-Urban land							
2046**. Herrick-Urban land							
2050**. Virden-Urban land							
2068**. Sable-Urban land							

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Winter wheat	Oats	Orchardgrass-alfalfa hay	Bromegrass-alfalfa
		Bu	Bu	Bu	Bu	Tons	AUM*
2128C**. Douglas-Urban land							
3073---------- Ross	IIw	120	38	---	---	---	---
3074---------- Radford	IIIw	100	32	---	59	---	6.5
3107---------- Sawmill	IIIw	102	33	---	---	---	---
3284---------- Tice	IIIw	138	42	---	---	4.1	6.9
7148---------- Proctor	I	140	42	57	88	5.3	9.0
7242---------- Kendall	IIw	135	41	55	75	---	8.7
8206---------- Thorp	IIw	113	38	---	60	---	---

* Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 7.--CAPABILITY CLASSES AND SUBCLASSES

(Miscellaneous areas are excluded. Absence of an entry indicates no acreage)

Class	Total acreage	Major management concerns (Subclass)		
		Erosion (e)	Wetness (w)	Soil problem (s)
		Acres	Acres	Acres
I	60,385	---	---	---
II	321,734	87,355	234,379	---
III	62,788	28,038	34,750	---
IV	1,415	1,415	---	---
V	---	---	---	---
VI	3,760	3,760	---	---
VII	410	410	---	---
VIII	---	---	---	---

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
7C2, 7C3-------- Atlas	4C	Slight	Slight	Moderate	Moderate	White oak---------- Northern red oak---- Bur oak---------- Green ash----------	70 70 70 ---	4 4 ---	Green ash, pin oak, red maple, Austrian pine.
8D2, 8D3-------- Hickory	5A	Slight	Slight	Slight	Slight	White oak---------- Northern red oak---- Black oak---------- Green ash---------- Bitternut hickory--- Yellow-poplar-------	85 85 --- --- --- 95	5 5 --- --- --- 7	White oak, yellow-poplar, eastern white pine, red pine, sugar maple, black walnut.
8F---------- Hickory	5R	Moderate	Moderate	Slight	Slight	White oak---------- Northern red oak---- Black oak---------- Green ash---------- Bitternut hickory--- Yellow-poplar-------	85 85 --- --- --- 95	5 5 --- --- --- 7	White oak, yellow-poplar, eastern white pine, red pine, sugar maple, black walnut.
17---------- Keomah	3A	Slight	Slight	Slight	Slight	White oak---------- Northern red oak----	65 70	3 4	Eastern white pine, white oak, red pine, northern red oak, black walnut, sugar maple.
27G---------- Miami	5R	Severe	Severe	Slight	Slight	White oak---------- Yellow-poplar------- Sweetgum----------	90 98 76	5 7 5	Yellow-poplar, eastern white pine, red pine, white ash, black walnut.
119C2---------- Elco	4A	Slight	Slight	Slight	Slight	White oak---------- Northern red oak---- Black walnut--------	80 --- ---	4 --- ---	White oak, northern red oak, black walnut, green ash, eastern white pine, white ash.
131C2---------- Alvin	4A	Slight	Slight	Slight	Slight	White oak---------- Northern red oak---- Black walnut-------- Yellow-poplar-------	80 80 --- 90	4 4 --- 6	Green ash, black walnut, yellow-poplar, white oak, eastern white pine, American sycamore, sugar maple.

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
134B, 134C2----- Camden	7A	Slight	Slight	Slight	Slight	Yellow-poplar White oak Northern red oak Sweetgum Green ash	95 85 85 80 76	7 5 5 6 5	Yellow-poplar, white oak, green ash, black walnut, eastern white pine, red pine, black locust, white ash.
242----- Kendall	4A	Slight	Slight	Slight	Slight	White oak Northern red oak	80 80	4 4	White oak, black walnut,
						Yellow-poplar Black walnut	90 ---	6 ---	northern red oak, green ash, eastern white pine, red pine.
264D2----- El Dara	4A	Slight	Slight	Slight	Slight	White oak Northern red oak Yellow-poplar Black walnut	80 80 90 ---	4 4 6 ---	Eastern white pine, black walnut, red pine, yellow-poplar, green ash.
264F----- El Dara	4R	Moderate	Moderate	Slight	Slight	White oak Northern red oak Yellow-poplar Black walnut	80 80 90 ---	4 4 6 ---	Eastern white pine, black walnut, red pine, yellow-poplar, green ash.
279B----- Rozetta	4A	Slight	Slight	Slight	Slight	White oak Northern red oak Yellow-poplar Black walnut	80 80 90 ---	4 4 6 ---	Eastern white pine, northern red oak, green ash, Scotch pine, yellow-poplar.
372-----	4A	Slight	Slight	Slight	Slight	White oak	80	4	White oak,

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	Productivity class*	
804B---------- Orthents	---	---	---	---	---	---	---	---	Black walnut, white oak, northern red oak, yellow-poplar.
3073---------- Ross	5A	Slight	Slight	Slight	Slight	Northern red oak----	86	5	Eastern white pine, black walnut, white ash, Norway spruce, yellow-poplar.
						Yellow-poplar-------	96	7	
						Sugar maple---------	85	4	
						White oak-----------	---	---	
						Black walnut--------	---	---	
						Black cherry--------	---	---	
						White ash-----------	---	---	
3107---------- Sawmill	5W	Slight	Moderate	Moderate	Moderate	Pin oak-------------	90	5	American sycamore, black spruce, hackberry, European larch, green ash, pin oak, red maple, swamp white oak.
						Eastern cottonwood--	---	---	
						Sweetgum------------	---	---	
						Cherrybark oak------	---	---	
						American sycamore---	---	---	
3284---------- Tice	5A	Slight	Slight	Slight	Slight	Pin oak-------------	96	5	Yellow-poplar, eastern cottonwood, American sycamore, green ash, red maple, cherrybark oak.
						Sweetgum------------	86	7	
						Yellow-poplar-------	90	6	
						Virginia pine-------	90	9	
						Eastern cottonwood--	---	---	
						White ash-----------	---	---	
7242---------- Kendall	4A	Slight	Slight	Slight	Slight	White oak-----------	80	4	White oak, black walnut, northern red oak, green ash, eastern white pine, red pine.
						Northern red oak----	80	4	
						Yellow-poplar-------	90	6	
						Black walnut--------	---	---	

* Productivity class is the yield in cubic meters per hectare per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

TABLE 9.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS

(The symbol < means less than; > means more than. Absence of an entry indicates that trees generally do not grow to the given height on that soil)

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
7C2, 7C3---------- Atlas	American cranberrybush, silky dogwood, Amur honeysuckle, arrowwood, Amur privet, Washington hawthorn, eastern redcedar.	Osage-orange, green ash, Austrian pine.	Pin oak, eastern white pine.	---
8D2, 8D3, 8F------ Hickory	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	White fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
17---------- Keomah	Silky dogwood, Amur honeysuckle, Amur privet, American cranberrybush.	Austrian pine, white fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce---------	Eastern white pine, pin oak.
27G----------	Amur honeysuckle, Amur	White fir, blue	Norway spruce	Eastern white pine
	cranberrybush, silky dogwood.	whitecedar, Washington hawthorn.		
36B---------- Tama	American cranberrybush, Amur honeysuckle, Amur privet, silky dogwood.	Blue spruce, northern whitecedar, Washington hawthorn, white fir.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
43----------	Amur privet, Amur			

TABLE 9.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
67---------- Harpster	Nannyberry viburnum, Washington hawthorn.	White spruce, northern whitecedar, eastern redcedar, green ash, Osage-orange.	Black willow----------	---
68---------- Sable	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, white fir, blue spruce, northern whitecedar, Austrian pine, Norway spruce.	Eastern white pine----	Pin oak.
112---------- Cowden	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	Austrian pine, northern whitecedar, blue spruce, Norway spruce, white fir, Washington hawthorn.	Eastern white pine----	Pin oak.
113A, 113B-------- Oconee	Eastern redcedar, Washington hawthorn, Amur privet, arrowwood, Amur honeysuckle, American cranberrybush.	Austrian pine, green ash, Osage-orange, northern whitecedar.	Eastern white pine, pin oak.	---
119C2---------- Elco	Silky dogwood, honeysuckle, Amur privet, American cranberrybush.	Northern whitecedar, Washington hawthorn, blue spruce, white fir.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
127B---------- Harrison	American cranberrybush, Amur honeysuckle, autumn-olive, silky dogwood.	Blue spruce, northern whitecedar, Washington hawthorn, white fir.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
128B, 128C2------- Douglas	American cranberrybush, Amur honeysuckle, autumn-olive, silky dogwood.	Blue spruce, northern whitecedar, Washington hawthorn, white fir.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
131C2---------- Alvin	Amur privet, Washington hawthorn, Amur honeysuckle, American cranberrybush, silky dogwood.	Austrian pine, northern whitecedar, Osage-orange, eastern redcedar.	Eastern white pine, red pine, Norway spruce.	---
134B, 134C2------- Camden	Amur honeysuckle, Amur privet, silky dogwood, American cranberrybush.	White fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
136---------- Brooklyn	Silky dogwood, Amur privet, Amur honeysuckle, American cranberrybush.	Norway spruce, Austrian pine, northern whitecedar, blue spruce, white fir, Washington hawthorn.	Eastern white pine----	---

TABLE 9.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
138---------- Shiloh	Amur privet, Amur honeysuckle, American cranberrybush, silky dogwood.	Norway spruce, Austrian pine, northern whitecedar, blue spruce, white fir, Washington hawthorn.	Eastern white pine----	Pin oak.
152---------- Drummer	American cranberrybush, Amur honeysuckle, silky dogwood, Amur privet.	Norway spruce, Washington hawthorn, white fir; blue spruce, northern whitecedar, Austrian pine.	Eastern white pine----	Pin oak.
198---------- Elburn	Silky dogwood, Amur honeysuckle, Amur privet, American cranberrybush.	Austrian pine, white fir, northern whitecedar, Washington hawthorn, blue spruce.	Norway spruce---------	Eastern white pine, pin oak.
199B---------- Plano	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, northern whitecedar, blue spruce, white fir.	Austrian pine, Norway spruce.	Pin oak, eastern white pine.
242---------- Kendall	Amur privet, silky dogwood, Amur honeysuckle, American cranberrybush.	Austrian pine, white fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce---------	Eastern white pine, pin oak.
244---------- Hartsburg	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, white fir, blue spruce, northern whitecedar, Austrian pine, Norway spruce.	Eastern white pine----	Pin oak.
249---------- Edinburg	Amur privet, Amur honeysuckle, American [illegible]	Norway spruce, Austrian pine, [illegible]	Eastern white pine----	Pin oak.
	dogwood.	blue spruce, white fir, Washington hawthorn.		
256C2---------- Pana	Amur honeysuckle, autumn-olive, silky dogwood.	Eastern redcedar, Russian-olive.	Norway spruce, eastern white pine, Douglas fir.	American sycamore, eastern cottonwood.
257---------- Clarksdale	American cranberrybush, Amur honeysuckle, silky	Washington hawthorn, northern whitecedar, blue spruce, white	Norway spruce---------	Eastern white pine, pin oak.

TABLE 9 --WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	8-15	16-25	26-35	>35
279B---------- Rozetta	Amur privet, Amur honeysuckle, American cranberrybush, silky dogwood.	White fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
372---------- Kendall	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, northern whitecedar, blue spruce, white fir, Austrian pine.	Norway spruce---------	Pin oak, eastern white pine.
386B----------	American	Blue spruce, northern	Norway spruce,	Eastern white pine,

TABLE 9.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
916*:				
Oconee	Eastern redcedar, Washington hawthorn, Amur privet, arrowwood, Amur honeysuckle, American cranberrybush.	Austrian pine, green ash, Osage-orange, northern whitecedar.	Eastern white pine, pin oak.	---
Darmstadt	Eastern redcedar, Russian-olive.	Siberian elm, green ash.	---	---
995*:				
Herrick	Amur honeysuckle, silky dogwood, Amur privet, American cranberrybush.	Austrian pine, white fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce	Eastern white pine, pin oak.
Piasa	Eastern redcedar, Russian-olive.	Siberian elm, green ash.	---	---
2036B*:				
Tama	American cranberrybush, Amur honeysuckle, Amur privet, silky dogwood.	Blue spruce, northern whitecedar, Washington hawthorn, white fir.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
Urban land.				
2043*:				
Ipava	Amur privet, Amur honeysuckle, American cranberrybush, silky dogwood.	Austrian pine, white fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce	Eastern white pine, pin oak.
Urban land.				
2046*:				
Herrick	Amur honeysuckle, silky dogwood, Amur privet, American cranberrybush.	Austrian pine, white fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce	Eastern white pine, pin oak.
Urban land.				
2050*:				
Virden	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, white fir, blue spruce, northern whitecedar, Austrian pine, Norway spruce.	Eastern white pine	Pin oak.
Urban land.				
2068*:				
Sable	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, white fir, blue spruce, northern whitecedar, Austrian pine, Norway spruce.	Eastern white pine	Pin oak.

See footnote at end of table.

TABLE 9.--WINDBREAKS AND ENVIRONMENTAL PLANTINGS--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--			
	8-15	16-25	26-35	>35
2068*: Urban land.				
2128C*: Douglas	American cranberrybush, Amur honeysuckle, autumn-olive, silky dogwood.	Blue spruce, northern whitecedar, Washington hawthorn, white fir.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
Urban land.				
3073--Ross	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, northern whitecedar, blue spruce, white fir, Austrian pine.	Norway spruce	Pin oak, eastern white pine.
3074--Radford	Amur privet, Amur honeysuckle, American cranberrybush, silky dogwood.	Austrian pine, white fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce	Eastern white pine, pin oak.
3107--Sawmill	Amur privet, Amur honeysuckle, American cranberrybush, silky dogwood.	Norway spruce, Austrian pine, northern whitecedar, blue spruce, white fir, Washington hawthorn.	Eastern white pine	Pin oak.
3284--Tice	Silky dogwood, Amur privet, American cranberrybush, Amur honeysuckle.	Austrian pine, white fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce	Eastern white pine, pin oak.
7148--Proctor	Amur privet, Amur honeysuckle, American cranberrybush, silky dogwood.	White fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce, Austrian pine.	Eastern white pine, pin oak.
7242--Kendall	Amur privet, silky dogwood, Amur honeysuckle, American cranberrybush.	Austrian pine, white fir, blue spruce, northern whitecedar, Washington hawthorn.	Norway spruce	Eastern white pine, pin oak.
8206--Thorp	Silky dogwood, American cranberrybush, Amur honeysuckle, Amur privet.	Washington hawthorn, white fir, blue spruce, northern whitecedar, Austrian pine, Norway spruce.	Eastern white pine	Pin oak.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--RECREATIONAL DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
7C2, 7C3 Atlas	Severe: wetness, percs slowly.	Severe: percs slowly.	Severe: slope, wetness, percs slowly.	Severe: erodes easily.	Moderate: wetness, droughty.
8D2, 8D3 Hickory	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
8F Hickory	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
17 Keomah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Slight	Slight.
27G Miami	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
36B Tama	Slight	Slight	Moderate: slope.	Slight	Slight.
43 Ipava	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
45 Denny	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
46 Herrick	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
48 Ebbert	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
50 Virden	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
67 Harpster	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
68 Sable	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
112 Cowden	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
113A, 113B Oconee	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
119C2 Elco	Moderate: percs slowly.	Moderate: percs slowly.	Severe: slope.	Severe: erodes easily.	Slight.
127B Harrison	Slight	Slight	Moderate: slope.	Slight	Slight.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
128B---------- Douglas	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
128C2---------- Douglas	Slight----------	Slight----------	Severe: slope.	Slight----------	Slight.
131C2---------- Alvin	Slight----------	Slight----------	Severe: slope.	Slight----------	Slight.
134B---------- Camden	Slight----------	Slight----------	Moderate: slope.	Severe: erodes easily.	Slight.
134C2---------- Camden	Slight----------	Slight----------	Severe: slope.	Severe: erodes easily.	Slight.
136---------- Brooklyn	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
138---------- Shiloh	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
152---------- Drummer	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
198---------- Elburn	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
199B---------- Plano	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
242---------- Kendall	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
244---------- Hartsburg	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
249---------- Edinburg	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
256C2---------- Pana	Slight----------	Slight----------	Severe: slope.	Slight----------	Slight.

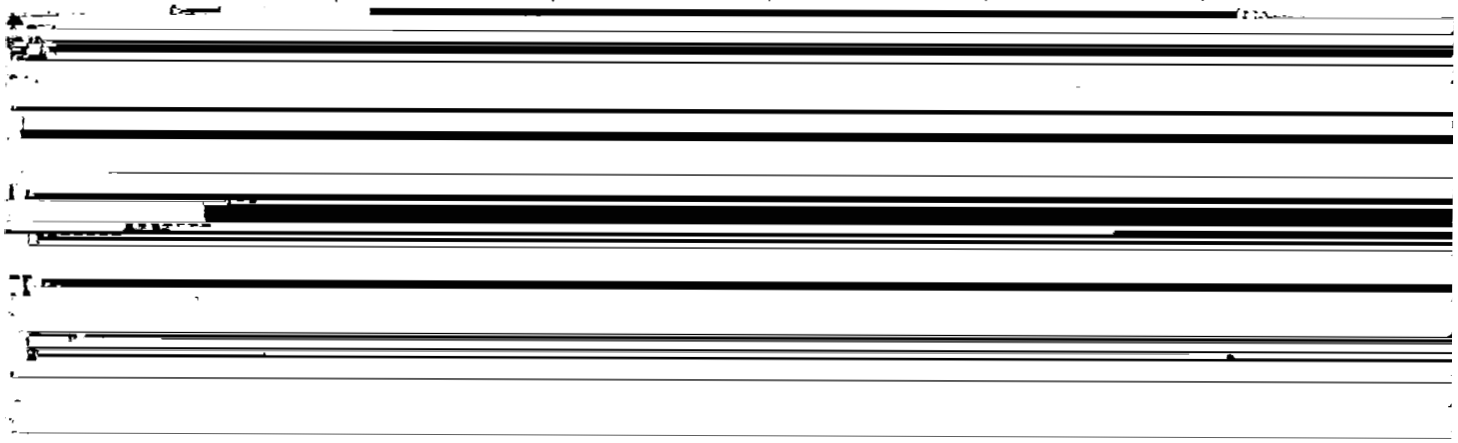


TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
386B---------- Downs	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
474---------- Piasa	Severe: ponding, percs slowly, excess sodium.	Severe: ponding, excess sodium, percs slowly.	Severe: ponding, percs slowly, excess sodium.	Severe: ponding.	Severe: excess sodium, ponding.
533*. Urban land					
567C2---------- Elkhart	Slight----------	Slight----------	Severe: slope.	Slight----------	Slight.
660C2---------- Coatsburg	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: slope, wetness, percs slowly.	Severe: wetness, erodes easily.	Severe: wetness.
684B---------- Broadwell	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
685B---------- Middletown	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
802B---------- Orthents	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope.	Slight----------	Slight.
804B---------- Orthents	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight----------	Slight.
864*, 865*. Pits					
916*: Oconee----------	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Darmstadt----------	Severe: wetness, percs slowly, excess sodium.	Severe: excess sodium, percs slowly.	Severe: wetness, percs slowly.	Severe: erodes easily.	Severe: excess sodium.
995*: Herrick----------	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Piasa----------	Severe: ponding, percs slowly, excess sodium.	Severe: ponding, excess sodium, percs slowly.	Severe: ponding, percs slowly, excess sodium.	Severe: ponding.	Severe: excess sodium, ponding.
2036B*: Tama----------	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
Urban land.					

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways

TABLE 11.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
7C2, 7C3---------- Atlas	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
8D2, 8D3---------- Hickory	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
8F---------- Hickory	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
17---------- Keomah	Good	Good	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair.
27G---------- Miami	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
36B---------- Tama	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
43---------- Ipava	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
45---------- Denny	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
46---------- Herrick	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
48---------- Ebbert	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
50---------- Virden	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
67---------- Harpster	Fair	Fair	Good	Fair	Fair	Good	Fair	Fair	Fair	Fair.
68---------- Sable	Fair	Good	Good	Fair	Fair	Good	Good	Good	Fair	Good.
112---------- Cowden	Poor	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
113A---------- Oconee	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
113B---------- Oconee	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
119C2---------- Elco	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
127B----------	Good	Good	Good	Good	Good	Poor	Poor	Good		

TABLE 11.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
128C2--Douglas	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
131C2--Alvin	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
134B--Camden	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
134C2--Camden	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Poor.
136--Brooklyn	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
138--Shiloh	Fair	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
152--Drummer	Fair	Good	Good	Fair	Fair	Good	Good	Good	Fair	Good.
198--Elburn	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
199B--Plano	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
242--Kendall	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
244--Hartsburg	Fair	Fair	Good	Fair	Fair	Good	Good	Fair	Fair	Good.
249--Edinburg	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
256C2--Pana	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
257--Clarksdale	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
259C2--Assumption	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
264D2--El Dara	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
264F--El Dara	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
279B--Rozetta	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
372--Kendall	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.

TABLE 11.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
533*. Urban land										
567C2--- Elkhart	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
660C2--- Coatsburg	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
684B--- Broadwell	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
685B--- Middletown	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
802B. Orthents										
804B--- Orthents	Good	Fair	Good	Good	Good	Poor	Poor	Good	Good	Poor.
864*, 865*. Pits										
916*:										
Oconee---	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Darmstadt---	Fair	Good	Poor	Good	Good	Fair	Fair	Fair	Good	Fair.
995*:										
Herrick---	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Piasa---	Poor	Fair	Fair	Poor	Poor	Good	Good	Poor	Poor	Good.
2036B*:										
Tama---	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Urban land.										
2043*:										
Ipava---	Good	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor.
Urban land										
2046*:										
Herrick---	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Urban land.										
2050*:										
Virden---	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
Urban land.										
2068*:										
Sable---	Fair	Good	Good	Fair	Fair	Good	Good	Good	Fair	Good.
Urban land.										

TABLE 11.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
2128C*:										
Douglas	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Urban land.										
3073--- Ross	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
3074--- Radford	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
3107--- Sawmill	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
3284--- Tice	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
7148--- Proctor	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
7242--- Kendall	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
8206--- Thorp	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--BUILDING SITE DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
7C2, 7C3---------- Atlas	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength.	Moderate: wetness, droughty.
8D2, 8D3---------- Hickory	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
8F---------- Hickory	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
17---------- Keomah	Severe: wetness.	Severe: shrink-swell.	Severe: wetness.	Severe: shrink-swell.	Severe: shrink-swell, low strength, frost action.	Slight.
27G---------- Miami	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
36B---------- Tama	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
43---------- Ipava	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, frost action.	Moderate: wetness.
45---------- Denny	Severe: ponding.	Severe: ponding, shrink-swell.	Severe: ponding.	Severe: ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: ponding.
46---------- Herrick	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, frost action.	Moderate: wetness.
48---------- Ebbert	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
50---------- Virden	Severe: ponding.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: low strength, ponding, shrink-swell.	Severe: ponding.
67---------- Harpster	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.

TABLE 12.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
68---------- Sable	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
112---------- Cowden	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, wetness.	Severe: wetness.
113A, 113B-------- Oconee	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, frost action, shrink-swell.	Moderate: wetness.
119C2---------- Elco	Moderate: too clayey, wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
127B---------- Harrison	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
128B---------- Douglas	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
128C2---------- Douglas	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
131C2---------- Alvin	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Slight.
134B---------- Camden	Slight---------	Moderate: shrink-swell.	Slight---------	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
134C2---------- Camden	Slight---------	Moderate: shrink-swell.	Slight---------	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
136---------- Brooklyn	Severe: ponding.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: ponding.
138---------- Shiloh	Severe: ponding.	Severe: ponding,	Severe: ponding,	Severe: ponding,	Severe: shrink-swell,	Severe: ponding.

TABLE 12.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
199B---------- Plano	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Severe: frost action, low strength.	Slight.
242---------- Kendall	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
244---------- Hartsburg	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
249---------- Edinburg	Severe: ponding.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: ponding.
256C2---------- Pana	Slight---------	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Slight.
257---------- Clarksdale	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, frost action.	Moderate: wetness.
259C2---------- Assumption	Moderate: too clayey, wetness.	Moderate: shrink-swell.	Severe: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
264D2---------- El Dara	Severe: cutbanks cave.	Moderate: slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
264F---------- El Dara	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
279B---------- Rozetta	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
372---------- Kendall	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action.	Moderate: wetness.
386B---------- Downs	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
474---------- Piasa	Severe: ponding.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: excess sodium, ponding.
533*. Urban land						
567C2---------- Elkhart	Slight---------	Moderate: shrink-swell.	Slight---------	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.

See footnote at end of table.

TABLE 12.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
660C2---------- Coatsburg	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, wetness.	Severe: wetness.
684B---------- Broadwell	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
685B---------- Middletown	Severe: cutbanks cave.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
802B---------- Orthents	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell.	Slight.
804B---------- Orthents	Moderate: dense layer, wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
864*, 865*. Pits						
916*: Oconee----------	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, frost action, shrink-swell.	Moderate: wetness.
Darmstadt--------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, [illegible]	Severe: excess sodium.
995*: Herrick----------	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, frost action.	Moderate: wetness.
Piasa----------	Severe: ponding.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: excess sodium, ponding.
2036B*: Tama----------	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Slight.
Urban land.						
2043*: Ipava----------	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, frost action.	Moderate: wetness.
Urban land.						

TABLE 12.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
2046*:						
Herrick	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, frost action.	Moderate: wetness.
Urban land.						
2050*:						
Virden	Severe: ponding.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: ponding, shrink-swell.	Severe: low strength, ponding, shrink-swell.	Severe: ponding.
Urban land.						
2068*:						
Sable	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: low strength, ponding, frost action.	Severe: ponding.
Urban land.						
2128C*:						
Douglas	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
Urban land.						
3073 Ross	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
3074 Radford	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, flooding, frost action.	Severe: flooding.
3107 Sawmill	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
3284 Tice	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: low strength, flooding, frost action.	Severe: flooding.
3148	Severe:	Severe:				

TABLE 12.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
8206-------------- Thorp	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
7C2, 7C3 Atlas	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
8D2, 8D3 Hickory	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, small stones, slope.
8F Hickory	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
17 Keomah	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
27G Miami	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
36B Tama	Moderate: wetness, percs slowly.	Moderate: seepage, slope, wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey.
43 Ipava	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
45 Denny	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
46 Herrick	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
48 Ebbert	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: hard to pack, ponding.
50 Virden	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding, too clayey.	Severe: ponding.	Poor: too clayey, hard to pack, ponding.
67 Harpster	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
68 Sable	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: hard to pack, ponding.

TABLE 13.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
112 Cowden	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
113A Oconee	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
113B Oconee	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
119C2 Elco	Severe: wetness, percs slowly.	Severe: slope, wetness.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.
127B Harrison	Severe: wetness.	Severe: wetness.	Moderate: wetness, too clayey.	Slight	Fair: too clayey, wetness.
128B Douglas	Slight	Severe: seepage.	Severe: seepage.	Slight	Fair: too clayey.
128C2 Douglas	Slight	Severe: seepage, slope.	Severe: seepage.	Slight	Fair: too clayey.
131C2 Alvin	Slight	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage.
134B Camden	Slight	Moderate: seepage, slope.	Severe: seepage.	Slight	Fair: too clayey.
134C2 Camden	Slight	Severe: slope.	Severe: seepage.	Slight	Fair: too clayey.
136 Brooklyn	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding, too clayey.	Severe: ponding.	Poor: too clayey, hard to pack, ponding.
138 Shiloh	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding, too clayey.	Severe: ponding.	Poor: too clayey, hard to pack, ponding.
152 Drummer	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
198 Elburn	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: wetness.	Poor: wetness.
199B Plano	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.

TABLE 13.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
242 Kendall	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
244 Hartsburg	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding.
249 Edinburg	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding, too clayey.	Severe: ponding.	Poor: too clayey, hard to pack, ponding.
256C2 Pana	Slight	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: small stones.
257 Clarksdale	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
259C2 Assumption	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: too clayey.	Moderate: wetness.	Poor: too clayey.
264D2 El Dara	Moderate: wetness, percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope, thin layer.
264F El Dara	Severe: slope.	Severe: slope.	Severe: slope, too sandy.	Severe: slope.	Poor: seepage, too sandy, slope.
279B Rozetta	Moderate: wetness.	Moderate: seepage, slope, wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey.
372 Kendall	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: wetness.	Poor: wetness.
386B Downs	Moderate: wetness, percs slowly.	Moderate: seepage, slope, wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey.
474 Piasa	Severe: ponding, percs slowly.	Slight	Severe: ponding, too clayey, excess sodium.	Severe: ponding.	Poor: too clayey, hard to pack, ponding.
533*. Urban land					
567C2 Elkhart	Slight	Severe: slope.	Slight	Slight	Good.

See footnote at end of table.

TABLE 13.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
660C2---------- Coatsburg	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
684B---------- Broadwell	Slight----------	Severe: seepage.	Severe: seepage.	Slight----------	Fair: too clayey, thin layer.
685B---------- Middletown	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: wetness.	Fair: too clayey, wetness, thin layer.
802B---------- Orthents	Severe: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight----------	Fair: too clayey.
804B---------- Orthents	Severe: percs slowly.	Moderate: slope, wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey.
864*, 865*. Pits					
916*: Oconee----------	Severe: wetness, percs slowly.	Slight----------	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Darmstadt----------	Severe: wetness, percs slowly.	Slight----------	Severe: wetness, excess sodium.	Severe: wetness.	Poor: wetness, excess sodium.
995*: Herrick----------	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Piasa----------	Severe: ponding, percs slowly.	Slight----------	Severe: ponding, too clayey, excess sodium.	Severe: ponding.	Poor: too clayey, hard to pack, ponding.
2036B*: Tama----------	Moderate: wetness, percs slowly.	Moderate: seepage, slope, wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey.
Urban land.					
2043*: Ipava----------	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Urban land.					

See footnote at end of table.

TABLE 13.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
2046*:					
Herrick	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Urban land.					
2050*:					
Virden	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding, too clayey.	Severe: ponding.	Poor: too clayey, hard to pack, ponding.
Urban land.					
2068*:					
Sable	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: hard to pack, ponding.
Urban land.					
2128C*:					
Douglas	Slight	Severe: seepage, slope.	Severe: seepage.	Slight	Fair: too clayey.
Urban land.					
3073 Ross	Severe: flooding.	Severe: seepage, flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage.	Good.
3074 Radford	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
3107 Sawmill	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
3284 Tice	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: hard to pack.
7148 Proctor	Moderate: flooding, percs slowly.	Severe: seepage.	Severe: seepage.	Moderate: flooding.	Fair: too clayey.
7242 Kendall	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
8206 Thorp	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Poor: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
7C2, 7C3 Atlas	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
8D2, 8D3 Hickory	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
8F Hickory	Fair: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
17 Keomah	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
27G Miami	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
36B Tama	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
43 Ipava	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
45 Denny	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
46 Herrick	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
48 Ebbert	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
50 Virden	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
67 Harpster	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
68 Sable	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
112 Cowden	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
113A, 113B Oconee	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
119C2 Elco	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
127B Harrison	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.

TABLE 14.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
128B, 128C2 Douglas	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
131C2 Alvin	Good	Probable	Improbable: too sandy.	Poor: too sandy.
134B, 134C2 Camden	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
136 Brooklyn	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
138 Shiloh	Poor: shrink-swell, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
152 Drummer	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
198 Elburn	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
199B Plano	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
242 Kendall	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
244 Hartsburg	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
249 Edinburg	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
256C2 Pana	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
257 Clarksdale	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
259C2 Assumption	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, thin layer.
264D2 El Dara	Good	Probable	Improbable: too sandy.	Fair: too clayey, slope.
264F El Dara	Fair: slope.	Probable	Improbable: too sandy.	Poor: slope.
279B Rozetta	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
372 Kendall	Fair: wetness.	Probable	Improbable: too sandy.	Fair: too clayey.

TABLE 14.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
386B Downs	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
474 Piasa	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, excess sodium.
533*. Urban land				
567C2 Elkhart	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
660C2 Coatsburg	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
684B Broadwell	Good	Probable	Improbable: too sandy.	Good.
685B Middletown	Good	Probable	Improbable: too sandy.	Fair: too clayey.
802B Orthents	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
804B Orthents	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim.
864*, 865*. Pits				
916*: Oconee	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
Darmstadt	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess sodium.
995*: Herrick	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Piasa	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, excess sodium.
2036B*: Tama	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Urban land.				
2043*: Ipava	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Urban land.				

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TABLE 14.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
2046*:				
Herrick	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Urban land.				
2050*:				
Virden	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
Urban land.				
2068*:				
Sable	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Urban land.				
2128C*:				
Douglas	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Urban land.				
3073 Ross	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
3074 Radford	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
3107 Sawmill	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
3284 Tice	Fair: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
7148 Proctor	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
7242 Kendall	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
8206 Thorp	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--WATER MANAGEMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
7C2, 7C3---------- Atlas	Moderate: slope.	Severe: hard to pack.	Percs slowly, frost action, slope.	Slope, wetness, droughty.	Erodes easily, wetness.	Wetness, erodes easily.
8D2, 8D3, 8F------ Hickory	Severe: slope.	Moderate: thin layer.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
17---------- Keomah	Slight---------	Moderate: wetness.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, percs slowly.
27G----------	Severe:	Severe:	Deep to water	Slope,	Slope,	Slope,

[redacted]

36B---------- Tama	Moderate: seepage, slope.	Slight---------	Deep to water	Slope----------	Erodes easily	Erodes easily.
43---------- Ipava	Slight---------	Severe: wetness.	Frost action---	Wetness--------	Erodes easily, wetness.	Wetness, erodes easily.
45---------- Denny	Slight---------	Severe: ponding.	Ponding, percs slowly, frost action.	Ponding, percs slowly, erodes easily.	Erodes easily, ponding.	Wetness, erodes easily, percs slowly.
46---------- Herrick	Slight---------	Severe: wetness.	Frost action---	Wetness--------	Erodes easily, wetness.	Wetness, erodes easily.
48---------- Ebbert	Slight---------	Severe: ponding.	Ponding, percs slowly, frost action.	Ponding, percs slowly.	Erodes easily, ponding, percs slowly.	Wetness, erodes easily, percs slowly.
50----------	Slight---------	Severe:	Ponding,	Ponding--------	Ponding--------	Wetness.

TABLE 15.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
119C2---------- Elco	Moderate: seepage, slope.	Moderate: piping, wetness.	Frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily.
127B---------- Harrison	Moderate: seepage, slope.	Moderate: piping.	Deep to water	Slope----------	Erodes easily	Erodes easily.
128B, 128C2------- Douglas	Severe: seepage.	Moderate: thin layer, piping.	Deep to water	Slope----------	Erodes easily	Erodes easily.
131C2---------- Alvin	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, soil blowing.	Soil blowing---	Favorable.
134B, 134C2------- Camden	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
136---------- Brooklyn	Slight---------	Severe: thin layer, ponding.	Ponding, percs slowly, frost action.	Ponding, percs slowly, erodes easily.	Erodes easily, ponding, percs slowly.	Wetness, erodes easily, percs slowly.
138---------- Shiloh	Slight---------	Severe: ponding.	Ponding, frost action.	Ponding--------	Ponding--------	Wetness.
152---------- Drummer	Moderate: seepage.	Severe: ponding.	Ponding, frost action.	Ponding--------	Ponding--------	Wetness.
198---------- Elburn	Severe: seepage.	Severe: wetness.	Frost action---	Wetness--------	Erodes easily, wetness.	Wetness, erodes easily.
199B---------- Plano	Moderate: seepage, slope.	Moderate: thin layer, piping, wetness.	Deep to water	Slope----------	Erodes easily	Erodes easily.
242---------- Kendall	Moderate: seepage.	Severe: wetness.	Frost action---	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
244---------- Hartsburg	Moderate: seepage.	Severe: ponding.	Ponding, frost action.	Ponding--------	Ponding--------	Wetness.
249---------- Edinburg	Moderate: seepage.	Severe: hard to pack, ponding.	Ponding, percs slowly, frost action.	Ponding, percs slowly, erodes easily.	Erodes easily, ponding, percs slowly.	Wetness, erodes easily, percs slowly.
256C2---------- Pana	Severe: seepage.	Severe: piping.	Deep to water	Slope----------	Favorable------	Favorable.
257---------- Clarksdale	Slight---------	Severe: wetness.	Frost action---	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
259C2---------- Assumption	Moderate: seepage, slope.	Moderate: wetness.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, percs slowly.
264D2---------- El Dara	Severe: slope.	Moderate: thin layer, piping.	Deep to water	Slope, soil blowing.	Slope, soil blowing.	Slope.

TABLE 15.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
264F---------- El Dara	Severe: slope.	Severe: seepage, piping.	Deep to water	Slope, rooting depth.	Slope, too sandy.	Slope, rooting depth.
279B----------	Moderate:	Slight---------	Deep to water	Slope,	Erodes easily	Erodes easily.
372---------- Kendall	Severe: seepage.	Severe: wetness.	Frost action---	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
386B---------- Downs	Moderate: seepage, slope.	Slight---------	Deep to water	Slope----------	Erodes easily	Erodes easily.
474---------- Piasa	Slight---------	Severe: hard to pack, ponding, excess sodium.	Ponding, percs slowly, frost action.	Ponding, percs slowly, erodes easily.	Erodes easily, ponding, percs slowly.	Wetness, excess sodium, erodes easily.
533*. Urban land						
567C2---------- Elkhart	Moderate: seepage, slope.	Moderate: piping.	Deep to water	Slope----------	Erodes easily	Erodes easily.

TABLE 15.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
995*:						
Herrick	Slight	Severe: wetness.	Frost action	Wetness	Erodes easily, wetness.	Wetness, erodes easily.
Piasa	Slight	Severe: hard to pack, ponding, excess sodium.	Ponding, percs slowly, frost action.	Ponding, percs slowly, erodes easily.	Erodes easily, ponding, percs slowly.	Wetness, excess sodium, erodes easily.
2036B*:						
Tama	Moderate: seepage, slope.	Slight	Deep to water	Slope	Erodes easily	Erodes easily.
Urban land.						
2043*:						
Ipava	Moderate: slope.	Severe: wetness.	Frost action, slope.	Slope, wetness.	Erodes easily, wetness.	Wetness, erodes easily.
Urban land.						
2046*:						
Herrick	Slight	Severe: wetness.	Frost action	Wetness	Erodes easily, wetness.	Wetness, erodes easily.
Urban land.						
2050*:						
Virden	Slight	Severe: hard to pack, ponding.	Ponding, frost action.	Ponding	Ponding	Wetness.
Urban land.						
2068*:						
Sable	Moderate: seepage.	Severe: ponding.	Ponding, frost action.	Ponding	Ponding	Wetness.
Urban land.						
2128C*:						
Douglas	Severe: seepage.	Moderate: thin layer, piping.	Deep to water	Slope	Erodes easily	Erodes easily.
Urban land.						
3073 Ross	Severe: seepage.	Severe: piping.	Deep to water	Flooding	Favorable	Favorable.
3074 Radford	Moderate: seepage.	Severe: wetness.	Flooding, frost action.	Wetness, flooding.	Wetness	Wetness.
3107 Sawmill	Moderate: seepage.	Severe: wetness.	Flooding, frost action.	Wetness, flooding.	Wetness	Wetness.
3284 Tice	Moderate: seepage.	Severe: wetness.	Flooding, frost action.	Wetness	Wetness	Favorable.

See footnote at end of table.

TABLE 15.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
7148--Proctor	Severe: seepage.	Severe: piping.	Deep to water	Favorable	Erodes easily	Erodes easily.
7242--Kendall	Moderate: seepage.	Severe: thin layer, wetness.	Frost action	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
8206--Thorp	Slight	Severe: wetness.	Percs slowly, flooding, frost action.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--ENGINEERING INDEX PROPERTIES

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
7C2---------- Atlas	0-5	Silt loam-----	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	75-95	25-35	5-15
	5-51	Silty clay loam, clay, clay loam.	CH	A-7	0	0	100	95-100	95-100	75-95	50-70	30-45
	51-60	Clay loam, clay, loam.	CH, CL	A-6, A-7	0	0	95-100	90-100	90-100	65-95	35-55	20-30
7C3---------- Atlas	0-6	Silty clay loam.	CH, CL	A-7	0	0	100	100	95-100	75-100	40-60	25-40
	6-60	Silty clay loam, clay, clay loam.	CH	A-7	0	0	100	95-100	95-100	75-95	50-70	30-45
8D2---------- Hickory	0-6	Loam----------	CL	A-6, A-4	0	0-5	95-100	90-100	90-100	75-95	20-35	8-15
	6-49	Clay loam, gravelly clay loam.	CL	A-6, A-7	0-1	0-5	95-100	75-100	70-95	65-80	30-50	15-30
	49-60	Sandy loam, loam, gravelly clay loam.	CL-ML, CL	A-4, A-6	0-1	0-5	85-100	75-95	70-95	60-80	20-40	5-20
8D3---------- Hickory	0-5	Clay loam-----	CL	A-6, A-7	0	0-5	95-100	90-100	80-95	70-85	30-50	15-30
	5-47	Clay loam, silty clay loam, gravelly clay loam.	CL	A-6, A-7	0-1	0-5	95-100	75-100	70-95	65-80	30-50	15-30
	47-60	Sandy loam, loam, gravelly clay loam.	CL-ML, CL	A-4, A-6	0-1	0-5	85-100	75-95	70-95	60-80	20-40	5-20
8F---------- Hickory	0-9	Loam----------	CL, ML, CL-ML	A-6, A-4	0	0-5	95-100	90-100	90-100	75-95	20-35	3-15
	9-49	Clay loam, silty clay loam, gravelly clay loam.	CL	A-6, A-7	0-1	0-5	95-100	75-100	70-95	65-80	30-50	15-30
	49-60	Clay loam, loam, gravelly clay loam.	CL-ML, CL	A-4, A-6	0-1	0-5	85-100	75-95	70-95	60-80	20-40	5-20
17---------- Keomah	0-13	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	13-29	Silty clay, silty clay loam.	CH	A-7	0	0	100	100	100	95-100	45-60	30-45
	29-60	Silty clay loam, silt loam.	CL	A-7, A-6	0	0	100	100	100	95-100	35-50	15-30

TABLE 16.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
27G---------- Miami	0-8	Loam----------	CL, CL-ML, ML	A-4	0	0	100	95-100	80-100	50-90	15-30	3-10
	8-27	Clay loam, silty clay loam.	CL, SC	A-6	0	0	90-100	85-100	70-95	40-95	30-40	15-25
	27-40	Loam----------	CL, SC	A-4, A-6	---	0-3	85-100	85-100	70-90	40-90	25-35	8-15
	40-60	Loam----------	CL, CL-ML, SC, SC-SM	A-4, A-6	---	0-3	85-100	85-100	70-90	45-70	20-40	5-20
36B---------- Tama	0-9	Silt loam-----	ML, CL	A-6, A-7	0	0	100	100	100	95-100	35-45	10-20
	9-41	Silty clay loam.	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	41-60	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
43---------- Ipava	0-18	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	25-40	10-20
	18-50	Silty clay loam, silty clay.	CH, CL	A-7	0	0	100	100	95-100	90-100	45-70	25-40
	50-62	Silt loam, silty clay loam.	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	90-100	25-40	5-20
45---------- Denny	0-9	Silt loam-----	CL	A-6, A-4	0	0	100	100	95-100	95-100	30-40	8-15
	9-23	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	5-15
	23-52	Silty clay loam, silty clay.	CL, CH	A-7, A-6	0	0	100	100	95-100	95-100	35-60	15-35
	52-60	Silt loam, silty clay loam.	CL	A-6	0	0	100	100	95-100	95-100	25-40	11-20
46---------- Herrick	0-15	Silt loam-----	CL, ML	A-4, A-6	0	0	100	100	95-100	90-100	30-40	5-15
	15-35	Silty clay loam, silty clay.	CH, CL	A-7-6	0	0	100	100	95-100	90-100	45-60	25-40
	35-58	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	0	100	100	95-100	90-100	35-50	20-35
	58-62	Silt loam, loam, clay loam.	CL	A-6	0	0	100	100	90-100	80-100	30-40	10-20
48---------- Ebbert	0-11	Silt loam-----	CL	A-6	0	0	100	100	95-100	85-100	30-40	10-15
	11-16	Silt loam-----	CL	A-4, A-6	0	0	100	100	95-100	85-100	25-35	7-15
	16-52	Silty clay loam, silt loam.	CL, CH	A-7	0	0	100	100	95-100	85-100	40-55	25-35
	52-60	Silty clay loam, clay loam, silt loam.	CL	A-7, A-6	0	0	100	95-100	95-100	80-100	30-50	10-30
50---------- Virden	0-12	Silty clay loam.	CL	A-7, A-6	0	0	100	100	95-100	95-100	30-45	10-25
	12-52	Silty clay, silty clay loam.	CH, CL, MH, ML	A-7-6	0	0	100	100	95-100	95-100	40-55	15-30
	52-60	Silty clay loam, silt loam.	CL	A-7, A-6	0	0	100	100	95-100	90-100	30-45	10-20

TABLE 16.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
67---------- Harpster	0-17	Silty clay loam.	CL, CH	A-7	0	0	100	95-100	95-100	90-100	45-60	20-35
	17-48	Silty clay loam.	CL, CH	A-7	0	0	100	95-100	95-100	85-100	40-60	20-35
	48-57	Silty clay loam, silt loam, loam.	CL, CH	A-6, A-7	0	0	100	95-100	95-100	70-100	35-55	20-35
	57-61	Stratified sandy loam to clay loam.	CL, CL-ML, SC, SC-SM	A-4, A-6, A-7	0	0	100	95-100	95-100	45-95	20-50	5-25
68---------- Sable	0-15	Silty clay loam.	CL, CH, ML, MH	A-7	0	0	100	100	95-100	95-100	41-65	15-35
	15-44	Silty clay loam, silt loam.	CL, CH	A-7	0	0	100	100	95-100	95-100	40-55	20-35
	44-60	Silt loam, silty clay loam.	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
112---------- Cowden	0-8	Silt loam-----	CL-ML, CL, ML	A-4, A-6	0	0	100	100	95-100	90-100	25-40	3-15
	8-18	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-100	25-35	5-15
	18-51	Silty clay loam, silty clay.	CH, CL	A-7-6	0	0	100	100	95-100	95-100	45-60	20-32
	51-60	Silt loam-----	CL	A-6, A-7-6	0	0	100	100	95-100	95-100	30-45	10-20
113A---------- Oconee	0-7	Silt loam-----	CL, ML, CL-ML	A-6, A-4	0	0	100	100	95-100	90-100	20-40	3-20
	7-15	Silt loam-----	CL	A-4, A-6	0	0	100	100	95-100	90-100	20-35	8-20
	15-54	Silty clay loam, silty clay.	CL, CH	A-7	0	0	100	100	95-100	90-100	40-65	20-45
	54-62	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-50	10-25
113B---------- Oconee	0-8	Silt loam-----	CL, ML, CL-ML	A-6, A-4	0	0	100	100	95-100	90-100	20-40	3-20
	8-11	Silt loam-----	CL	A-4, A-6	0	0	100	100	95-100	90-100	20-35	8-20
	11-49	Silty clay loam, silty clay.	CL, CH	A-7	0	0	100	100	95-100	90-100	40-65	20-45
	49-60	Silt loam-----	CL	A-4, A-6, A-7-6	0	0	100	100	90-100	85-100	20-45	8-25
119C2---------- Elco	0-6	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-15
	6-28	Silty clay loam, silt loam.	CL	A-7, A-6	0	0	100	100	95-100	85-100	25-45	10-30
	28-60	Silty clay loam, loam, clay.	CL	A-7, A-6	0	0	100	90-100	80-100	60-95	25-50	10-30

TABLE 16.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
127B---------- Harrison	0-10	Silt loam-----	CL	A-4, A-6	0	0	100	100	100	95-100	30-40	8-15
	10-45	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	100	95-100	30-45	10-20
	45-65	Silty clay loam, clay loam, silt loam.	CL	A-6, A-7	0	0-5	95-100	85-100	80-85	70-80	30-50	10-25
	65-70	Clay loam, clay, silty clay loam.	CL, CH	A-6, A-7	0-1	0-5	95-100	85-100	80-95	70-90	35-55	15-30
128B, 128C2--- Douglas	0-13	Silt loam-----	CL	A-4, A-6	0	0	100	100	100	100	25-35	7-15
	13-43	Silty clay loam, silt loam.	CL	A-7, A-6	0	0	100	100	100	100	30-45	10-20
	43-60	Silt loam, clay loam, gravelly sandy loam.	CL-ML, SC-SM, CL, SC	A-4, A-6, A-7	0	0	95-100	80-100	50-90	35-85	20-45	5-25
131C2--------- Alvin	0-7	Fine sandy loam.	SM, ML	A-4, A-2	0	0	100	100	80-95	30-60	<25	NP-4
	7-42	Very fine sandy loam, sandy loam, loam.	SM, SC, CL, ML	A-2, A-4, A-6	0	0	100	100	70-100	20-80	15-40	NP-15
	42-60	Very fine sand, fine sandy loam, loamy fine sand.	SP, SP-SM, SM	A-2, A-3, A-1	0	0	95-100	90-100	45-95	4-35	<20	NP-4
134B, 134C2--- Camden	0-14	Silt loam-----	CL, ML, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	20-35	3-15
	14-37	Silt loam, silty clay loam.	CL	A-6	0	0	100	100	95-100	90-100	25-40	15-25
	37-57	Clay loam, sandy loam, silt loam.	ML, SC, SM, CL	A-2, A-4, A-6	0	0-5	90-100	85-100	60-100	30-70	20-40	3-15
	57-60	Stratified sandy loam to silt loam.	SM, SC, ML, CL	A-2, A-4	0	0-5	90-100	80-100	50-80	20-60	<25	3-10
136---------- Brooklyn	0-9	Silt loam-----	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	90-100	25-35	5-15
	9-19	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	25-35	5-15
	19-41	Silty clay, silty clay loam.	CH, CL	A-7	0	0	100	100	95-100	95-100	45-60	25-40
	41-60	Stratified sandy loam to gravelly clay loam.	CL, CL-ML, SC-SM, SC	A-4, A-2, A-6	0-1	0-5	75-100	65-90	60-90	30-70	15-38	5-20

TABLE 16.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
138---------- Shiloh	0-15	Silty clay loam.	CL	A-7	0	0	100	100	95-100	90-100	40-50	15-25
	15-52	Silty clay, silty clay loam.	CL, CH	A-7	0	0	100	100	95-100	90-100	40-65	15-40
	52-62	Silty clay loam, silty clay, silt loam.	CL	A-7, A-6	0	0	100	100	95-100	90-100	30-50	15-30
152---------- Drummer	0-16	Silty clay loam.	CL	A-6, A-7	0	0	100	95-100	95-100	85-95	30-50	15-30
	16-49	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	95-100	95-100	85-95	30-50	15-30
	49-62	Stratified loamy sand to silty clay loam.	SC, CL	A-4, A-6	---	0-5	95-100	85-95	75-95	45-80	20-35	7-20
198---------- Elburn	0-16	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	25-40	10-25
	16-49	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	100	75-90	30-50	15-35
	49-62	Loam, sandy loam, clay loam.	CL, CL-ML, SC, SC-SM	A-6, A-4, A-2	0	0	90-100	80-100	60-90	25-80	20-40	5-20
199B---------- Plano	0-12	Silt loam-----	CL-ML, CL, ML	A-4, A-6	0	0	100	100	95-100	95-100	20-30	5-15
	12-44	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	25-45	10-25
	44-60	Stratified sandy loam to silt loam.	ML, SM, CL, SC	A-4, A-2	---	0-5	90-100	85-95	60-90	30-70	<25	NP-10
242---------- Kendall	0-11	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-100	20-35	5-15
	11-48	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-45	10-20
	48-60	Stratified sandy loam to silt loam.	CL, CL-ML, SC-SM, SC	A-2, A-4	0	0-5	90-100	80-95	60-90	30-70	<25	4-10
244---------- Hartsburg	0-20	Silty clay loam.	CL, ML	A-7, A-6	0	0	100	100	100	95-100	35-50	10-25
	20-31	Silty clay loam.	CL, CH	A-7	0	0	100	100	95-100	95-100	40-55	20-30
	31-62	Silt loam, loam.	CL	A-6	0	0	95-100	90-100	90-100	70-100	25-40	11-20
249---------- Edinburg	0-12	Silty clay loam.	CL	A-7, A-6	0	0	100	100	95-100	90-100	35-50	16-25
	12-52	Silty clay loam, silty clay.	CH, CL	A-7	0	0	100	100	95-100	90-100	45-70	25-45
	52-60	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	35-45	15-20

TABLE 16.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
256C2--------- Pana	0-9	Loam----------	ML, CL-ML	A-4	0	0	85-100	80-90	65-85	60-75	25-35	4-10
	9-60	Gravelly clay loam, gravelly loam, sandy loam.	CL, SC, ML, SM	A-2, A-4, A-6	---	0-5	60-95	50-90	40-70	25-65	25-40	3-15
257---------- Clarksdale	0-9	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	25-40	10-20
	9-16	Silt loam-----	CL	A-6, A-4	0	0	100	100	95-100	90-100	20-35	8-18
	16-55	Silty clay loam, silty clay.	CL, CH	A-7	0	0	100	100	95-100	90-100	40-65	25-40
	55-60	Silt loam, silty clay loam.	CL	A-6	0	0	95-100	95-100	95-100	90-100	25-40	10-25
259C2--------- Assumption	0-8	Silt loam-----	CL, ML	A-6, A-4	0	0	100	100	95-100	90-100	25-40	8-20
	8-28	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-50	10-30
	28-34	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	90-100	85-95	75-90	30-50	10-30
	34-60	Clay loam, silty clay loam, clay.	CL	A-6, A-7	---	0-5	100	95-100	90-100	70-90	35-50	20-35
264D2--------- El Dara	0-10	Sandy loam----	CL, SM, SC, ML	A-4	0	0	100	100	95-100	35-55	15-25	NP-10
	10-44	Sandy clay loam, clay loam, loam.	SC, CL	A-6, A-2-6	0	0	95-100	95-100	90-100	30-60	20-35	10-20
	44-63	Stratified sandy clay loam to sand.	SM, SC-SM, SC, SP-SM	A-2	0	0	100	95-100	95-100	10-30	<20	NP-10
264F---------- El Dara	0-5	Loam----------	CL, ML, CL-ML	A-4	0	0	100	100	95-100	50-60	<25	NP-10
	5-10	Fine sandy loam, loam, silt loam.	SM, SC, SC-SM	A-4, A-2	0	0	100	95-100	95-100	30-50	<20	NP-10
	10-52	Sandy clay loam, clay loam, sandy loam.	SC, CL	A-6, A-2-6	0	0	95-100	95-100	95-100	30-60	20-35	10-20
	52-60	Sandy loam, loamy sand, sand.	SM, SC-SM, SC, SP-SM	A-2	0	0	100	95-100	95-100	10-30	<20	NP-10
279B---------- Rozetta	0-9	Silt loam-----	CL	A-4, A-6	0	0	100	100	95-100	95-100	24-35	8-15
	9-53	Silty clay loam.	CL	A-7, A-6	0	0	100	100	95-100	95-100	35-50	15-30
	53-60	Silt loam-----	CL	A-6, A-4	0	0	100	100	95-100	85-100	25-40	7-20

TABLE 16.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
372---------- Kendall	0-12	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	20-35	5-15
	12-41	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-45	10-20
	41-47	Sandy clay loam, sandy loam, clay loam.	SC, SC-SM	A-6, A-4	0	0	95-100	95-100	80-90	35-50	20-40	5-15
	47-60	Stratified loamy sand to silt loam.	SM, SP-SM	A-2, A-1-b	0	0-5	75-95	50-75	20-50	5-30	---	NP
386B---------- Downs	0-9	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	100	95-100	25-35	5-15
	9-49	Silty clay loam, silt loam.	CL	A-7, A-6	0	0	100	100	100	95-100	35-45	15-25
	49-60	Silt loam-----	CL	A-6	0	0	100	100	100	95-100	30-40	11-20
474---------- Piasa	0-9	Silt loam-----	CL, ML	A-6, A-7	0	0	100	100	95-100	90-100	30-45	10-20
	9-14	Silt loam-----	CL	A-4, A-6	0	0	100	100	95-100	90-100	25-40	8-20
	14-53	Silty clay, silty clay loam.	CL, ML, MH, CH	A-7	0	0	100	100	95-100	95-100	40-55	15-25
	53-62	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-45	10-25
533*. Urban land												
567C2---------- Elkhart	0-12	Silt loam-----	CL	A-4, A-6	0	0	100	100	100	95-100	25-35	8-15
	12-29	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	100	95-100	35-50	18-30
	29-60	Silt loam, silt.	CL	A-6, A-4	0	0	100	100	95-100	95-100	20-37	8-20
660C2---------- Coatsburg	0-8	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-15
	8-55	Silty clay, clay, clay loam.	CH	A-7	0	0	100	95-100	75-90	65-85	50-70	35-55
	55-65	Loam, clay loam.	CL, CH	A-6, A-7	0	0-5	100	95-100	70-100	60-80	35-55	15-30
684B---------- Broadwell	0-15	Silt loam-----	ML, CL	A-6, A-7, A-4	0	0	100	100	90-100	85-100	30-45	5-20
	15-51	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-45	10-25
	51-60	Loamy fine sand, fine sand, sand.	SM, SP-SM, SP, SC-SM	A-3, A-2	0	0	100	100	75-95	4-35	<20	NP-5

See footnote at end of table.

TABLE 16.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
685B---------- Middletown	0-8	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	100	90-100	25-35	5-15
	8-44	Silty clay loam, silt loam.	CL	A-6	0	0	100	100	100	95-100	25-40	10-20
	44-56	Clay loam, loam, fine sandy loam.	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	90-100	20-35	4-15
	56-60	Loamy fine sand, fine sand, loamy sand.	SM, SP-SM	A-2, A-4	0	0	100	90-100	75-95	10-45	<20	NP
802B---------- Orthents	0-60	Clay loam-----	---	---	---	---	---	---	---	---	---	15-30
	60-80	Variable------	---	---	---	---	---	---	---	---	---	---
804B---------- Orthents	0-6	Silt loam-----	CL	A-6	---	0-5	95-100	90-100	85-95	60-90	20-40	10-20
	6-60	Loam, silt loam, clay loam.	CL	A-6	---	0-5	95-100	90-100	85-95	60-90	20-40	10-20
864*, 865*. Pits												
916*: Oconee-------	0-7	Silt loam-----	CL, ML, CL-ML	A-6, A-4	0	0	100	100	95-100	90-100	20-40	3-20
	7-15	Silt loam-----	CL	A-4, A-6	0	0	100	100	95-100	90-100	20-35	8-20
	15-54	Silty clay loam, silty clay.	CL, CH	A-7	0	0	100	100	95-100	90-100	40-65	20-45
	54-60	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-50	10-25
Darmstadt----	0-13	Silt loam-----	CL, CL-ML	A-6, A-7, A-4	0	0	95-100	95-100	95-100	75-100	25-45	5-20
	13-26	Silty clay loam, silty clay.	CL, CH	A-7	0	0	100	95-100	95-100	90-100	40-65	20-40
	26-54	Silty clay loam, silty clay.	CL, CH	A-7	0	0	100	95-100	95-100	90-100	40-65	20-40
	54-60	Silt loam, silty clay loam, loam.	CL	A-6, A-7, A-4	0	0	95-100	95-100	90-100	75-100	20-50	7-30
995*: Herrick------	0-15	Silt loam-----	CL, ML	A-4, A-6	0	0	100	100	95-100	90-100	30-40	5-15
	15-35	Silty clay loam, silty clay.	CH, CL	A-7-6	0	0	100	100	95-100	90-100	45-60	25-40
	35-58	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	0	100	100	95-100	90-100	35-50	20-35
	58-60	Silt loam, loam, clay loam.	CL	A-6	0	0	100	100	90-100	80-100	30-40	10-20

See footnote at end of table.

TABLE 16.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
995*:												
Piasa	0-9	Silt loam	CL, ML	A-6, A-7	0	0	100	100	95-100	90-100	30-45	10-20
	9-14	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	90-100	25-40	8-20
	14-53	Silty clay, silty clay loam.	CL, ML, MH, CH	A-7	0	0	100	100	95-100	95-100	40-55	15-25
	53-62	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-45	10-25
2036B*:												
Tama	0-14	Silt loam	ML, CL	A-6, A-7	0	0	100	100	100	95-100	35-45	10-20
	14-52	Silty clay loam.	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	52-60	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-25
Urban land.												
2043*:												
Ipava	0-18	Silt loam	CL	A-6	0	0	100	100	95-100	90-100	25-40	10-20
	18-50	Silty clay loam, silty clay.	CH, CL	A-7	0	0	100	100	95-100	90-100	45-70	25-40
	50-60	Silt loam, silty clay loam.	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	90-100	25-40	5-20
Urban land.												
2046*:												
Herrick	0-15	Silt loam	CL, ML	A-4, A-6	0	0	100	100	95-100	90-100	30-40	5-15
	15-35	Silty clay loam, silty clay.	CH, CL	A-7-6	0	0	100	100	95-100	90-100	45-60	25-40
	35-58	Silty clay loam, silt loam.	CL	A-6, A-7-6	0	0	100	100	95-100	90-100	35-50	20-35
	58-60	Silt loam, loam, clay loam.	CL	A-6	0	0	100	100	90-100	80-100	30-40	10-20
Urban land.												
2050*:												
Virden	0-12	Silty clay loam.	CL	A-7, A-6	0	0	100	100	95-100	95-100	30-45	10-25
	12-52	Silty clay, silty clay loam.	CH, CL, MH, ML	A-7-6	0	0	100	100	95-100	95-100	40-55	15-30
	52-60	Silty clay loam, silt loam.	CL	A-7, A-6	0	0	100	100	95-100	90-100	30-45	10-20
Urban land.												

See footnote at end of table.

TABLE 16.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
2068*:												
Sable--------	0-15	Silt loam-----	CL	A-6, A-7	0	0	100	100	95-100	95-100	30-45	10-20
	15-44	Silty clay loam, silt loam.	CL, CH	A-7	0	0	100	100	95-100	95-100	40-55	20-35
	44-60	Silt loam, silty clay loam.	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
Urban land.												
2128C*:												
Douglas------	0-13	Silt loam-----	CL	A-4, A-6	0	0	100	100	100	100	25-35	7-15
	13-43	Silty clay loam, silt loam.	CL	A-7, A-6	0	0	100	100	100	100	30-45	10-20
	43-60	Silt loam, clay loam, gravelly sandy loam.	CL-ML, SC-SM, CL, SC	A-4, A-6, A-7	0	0	95-100	80-100	50-90	35-85	20-45	5-25
Urban land.												
3073----------	0-15	Silty clay loam.	CL	A-6, A-7	0	0	90-100	90-100	80-100	65-95	35-45	12-20
Ross	15-45	Loam, silt loam, silty clay loam.	ML, CL, CL-ML	A-6, A-4, A-7	0	0	90-100	85-100	70-100	55-95	22-45	3-20
	45-62	Stratified gravelly sandy loam to silt loam.	CL, ML, SM, GM	A-6, A-4, A-2	---	0-5	65-100	45-100	30-100	25-80	<30	NP-12
3074----------	0-11	Silt loam-----	ML, CL	A-4, A-6	0	0	100	100	95-100	80-100	30-40	5-15
Radford	11-24	Silt loam-----	CL, ML	A-4, A-6	0	0	100	100	95-100	80-100	25-35	5-15
	24-60	Silt loam, silty clay loam, clay loam.	CL	A-6, A-7	0	0	100	100	95-100	80-95	35-50	15-25
3107----------	0-22	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	85-100	30-50	15-30
Sawmill	22-29	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	85-100	30-50	15-30
	29-60	Silty clay loam, clay loam, loam.	CL	A-6, A-7, A-4	0	0	100	100	85-100	70-95	25-50	8-25
3284----------	0-14	Silty clay loam.	CL	A-6, A-7	0	0	100	100	90-100	80-95	30-45	10-20
Tice	14-52	Silty clay loam, silt loam.	CL, CH	A-7	0	0	100	100	95-100	85-95	40-55	15-30
	52-60	Stratified silty clay loam to loam.	CL-ML, CL	A-4, A-6, A-7	0	0	100	100	60-95	55-80	25-45	5-20

See footnote at end of table.

TABLE 16.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
7148---------- Proctor	0-16	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	25-40	10-20
	16-34	Silty clay loam.	CL	A-7, A-6	0	0	100	95-100	85-100	85-100	25-50	10-25
	34-53	Clay loam, loam, sandy loam.	CL, CL-ML, SC, SC-SM	A-7, A-6, A-4, A-2	0	0	90-100	85-100	75-100	30-80	20-45	5-25
	53-60	Loamy sand, sandy loam.	SC, SC-SM, SM	A-2, A-4	0	0	85-100	80-100	50-100	25-50	<25	NP-10
7242---------- Kendall	0-9	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	85-95	20-35	5-15
	9-13	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	85-95	15-30	5-15
	13-57	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	85-95	30-45	10-20
	57-60	Stratified sandy loam to silt loam.	CL-ML, SC-SM, CL, SC	A-2, A-4	0	0-5	98-100	80-90	60-90	30-70	15-25	4-10
8206---------- Thorp	0-23	Silt loam-----	CL	A-6, A-4	0	0	100	100	95-100	85-95	25-40	8-20
	23-54	Silty clay loam.	CL	A-7, A-6	0	0	100	100	95-100	85-95	30-50	10-25
	54-60	Stratified loam to loamy very fine sand.	ML, CL, SM, SC	A-2, A-4, A-6	0	0	85-100	75-95	65-85	20-60	<25	NP-15

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
7C2	0-5	20-27	1.30-1.50	0.2-0.6	0.20-0.25	4.5-7.3	Moderate	0.43	3	6	1-3
Atlas	5-51	35-45	1.35-1.55	<0.06	0.07-0.19	4.5-7.3	High	0.32			
	51-60	20-30	1.35-1.60	0.06-0.2	0.07-0.18	5.6-7.8	Moderate	0.32			
7C3	0-6	30-40	1.35-1.55	0.06-0.2	0.14-0.19	4.5-7.3	High	0.43	2	7	.5-1
Atlas	6-60	35-45	1.35-1.55	<0.06	0.07-0.19	4.5-7.3	High	0.32			
8D2	0-6	19-25	1.30-1.50	0.6-2.0	0.20-0.22	4.5-7.3	Low	0.37	5	6	1-2
Hickory	6-49	27-35	1.45-1.65	0.6-2.0	0.15-0.19	4.5-6.0	Moderate	0.28			
	49-60	15-32	1.50-1.70	0.6-2.0	0.11-0.19	5.1-8.4	Low	0.28			
8D3	0-5	27-35	1.40-1.65	0.6-2.0	0.17-0.19	4.5-7.3	Moderate	0.37	4	6	.5-1
Hickory	5-47	27-35	1.45-1.65	0.6-2.0	0.15-0.19	4.5-6.0	Moderate	0.28			
	47-60	15-32	1.50-1.70	0.6-2.0	0.11-0.19	5.1-8.4	Low	0.28			
8F	0-9	19-25	1.30-1.50	0.6-2.0	0.20-0.22	4.5-7.3	Low	0.37	5	6	1-2
Hickory	9-49	27-35	1.45-1.65	0.6-2.0	0.15-0.19	4.5-6.0	Moderate	0.28			
	49-60	15-32	1.50-1.70	0.6-2.0	0.11-0.19	5.1-8.4	Low	0.28			
17	0-13	16-26	1.30-1.40	0.6-2.0	0.22-0.24	4.5-7.3	Low	0.37	3	6	1-3
Keomah	13-29	35-42	1.30-1.45	0.06-0.2	0.18-0.20	4.5-5.5	High	0.37			
	29-60	24-38	1.40-1.55	0.2-0.6	0.18-0.20	5.1-7.3	Moderate	0.37			
27G	0-8	11-22	1.30-1.45	0.6-2.0	0.20-0.24	5.6-7.3	Low	0.37	4	5	.5-3
Miami	8-27	27-35	1.45-1.65	0.2-1.6	0.15-0.20	5.1-6.0	Moderate	0.37			
	27-40	20-27	1.50-1.70	0.2-0.6	0.14-0.19	6.6-7.8	Low	0.37			
	40-60	15-25	1.70-1.90	0.06-0.2	0.05-0.10	7.4-8.4	Moderate	0.37			
36B	0-9	20-26	1.25-1.30	0.6-2.0	0.22-0.24	5.1-7.3	Moderate	0.28	5	6	3-4
Tama	9-41	27-35	1.30-1.35	0.6-2.0	0.18-0.20	5.1-7.3	Moderate	0.43			
	41-60	20-30	1.35-1.40	0.6-2.0	0.18-0.20	5.6-7.8	Moderate	0.43			
43	0-18	20-27	1.15-1.35	0.6-2.0	0.22-0.24	5.6-7.3	Moderate	0.28	5	6	4-5
Ipava	18-50	35-43	1.25-1.50	0.2-0.6	0.11-0.20	5.6-7.8	High	0.43			
	50-62	20-30	1.30-1.55	0.2-0.6	0.20-0.22	6.1-8.4	Moderate	0.43			
45	0-9	20-27	1.25-1.45	0.6-2.0	0.22-0.24	5.6-7.3	Low	0.37	3	6	3-4
Denny	9-23	15-22	1.25-1.45	0.2-0.6	0.18-0.20	5.1-6.5	Low	0.37			
	23-52	35-45	1.20-1.40	0.06-0.2	0.11-0.22	4.5-6.5	High	0.37			
	52-60	25-35	1.40-1.60	0.2-0.6	0.20-0.22	5.1-7.8	Moderate	0.37			
46	0-15	20-27	1.15-1.30	0.6-2.0	0.22-0.24	5.1-7.3	Moderate	0.28	5	6	3-4
Herrick	15-35	35-42	1.20-1.40	0.2-0.6	0.12-0.17	4.5-6.0	High	0.43			
	35-58	25-40	1.20-1.40	0.2-0.6	0.16-0.20	5.6-7.3	Moderate	0.43			
	58-62	20-30	1.30-1.50	0.2-0.6	0.16-0.21	5.6-8.4	Moderate	0.43			
48	0-11	20-27	1.20-1.40	0.2-0.6	0.22-0.24	5.1-7.3	Low	0.32	5	6	2-3
Ebbert	11-16	18-25	1.30-1.50	0.2-0.6	0.20-0.22	5.1-6.0	Low	0.43			
	16-52	24-35	1.35-1.55	0.06-0.2	0.18-0.20	4.5-7.3	Moderate	0.43			
	52-60	22-33	1.50-1.70	0.06-0.2	0.14-0.20	5.6-7.3	Moderate	0.43			

TABLE 17.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
67----------	0-17	27-35	1.05-1.25	0.6-2.0	0.21-0.24	7.4-8.4	Moderate-----	0.28	5	4L	5-6
Harpster	17-48	27-35	1.20-1.50	0.6-2.0	0.18-0.22	7.4-8.4	Moderate-----	0.28			
	48-57	22-35	1.25-1.55	0.6-2.0	0.17-0.22	7.4-8.4	Moderate-----	0.28			
	57-61	15-30	1.40-1.60	0.6-2.0	0.11-0.22	7.4-8.4	Low----------	0.28			
68----------	0-15	27-35	1.15-1.35	0.6-2.0	0.21-0.23	5.6-7.3	Moderate-----	0.28	5	7	5-6
Sable	15-44	24-35	1.30-1.50	0.6-2.0	0.18-0.20	5.6-7.8	Moderate-----	0.28			
	44-60	20-28	1.30-1.50	0.6-2.0	0.20-0.22	6.6-8.4	Low----------	0.28			
112----------	0-8	17-27	1.30-1.50	0.6-2.0	0.22-0.25	5.6-7.3	Low----------	0.37	3	6	2-3
Cowden	8-18	17-27	1.25-1.45	0.06-0.2	0.18-0.20	4.5-6.0	Low----------	0.37			
	18-51	35-42	1.35-1.60	0.06-0.2	0.12-0.20	4.5-7.3	High---------	0.37			
	51-60	20-27	1.50-1.70	0.2-0.6	0.17-0.22	5.6-7.8	Moderate-----	0.37			
113A----------	0-7	20-27	1.20-1.30	0.6-2.0	0.22-0.24	5.6-7.8	Moderate-----	0.32	3-2	6	2-3
Oconee	7-15	18-27	1.30-1.45	0.06-0.2	0.20-0.22	4.5-7.3	Moderate-----	0.43			
	15-54	35-42	1.30-1.50	0.06-0.2	0.11-0.17	4.5-6.0	High---------	0.43			
	54-62	20-35	1.40-1.60	0.06-0.2	0.16-0.21	5.1-6.5	Moderate-----	0.43			
113B----------	0-8	20-27	1.20-1.30	0.6-2.0	0.22-0.24	5.6-7.8	Moderate-----	0.32	3-2	6	2-3
Oconee	8-11	18-27	1.30-1.45	0.06-0.2	0.20-0.22	4.5-7.3	Moderate-----	0.43			
	11-49	35-42	1.30-1.50	0.06-0.2	0.11-0.17	4.5-6.0	High---------	0.43			
	49-60	17-27	1.40-1.60	0.06-0.2	0.20-0.22	5.6-8.4	Moderate-----	0.43			
119C2----------	0-6	20-27	1.20-1.35	0.6-2.0	0.22-0.24	5.6-7.3	Low----------	0.37	5	6	1-3
Elco	6-28	23-35	1.25-1.45	0.6-2.0	0.18-0.21	5.1-7.8	Moderate-----	0.37			
	28-60	25-45	1.45-1.70	0.06-0.6	0.14-0.20	5.1-7.8	High---------	0.37			
127B----------	0-10	20-27	1.15-1.30	0.6-2.0	0.22-0.24	6.1-7.3	Low----------	0.32	5	6	2-4
Harrison	10-45	25-35	1.25-1.40	0.6-2.0	0.18-0.22	5.1-6.5	Moderate-----	0.43			
	45-65	20-35	1.30-1.45	0.6-2.0	0.14-0.20	5.6-7.3	Moderate-----	0.43			
	65-70	30-50	1.50-1.70	0.06-0.2	0.10-0.19	5.1-7.8	High---------	0.43			
128B, 128C2------	0-13	14-27	1.20-1.30	0.6-2.0	0.22-0.24	5.6-7.3	Low----------	0.32	5-4	5	2-4
Douglas	13-43	25-35	1.25-1.40	0.6-2.0	0.18-0.22	5.1-6.5	Moderate-----	0.43			
	43-60	10-30	1.45-1.70	0.6-6.0	0.11-0.22	5.6-7.3	Moderate-----	0.43			
131C2----------	0-7	10-15	1.45-1.65	2.0-6.0	0.14-0.17	4.5-7.3	Low----------	0.24	5	3	.5-1
Alvin	7-42	15-18	1.40-1.65	0.6-6.0	0.14-0.18	4.5-6.0	Low----------	0.24			
	42-60	3-10	1.45-1.65	2.0-6.0	0.10-0.15	5.1-8.4	Low----------	0.24			
134B, 134C2------	0-14	14-27	1.35-1.55	0.6-2.0	0.21-0.25	5.1-7.3	Low----------	0.37	5	6	1-2
Camden	14-37	22-35	1.40-1.60	0.6-2.0	0.14-0.24	5.1-7.3	Moderate-----	0.37			
	37-57	18-30	1.45-1.65	0.6-2.0	0.11-0.22	5.1-7.3	Low----------	0.32			
	57-60	5-20	1.40-1.70	0.6-6.0	0.12-0.22	5.6-8.4	Low----------	0.32			
136----------	0-9	20-27	1.20-1.40	0.6-2.0	0.22-0.24	5.6-7.3	Low----------	0.37	3	6	3-4
Brooklyn	9-19	14-22	1.25-1.40	0.6-2.0	0.20-0.22	4.5-6.5	Low----------	0.37			
	19-41	35-45	1.35-1.55	0.06-0.2	0.11-0.20	4.5-7.8	High---------	0.37			
	41-60	10-30	1.40-1.70	0.2-0.6	0.11-0.19	5.1-7.8	Low----------	0.24			
138----------	0-15	35-40	1.30-1.50	0.2-0.6	0.18-0.21	6.1-7.3	High---------	0.28	5	7	4-6
Shiloh	15-52	35-45	1.35-1.55	0.2-0.6	0.09-0.18	6.1-7.8	High---------	0.28			
	52-62	25-45	1.30-1.50	0.2-0.6	0.18-0.20	6.1-8.4	High---------	0.28			
152----------	0-16	27-35	1.10-1.30	0.6-2.0	0.21-0.23	5.6-7.8	Moderate-----	0.28	5	7	5-7
Drummer	16-49	20-35	1.20-1.45	0.6-2.0	0.21-0.24	5.6-7.8	Moderate-----	0.28			

TABLE 17.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
199B	0-12	18-27	1.10-1.30	0.6-2.0	0.22-0.24	6.1-7.3	Low	0.32	5	6	3-5
Plano	12-44	25-35	1.20-1.40	0.6-2.0	0.18-0.20	5.1-7.3	Moderate	0.43			
	44-60	10-20	1.50-1.70	0.6-2.0	0.11-0.22	5.6-8.4	Low	0.43			
242	0-11	20-27	1.15-1.30	0.6-2.0	0.22-0.24	5.1-7.3	Low	0.37	5	6	1-3
Kendall	11-48	27-35	1.30-1.50	0.6-2.0	0.18-0.20	4.5-7.3	Moderate	0.37			
	48-60	10-25	1.55-1.70	0.6-2.0	0.11-0.22	5.6-8.4	Low	0.37			
244	0-20	27-33	1.15-1.35	0.6-2.0	0.21-0.24	6.1-7.8	Moderate	0.28	5	7	3-5
Hartsburg	20-31	27-35	1.20-1.50	0.6-2.0	0.18-0.20	6.6-8.4	Moderate	0.28			
	31-62	20-27	1.30-1.55	0.6-2.0	0.20-0.22	7.4-8.4	Low	0.28			
249	0-12	27-35	1.10-1.30	0.6-2.0	0.21-0.24	5.6-7.8	High	0.37	3	7	3-4
Edinburg	12-52	35-46	1.20-1.40	0.06-0.2	0.13-0.20	5.6-7.3	High	0.37			
	52-60	22-30	1.30-1.50	0.2-2.0	0.18-0.22	6.6-7.8	Moderate	0.37			
256C2	0-9	15-24	1.20-1.40	2.0-6.0	0.20-0.24	5.1-6.0	Low	0.32	5	5	2-4
Pana	9-60	18-33	1.40-1.60	2.0-6.0	0.10-0.15	5.1-6.0	Low	0.24			
257	0-9	20-27	1.30-1.50	0.6-2.0	0.22-0.25	5.1-7.3	Moderate	0.37	5	6	2-3
Clarksdale	9-16	15-27	1.25-1.50	0.2-0.6	0.20-0.22	5.1-6.5	Low	0.37			
	16-55	35-45	1.30-1.50	0.2-0.6	0.11-0.20	5.1-7.3	High	0.37			
	55-60	20-30	1.40-1.60	0.2-0.6	0.20-0.22	6.1-8.4	Moderate	0.37			
259C2	0-8	20-27	1.25-1.45	0.6-2.0	0.23-0.26	5.6-7.3	Low	0.28	5	6	3-4
Assumption	8-28	25-35	1.20-1.40	0.6-2.0	0.18-0.22	5.1-7.3	Moderate	0.43			
	28-34	25-35	1.40-1.60	0.2-0.6	0.16-0.20	5.1-7.3	Moderate	0.43			
	34-60	30-45	1.45-1.65	0.06-0.6	0.14-0.20	5.1-7.3	High	0.43			
264D2	0-10	10-20	1.30-1.50	0.6-2.0	0.13-0.18	4.5-7.8	Low	0.24	5-4	3	1-3
El Dara	10-44	18-35	1.35-1.60	0.6-2.0	0.12-0.19	4.5-7.3	Low	0.32			
	44-63	5-25	1.50-1.80	0.6-2.0	0.11-0.19	4.5-6.0	Low	0.24			
264F	0-5	10-25	1.30-1.50	0.6-2.0	0.18-0.22	4.5-7.8	Low	0.32	5	5	1-3
El Dara	5-10	5-20	1.35-1.55	0.6-2.0	0.10-0.18	4.5-7.3	Low	0.24			
	10-52	18-35	1.35-1.60	0.6-2.0	0.12-0.19	4.5-7.3	Low	0.32			
	52-60	5-25	1.50-1.80	0.6-2.0	0.11-0.19	4.5-6.0	Low	0.24			
279B	0-9	15-27	1.20-1.40	0.6-2.0	0.22-0.24	5.1-7.3	Low	0.37	5	6	1-3
Rozetta	9-53	27-35	1.35-1.55	0.6-2.0	0.18-0.22	4.5-6.0	Moderate	0.37			
	53-60	20-27	1.40-1.60	0.6-2.0	0.20-0.22	5.6-7.8	Low	0.37			
372	0-12	20-27	1.15-1.30	0.6-2.0	0.22-0.24	5.1-7.3	Low	0.37	5	6	1-3
Kendall	12-41	27-35	1.30-1.50	0.6-2.0	0.18-0.20	5.1-7.3	Moderate	0.37			
	41-47	20-27	1.35-1.55	0.6-2.0	0.16-0.18	5.6-7.3	Low	0.37			
	47-60	1-5	1.55-1.80	6.0-20	0.05-0.07	6.1-8.4	Low	0.17			
386B	0-9	15-25	1.25-1.30	2.0-6.0	0.21-0.23	5.1-7.3	Low	0.32	5	6	2-3
Pewee	9-49	26-35	1.30-1.35	0.6-2.0	0.18-0.20	5.1-7.3	Moderate	0.43			

TABLE 17.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
567C2	0-12	20-27	1.15-1.35	0.6-2.0	0.22-0.24	5.6-7.8	Low	0.32	5	6	2-4
Elkhart	12-29	25-35	1.25-1.45	0.6-2.0	0.18-0.20	5.6-8.4	Moderate	0.43			
	29-60	20-27	1.35-1.55	0.6-2.0	0.20-0.22	7.4-8.4	Low	0.43			
660C2	0-8	20-27	1.20-1.40	0.2-0.6	0.22-0.26	5.1-7.8	Moderate	0.37	3	6	3-5
Coatsburg	8-55	35-45	1.50-1.70	<0.06	0.09-0.13	5.1-6.5	High	0.37			
	55-65	20-35	1.55-1.75	0.06-0.2	0.15-0.19	5.6-7.8	Moderate	0.37			
684B	0-15	20-27	1.25-1.45	0.6-2.0	0.23-0.26	5.6-7.3	Low	0.32	5	6	3-5
Broadwell	15-51	24-35	1.35-1.60	0.6-2.0	0.14-0.24	5.6-7.3	Moderate	0.43			
	51-60	3-10	1.55-1.75	6.0-20	0.08-0.11	5.6-7.3	Low	0.15			
685B	0-8	20-27	1.20-1.40	0.6-2.0	0.22-0.24	6.1-7.3	Low	0.37	5	6	1-2
Middletown	8-44	20-35	1.25-1.45	0.6-2.0	0.18-0.22	4.5-6.5	Moderate	0.37			
	44-56	15-30	1.35-1.60	0.6-2.0	0.15-0.19	4.5-7.3	Low	0.32			
	56-60	3-12	1.45-1.70	6.0-20	0.08-0.10	5.1-7.3	Low	0.17			
802B	0-60	18-35	1.45-1.65	0.06-2.0	0.12-0.18	---	Moderate	0.32	5	6	---
Orthents	60-80	---	---	0.06-2.0	---	---	---	----			
804B	0-6	22-30	1.70-1.75	0.2-0.6	0.18-0.22	5.6-7.3	Moderate	0.43	5	4	.5-1
Orthents	6-60	22-30	1.70-1.80	0.2-0.6	0.16-0.20	5.6-7.3	Moderate	0.43			
864*, 865*											
Pits											
916*:											
Oconee	0-7	20-27	1.20-1.30	0.6-2.0	0.22-0.24	5.6-7.8	Moderate	0.32	3-2	6	2-3
	7-15	18-27	1.30-1.45	0.06-0.2	0.20-0.22	4.5-7.3	Moderate	0.43			
	15-54	35-42	1.30-1.50	0.06-0.2	0.11-0.17	4.5-6.0	High	0.43			
	54-60	20-35	1.40-1.60	0.06-0.2	0.16-0.21	5.1-6.5	Moderate	0.43			
Darmstadt	0-13	10-27	1.30-1.50	0.06-0.2	0.22-0.24	5.1-7.3	Low	0.43	3	6	.5-2
	13-26	27-35	1.40-1.65	0.06-0.2	0.11-0.20	4.5-7.8	Moderate	0.43			
	26-54	27-35	1.40-1.65	<0.06	0.09-0.10	6.6-9.0	Moderate	0.43			
	54-60	15-30	1.50-1.70	<0.06	0.10-0.15	7.4-9.0	Low	0.43			
995*:											
Herrick	0-15	20-27	1.15-1.30	0.6-2.0	0.22-0.24	5.1-7.3	Moderate	0.28	5	6	3-4
	15-35	35-42	1.20-1.40	0.2-0.6	0.12-0.17	4.5-6.0	High	0.43			
	35-58	25-40	1.20-1.40	0.2-0.6	0.16-0.20	5.6-7.3	Moderate	0.43			
	58-60	20-30	1.30-1.50	0.2-0.6	0.16-0.21	5.6-8.4	Moderate	0.43			
Piasa	0-9	18-27	1.25-1.45	0.2-0.6	0.22-0.24	5.1-7.8	Moderate	0.37	3	6	2-4
	9-14	18-27	1.30-1.50	0.06-0.2	0.18-0.20	5.6-7.8	Moderate	0.37			
	14-53	35-43	1.35-1.55	<0.06	0.09-0.10	6.1-9.0	High	0.37			
	53-62	20-35	1.50-1.70	0.06-0.2	0.10-0.12	7.4-9.0	Moderate	0.37			
2036B*:											
Tama	0-14	20-26	1.25-1.30	0.6-2.0	0.22-0.24	5.1-7.3	Moderate	0.28	5	6	3-4
	14-52	27-35	1.30-1.35	0.6-2.0	0.18-0.20	5.1-6.5	Moderate	0.43			
	52-60	20-30	1.35-1.40	0.6-2.0	0.18-0.20	5.6-7.3	Moderate	0.43			
Urban land.											
2043*:											
Ipava	0-18	20-27	1.15-1.35	0.6-2.0	0.22-0.24	5.6-7.3	Moderate	0.28	5	6	4-5
	18-50	35-43	1.25-1.50	0.2-0.6	0.11-0.20	5.6-7.8	High	0.43			
	50-60	20-30	1.30-1.55	0.2-0.6	0.20-0.22	6.1-8.4	Moderate	0.43			
Urban land.											

See footnote at end of table.

TABLE 17.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
2046*:											
Herrick	0-15	20-27	1.15-1.30	0.6-2.0	0.22-0.24	5.1-7.3	Moderate	0.28	5	6	3-4
	15-35	35-42	1.20-1.40	0.2-0.6	0.12-0.17	4.5-6.0	High	0.43			
	35-58	25-40	1.20-1.40	0.2-0.6	0.16-0.20	5.6-7.3	Moderate	0.43			
	58-60	20-30	1.30-1.50	0.2-0.6	0.16-0.21	5.6-8.4	Moderate	0.43			
Urban land.											
2050*:											
Virden	0-12	27-30	1.20-1.40	0.6-2.0	0.21-0.24	5.6-7.8	Moderate	0.28	5	7	4-6
	12-52	35-42	1.20-1.45	0.2-0.6	0.11-0.20	5.6-7.8	High	0.28			
	52-60	25-33	1.25-1.55	0.2-0.6	0.18-0.22	6.1-8.4	Moderate	0.28			
Urban land.											
2068*:											
Sable	0-15	20-27	1.20-1.40	0.6-2.0	0.22-0.24	5.6-7.3	Low	0.28	5	6	2-4
	15-44	24-35	1.30-1.50	0.6-2.0	0.18-0.20	5.6-7.8	Moderate	0.28			
	44-60	20-28	1.30-1.50	0.6-2.0	0.20-0.22	6.6-8.4	Low	0.28			
Urban land.											
2128C*:											
Dow[illegible]	0-13	14-27	1.20-1.30	0.6-2.0	0.22-0.24	5.6-7.3	Low	0.32	5-4	5	2-4

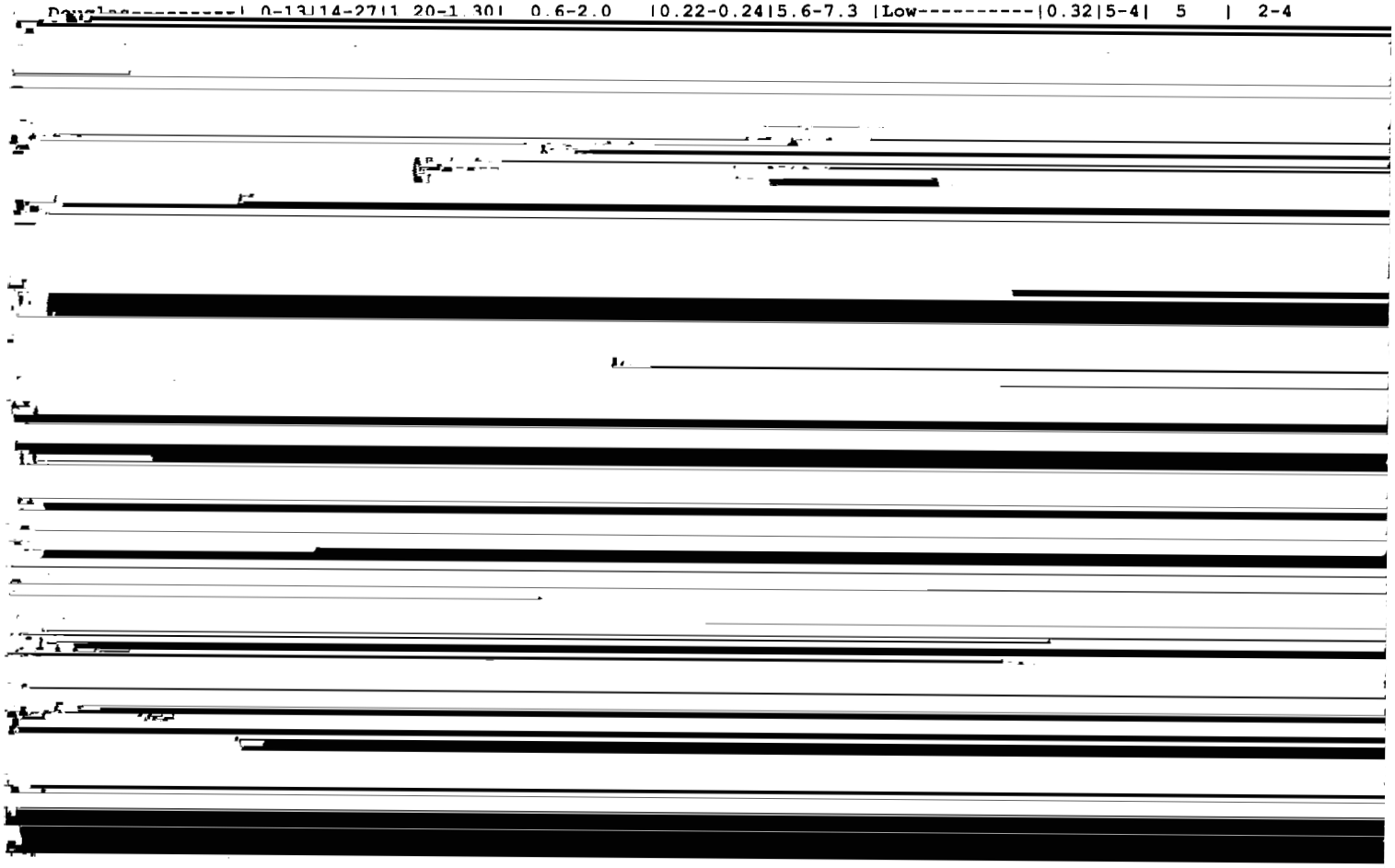

TABLE 18.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
7C2, 7C3---------- Atlas	D	None--------	---	---	1.0-2.0	Perched	Apr-Jun	High-----	Moderate.
8D2, 8D3, 8F------ Hickory	C	None--------	---	---	>6.0	---	---	Moderate	Moderate.
17---------------- Keomah	C	None--------	---	---	2.0-4.0	Apparent	Nov-Jul	High-----	Moderate.
27G--------------- Miami	B	None--------	---	---	>6.0	---	---	Moderate	Moderate.
36B--------------- Tama	B	None--------	---	---	4.0-6.0	Apparent	Nov-Jun	Moderate	Moderate.
43---------------- Ipava	B	None--------	---	---	1.0-3.0	Apparent	Mar-Jun	High-----	Moderate.
45---------------- Denny	D	None--------	---	---	+1-2.0	Apparent	Mar-Jun	High-----	Moderate.
46---------------- Herrick	B	None--------	---	---	1.0-3.0	Apparent	Mar-Jun	High-----	High.
48---------------- Ebbert	C/D	None--------	---	---	+1-2.0	Apparent	Apr-Jul	High-----	Moderate.
50---------------- Virden	B/D	None--------	---	---	+.5-2.0	Apparent	Mar-Jun	High-----	Moderate.
67---------------- Harpster	B/D	None--------	---	---	+.5-2.0	Apparent	Feb-Jun	High-----	Low.
68---------------- Sable	B/D	None--------	---	---	+.5-2.0	Apparent	Mar-Jun	High-----	Low.
112--------------- Cowden	D	None--------	---	---	0-2.0	Apparent	Mar-Jun	High-----	Moderate.
113A, 113B-------- Oconee	C	None--------	---	---	1.0-3.0	Apparent	Mar-Jun	High-----	High.
119C2------------- Elco	B	None--------	---	---	2.5-4.5	Perched	Mar-May	High-----	Moderate.
127B-------------- Harrison	B	None--------	---	---	3.0-6.0	Perched	Feb-May	High-----	Moderate.
128B, 128C2------- Douglas	B	None--------	---	---	>6.0	---	---	Moderate	Moderate.
131C2------------- Alvin	B	None--------	---	---	>6.0	---	---	Low------	High.
134B, 134C2------- Camden	B	None--------	---	---	>6.0	---	---	Low------	Moderate.

TABLE 18.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
136---------- Brooklyn	C/D	Rare--------	---	---	+.5-2.0	Apparent	Mar-Jun	High-----	Moderate.
138---------- Shiloh	B/D	None--------	---	---	+1-2.0	Apparent	Mar-Jun	High-----	Low.
152---------- Drummer	B/D	None--------	---	---	+.5-2.0	Apparent	Mar-Jun	High-----	Moderate.
198---------- Elburn	B	None--------	---	---	1.0-3.0	Apparent	Jan-May	High-----	Moderate.
199B---------- Plano	B	None--------	---	---	3.0-6.0	Apparent	Mar-May	Moderate	Low.
242---------- Kendall	B	None--------	---	---	1.0-3.0	Apparent	Mar-Jun	High-----	Moderate.
244---------- Hartsburg	B/D	None--------	---	---	+.5-2.0	Apparent	Mar-Jun	High-----	Low.
249---------- Edinburg	C/D	None--------	---	---	+1-2.0	Apparent	Mar-Jun	High-----	Moderate.
256C2---------- Pana	B	None--------	---	---	>6.0	---	---	Low------	High.
257---------- Clarksdale	C	None--------	---	---	1.0-3.0	Apparent	Mar-Jun	High-----	Moderate.
259C2---------- Assumption	B	None--------	---	---	2.5-4.5	Perched	Feb-May	High-----	Moderate.
264D2---------- El Dara	B	None--------	---	---	4.0-6.0	Perched	Apr-May	Low------	High.
264F---------- El Dara	B	None--------	---	---	>6.0	---	---	Moderate	Moderate.
279B---------- Rozetta	B	None--------	---	---	4.0-6.0	Apparent	Mar-Jun	Moderate	Moderate.
372---------- Kendall	B	None--------	---	---	1.0-3.0	Apparent	Mar-Jun	High-----	Moderate.
386B---------- Downs	B	None--------	---	---	4.0-6.0	Apparent	Mar-Jun	Moderate	Moderate.
474---------- Piasa	D	None--------	---	---	+.5-2.0	Perched	Feb-May	High-----	Low.
533*. Urban land									
567C2---------- Elkhart	B	None--------	---	---	>6.0	---	---	Moderate	Moderate.
660C2---------- Coatsburg	D	None--------	---	---	0-1.0	Perched	Apr-Jun	High-----	Moderate.

See footnote at end of table.

TABLE 18.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
684B---------- Broadwell	B	None--------	---	---	>6.0	---	---	Moderate	Moderate.
685B---------- Middletown	B	None--------	---	---	3.0-6.0	Apparent	Mar-Jun	High-----	High.
802B---------- Orthents	---	None--------	---	---	>6.0	---	---	---	---
804B---------- Orthents	B	None--------	---	---	4.0-6.0	Apparent	Mar-May	Moderate	Moderate.
864*, 865*. Pits									
916*:									
Oconee----------	C	None--------	---	---	1.0-3.0	Apparent	Mar-Jun	High-----	High.
Darmstadt--------	D	None--------	---	---	1.0-3.0	Perched	Feb-May	High-----	High.
995*:									
Herrick----------	B	None--------	---	---	1.0-3.0	Apparent	Mar-Jun	High-----	High.
Piasa----------	D	None--------	---	---	+.5-2.0	Perched	Feb-May	High-----	Low.
2036B*:									
Tama----------	B	None--------	---	---	4.0-6.0	Apparent	Nov-Jun	Moderate	Moderate.
Urban land.									
2043*:									
Ipava----------	B	None--------	---	---	1.0-3.0	Apparent	Mar-Jun	High-----	Moderate.
Urban land.									
2046*:									
Herrick----------	B	None--------	---	---	1.0-3.0	Apparent	Mar-Jun	High-----	High.
Urban land.									
2050*:									
Virden----------	B/D	None--------	---	---	+.5-2.0	Apparent	Mar-Jun	High-----	Moderate.
Urban land.									
2068*:									
Sable----------	B/D	None--------	---	---	+.5-2.0	Apparent	Mar-Jun	High-----	Low.
Urban land.									
2128C*:									
Douglas----------	B	None--------	---	---	>6.0	---	---	Moderate	Moderate.
Urban land.									
3073---------- Ross	B	Frequent----	Very brief or brief.	Nov-Jun	4.0-6.0	Apparent	Feb-Apr	Low------	Low.
3074---------- Radford	B	Frequent----	Brief-----	Mar-Jun	1.0-3.0	Apparent	Mar-Jun	High-----	Low.

See footnote at end of table.

TABLE 18.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated	Concrete
					Ft				
3107---------- Sawmill	B/D	Frequent----	Brief to long.	Mar-Jun	0-2.0	Apparent	Mar-Jun	High-----	Low.
3284---------- Tice	B	Frequent----	Very brief to long.	Jan-Jun	1.5-3.0	Apparent	Mar-Jun	High-----	Low.
7148---------- Proctor	B	Rare--------	---	---	>6.0	---	---	Moderate	Moderate.
7242----------	B	Rare--------	---	---	1.0-3.0	Apparent	Mar-Jun	High-----	Moderate.

TABLE 19.--ENGINEERING INDEX TEST DATA

(Dashes indicate that data were not available. MAX means maximum dry density; OPT, optimum moisture; LL, liquid limit; PI, plasticity index; and UN, Unified)

Soil name	Sample number	Horizon	Depth	Moisture density		Percentage passing sieve number--				LL	PI	Classification	
				MAX	OPT	4	10	40	200			AASHTO	UN
			In	Lb/ cu ft	Pct					Pct			
Cowden	85IL-021-40-1	Ap	0-8	105.0	17.3	100.0	99.2	96.2	91.1	30.1	4.8	A-4(4)	ML
	40-2	Eg1	8-13	106.8	18.4	100.0	99.9	97.6	88.3	34.0	11.8	A-6(11)	CL
	40-5	Btg2	23-31	97.2	23.6	100.0	99.3	97.4	95.6	47.8	27.1	A-7-6(28)	CL
Douglas	84IL-021-51-1	Ap	0-7	103.3	19.6	100.0	99.8	99.1	97.1	35.3	12.2	A-6(13)	ML
	51-4	Bt2	18-28	101.9	21.2	100.0	99.9	99.2	97.7	40.6	18.3	A-6(20)	CL
	51-8	2BC	46-60	115.4	14.2	99.3	98.3	93.3	79.0	25.2	6.7	A-4(3)	CL-ML
Harrison	83IL-021-24-1	Ap	0-10	105.8	17.8	100.0	99.8	98.4	95.6	32.4	8.5	A-4(9)	ML
	24-4	Bt2	20-27	102.7	17.4	100.0	99.1	97.5	95.1	36.8	14.6	A-6(15)	CL
	24-7	2Bt5	45-65	111.1	16.6	100.0	99.4	96.3	81.2	32.0	15.8	A-6(11))	CL
Pana	85IL-021-18-1	Ap	0-7	118.7	12.6	95.6	94.3	83.7	47.4	23.9	8.6	A-4(1)	SC
	18-4	Bt3	29-39	116.3	15.7	86.5	80.0	67.4	34.8	26.5	12.6	A-2-6(0)	SC
Sawmill	85IL-021-8-1	Ap	0-7	99.8	22.3	100.0	99.7	97.9	93.2	43.4	24.0	A-7-6(24)	CL
	8-5	Bg1	29-39	107.5	18.0	100.0	99.7	97.9	92.8	44.0	26.4	A-7-6(25)	CL
	8-7	Bg3	50-60	110.2	17.4	100.0	99.2	96.0	90.4	46.6	31.8	A-7-6(29)	CL

TABLE 20.--CLASSIFICATION OF THE SOILS

(An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series)

Soil name	Family or higher taxonomic class
Alvin	Coarse-loamy, mixed, mesic Typic Hapludalfs
*Assumption	Fine-silty, mixed, mesic Typic Argiudolls
Atlas	Fine, montmorillonitic, mesic, sloping Aeric Ochraqualfs
Broadwell	Fine-silty, mixed, mesic Typic Argiudolls
Brooklyn	Fine, montmorillonitic, mesic Mollic Albaqualfs
Camden	Fine-silty, mixed, mesic Typic Hapludalfs
Clarksdale	Fine, montmorillonitic, mesic Udollic Ochraqualfs
*Coatsburg	Fine, montmorillonitic, mesic, sloping Typic Argiaquolls
Cowden	Fine, montmorillonitic, mesic Mollic Albaqualfs
Darmstadt	Fine-silty, mixed, mesic Albic Natraqualfs
Denny	Fine, montmorillonitic, mesic Mollic Albaqualfs
Douglas	Fine-silty, mixed, mesic Typic Argiudolls
Downs	Fine-silty, mixed, mesic Mollic Hapludalfs
Drummer	Fine-silty, mixed, mesic Typic Haplaquolls
Ebbert	Fine-silty, mixed, mesic Argiaquic Argialbolls
Edinburg	Fine, montmorillonitic, mesic Typic Argiaquolls
Elburn	Fine-silty, mixed, mesic Aquic Argiudolls
Elco	Fine-silty, mixed, mesic Typic Hapludalfs
El Dara	Fine-loamy, mixed, mesic Typic Hapludalfs
*Elkhart	Fine-silty, mixed, mesic Typic Argiudolls
Harpster	Fine-silty, mesic Typic Calciaquolls
Harrison	Fine-silty, mixed, mesic Typic Argiudolls
Hartsburg	Fine-silty, mixed, mesic Typic Haplaquolls
Herrick	Fine, montmorillonitic, mesic Aquic Argiudolls
Hickory	Fine-loamy, mixed, mesic Typic Hapludalfs
Ipava	Fine, montmorillonitic, mesic Aquic Argiudolls
Kendall	Fine-silty, mixed, mesic Aeric Ochraqualfs
Keomah	Fine, montmorillonitic, mesic Aeric Ochraqualfs
Miami	Fine-loamy, mixed, mesic Typic Hapludalfs
Middletown	Fine-silty, mixed, mesic Typic Hapludalfs
Oconee	Fine, montmorillonitic, mesic Udollic Ochraqualfs
Orthents	Orthents
*Pana	Fine-loamy, mixed, mesic Typic Argiudolls
Piasa	Fine, montmorillonitic, mesic Mollic Natraqualfs
Plano	Fine-silty, mixed, mesic Typic Argiudolls
Proctor	Fine-silty, mixed, mesic Typic Argiudolls
Radford	Fine-silty, mixed, mesic Fluvaquentic Hapludolls
Ross	Fine-loamy, mixed, mesic Cumulic Hapludolls
Rozetta	Fine-silty, mixed, mesic Typic Hapludalfs
Sable	Fine-silty, mixed, mesic Typic Haplaquolls
Sawmill	Fine-silty, mixed, mesic Cumulic Haplaquolls
Shiloh	Fine, montmorillonitic, mesic Cumulic Haplaquolls
Tama	Fine-silty, mixed, mesic Typic Argiudolls
Thorp	Fine-silty, mixed, mesic Argiaquic Argialbolls
Tice	Fine-silty, mixed, mesic Fluvaquentic Hapludolls
Virden	Fine, montmorillonitic, mesic Typic Argiaquolls

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