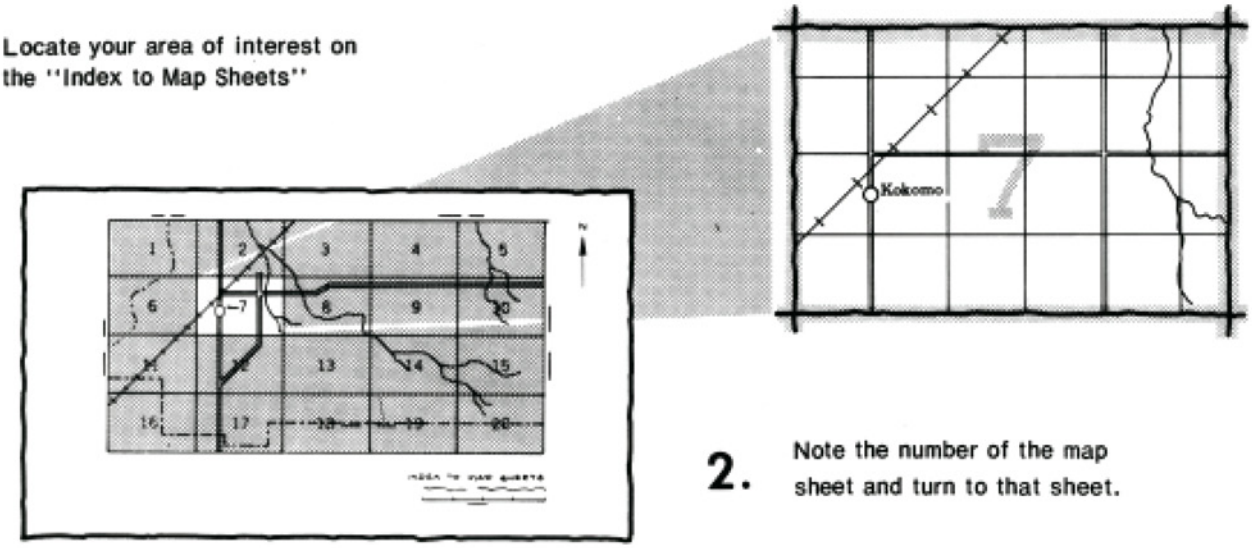
SOIL SURVEY OF

Clay County, Arkansas

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

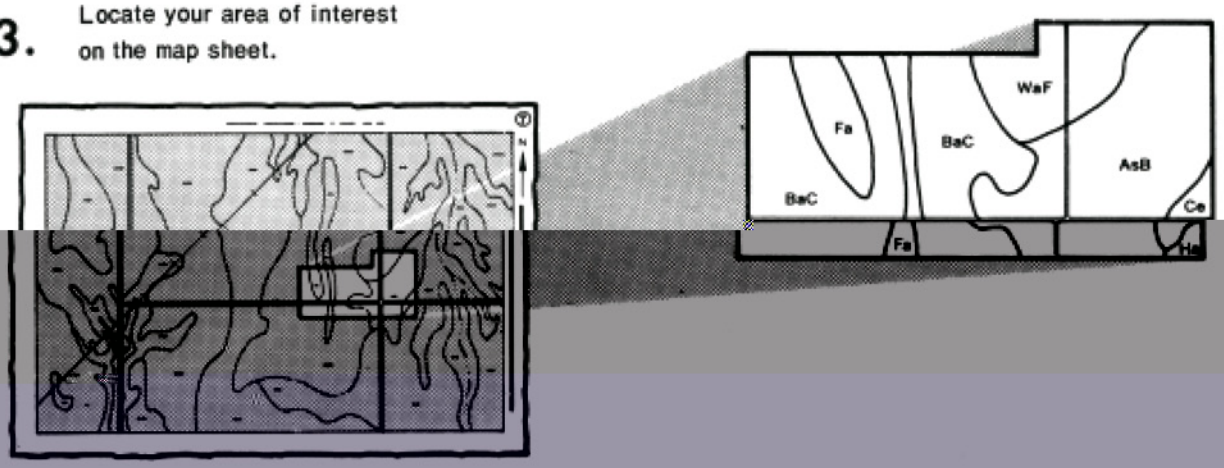
HOW TO USE

1. Locate your area of interest on the "Index to Map Sheets"



2. Note the number of the map sheet and turn to that sheet.

3. Locate your area of interest on the map sheet.

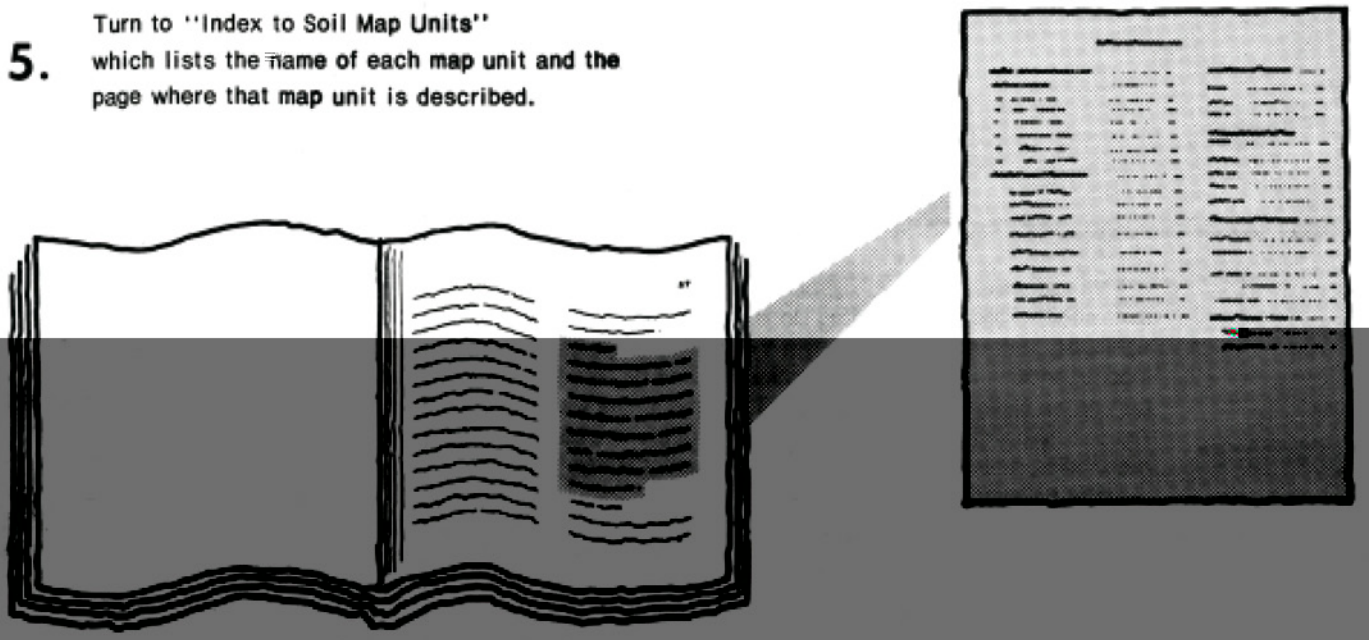


4. List the map unit symbols that are in your area.

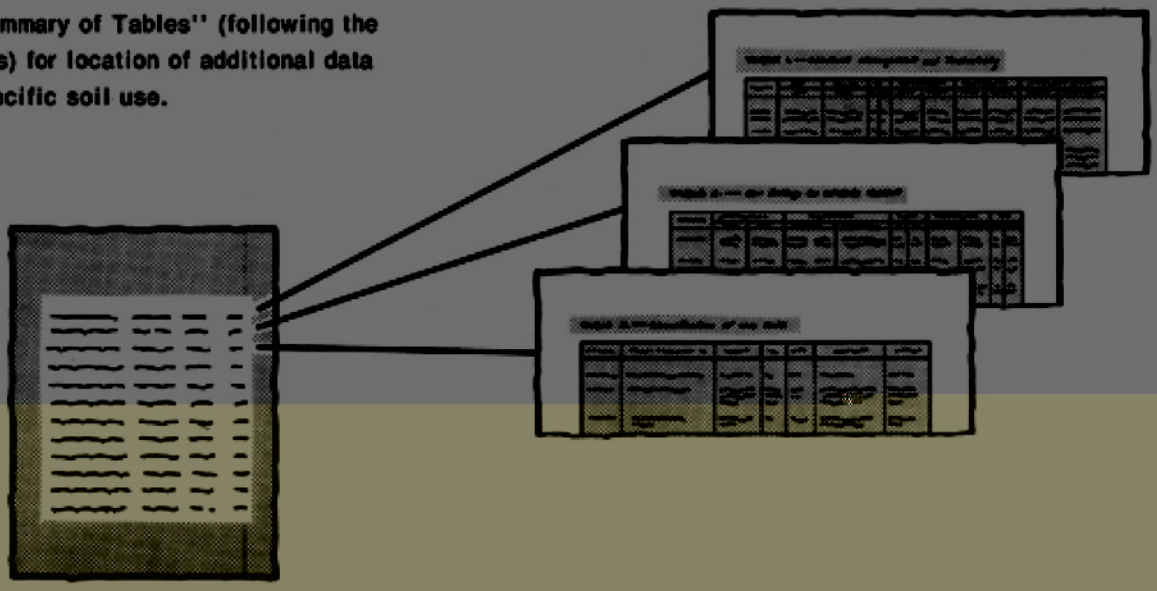
Symbols

THIS SOIL SURVEY

5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.



6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; to specialists in wildlife management, waste disposal, or pollution control.

This is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and agencies of the States, usually the Agricultural Experiment Stations. In some surveys, other Federal and local agencies also contribute. The Soil Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was completed in the period 1971-74. Soil names and descriptions were approved in 1975. Unless otherwise indicated, statements in the publication refer to conditions in the survey area in 1974. This survey was made cooperatively by the Soil Conservation Service and the Arkansas Agricultural Experiment Station. It is part of the technical assistance furnished to the Clay Conservation District.

Soil maps in this survey may be copied without permission, but any enlargement of these maps can cause misunderstanding of the detail of mapping and result in erroneous interpretations. Enlarged maps do not show small areas of contrasting soils that could have been shown at a larger mapping scale.

Cover: Cotton on Beulah fine sandy loam, gently undulating. Stripcropping reduces soil blowing.

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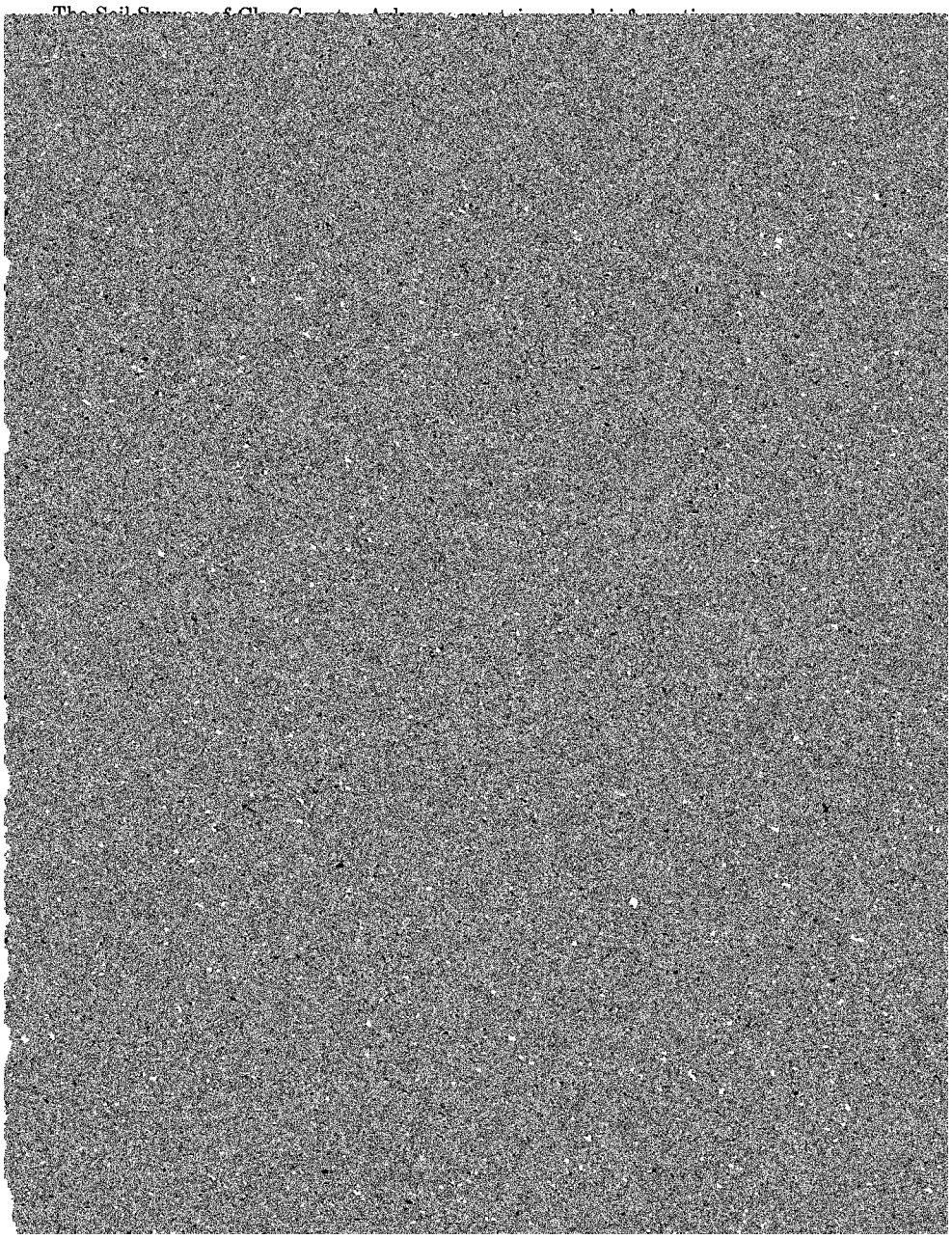
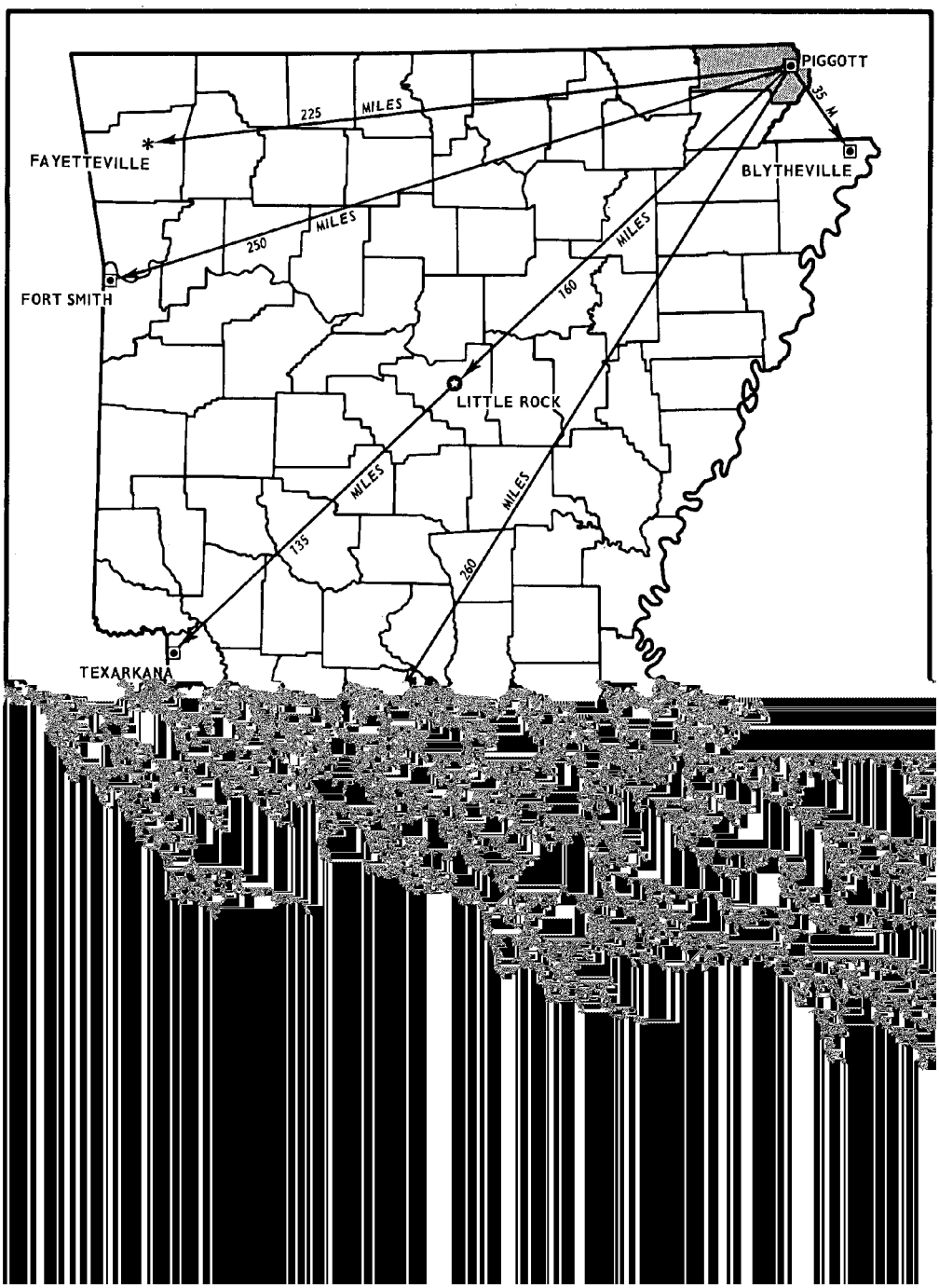
Foreword




PIGGOTT
225 MILES
35 M
FAYETTEVILLE
BLYTHEVILLE
250 MILES
160 MILES
FORT SMITH
LITTLE ROCK
135 MILES
260 MILES
TEXARKANA

SOIL SURVEY OF CLAY COUNTY, ARKANSAS

Soils surveyed by Richard T. Fielder, Dick V. Ferguson, and Jerry L. Hogan,
Soil Conservation Service

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

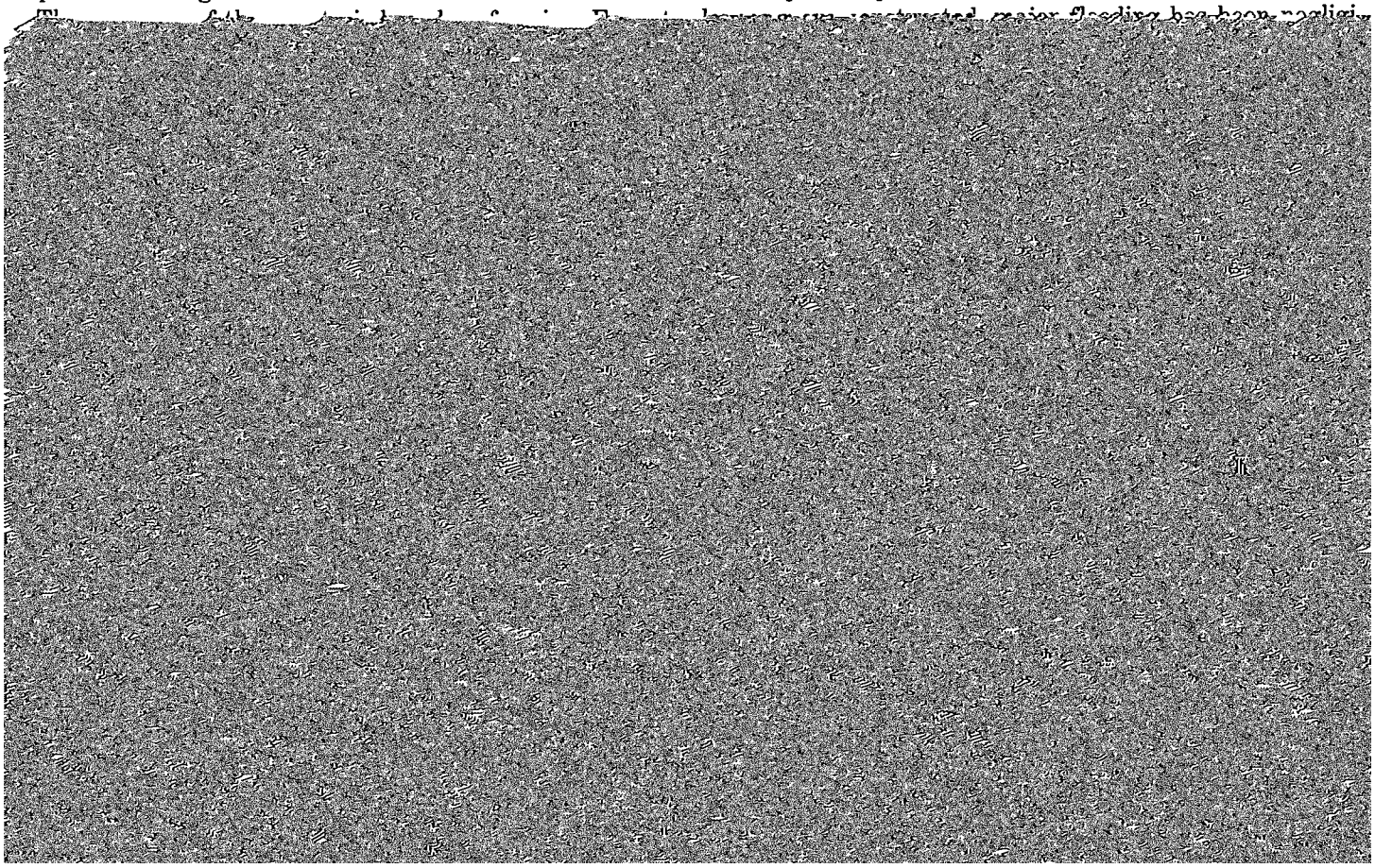
CLAY COUNTY is in the northeastern part of Arkansas. (See facing page.) It is roughly rectangular in shape and has a land area of about 409,088 acres, or 639 square miles. It is about 20 miles from north to south and about 38 miles from east to west.

The county is bounded on the north and east by the State of Missouri, on the south by Greene County, and on the west by Randolph County.

In 1970 the population of Clay County was 18,771. Piggott with a population of 3,361 and Corning with a population of 3,156 are the county seats and important trading centers. Rector has a population of 2,218 and is also an important trading center.

Elevations above mean sea level in the county range from about 524 feet at a point about 3 miles north of Rector atop Crowley's Ridge to about 240 feet near the southeast boundary of the county along the St. Francis River.

Most of the soils in the county contain moderate to high amounts of plant nutrients and are among the most fertile soils in the state. The bottom land area is part of the combined flood plains of the St. Francis, Cache, Little Black, Black, and Current Rivers. Most of the bottom land was subject to flooding by these rivers until levees were constructed. Levees along the St. Francis and Black Rivers protect part of the area from flooding. Since these



crops for selected years, and table 2 gives the kind and number of livestock. Over much of the county, improved crop varieties, improved drainage outlets, major flood control measures (on the flood plains), and other improved management techniques have led to rapid expansion of farming in the wetter areas and a great reduction in the amount of acreage in woodland.

Farms in Clay County, as in most of eastern Arkansas, are decreasing in number and increasing in size. Between 1964 and 1969, the number of farms decreased from 1,694 to 1,469, but the average size increased from 198 acres to 235 acres.

Farms of 220 acres or more increased from 483 in 1964 to 529 in 1969. Farms smaller than 220 acres decreased in number. Those of less than 100 acres decreased in number the most—from 663 in 1964 to 491 in 1969. Those larger than 1,000 acres increased from 25 to 34. In 1969, 673 farm operators were full owners, 466 were part owners, and 330 were tenants. Of these operators, 420 worked away from the farm 100 days or more.

The number of livestock in the county has been decreasing for several years. Most beef cattle are of good grade, and milk cows are generally kept mainly for home use.

Most of the farms are small enough for the family to do most of the work. Thus, outside labor is used only during peak seasons. On the larger farms laborers are hired and are supervised by the owner, manager, or tenant. Tenants pay a fixed rent or a percentage of the crop for use of the land. Most of the land is farmed by operators who have enough modern equipment to manage efficiently. Most farmers fertilize according to the needs of the crop, and many use chemicals for weed control.

Physiography and drainage

The geological deposits of the surface of Clay County are alluvium and loess. These deposits are the parent material of the soils in the county. Generally, the loess is on the uplands in the east central part of the county, mostly on Crowley's Ridge. The alluvial sediment is more than 200 feet thick and is over unconsolidated material. The loess is about 3 to more than 25 feet thick and is over unconsolidated old alluvium and coastal plain sediment. Depth to bedrock is probably many hundreds of feet throughout the county.

The alluvium is a mixture of minerals from throughout the Mississippi River and White River Basins. It is derived from many kinds of soils, rocks, and uncon-

are minor. Slopes generally are less than 1 percent, but they are as much as 8 percent on side slopes and low ridges.

In the Crowley's Ridge area, topography is characterized by ridges that have narrow winding tops, short side slopes, and narrow valleys between the ridges. Slopes on ridges range predominantly from 8 to 20 percent, but slopes along valley drainageways generally are less than 1 percent.

The drainage in the county is generally southwestward through a system of natural and improved drainageways and connecting artifical channels. The county is well supplied with drainageways. The major natural drains are the St. Francis, Black, Little Black, and Current Rivers; Little Rankine, Middle, and Hampton Sloughs; Murry, Dart, Johnson, Big, Post, White, Walnut, Oak, and Quick Creeks; Big Slough, Cache, Cypress, McNie, and Pomp Creeks; and Big Slough, Cache, and Cypress Ditches.

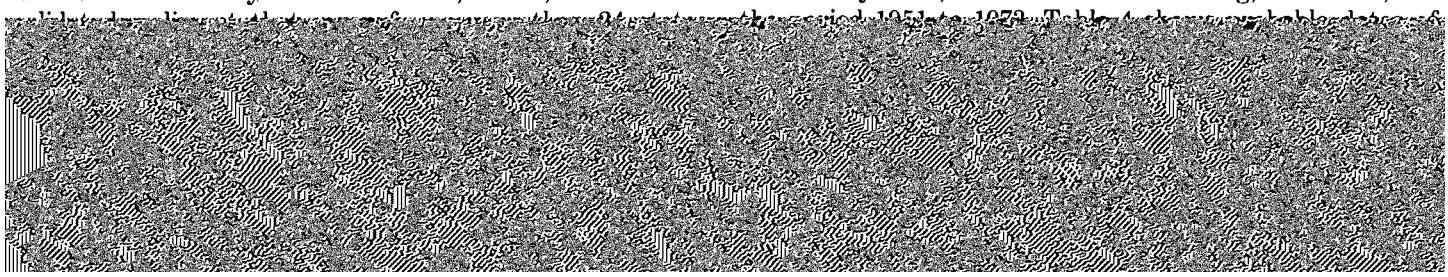
About 6,000 acres in the northeast corner of the county drains directly into the St. Francis River. The rest, east of the divide atop Crowley's Ridge, drains through Hampton and Middle Sloughs and Big Slough Ditch. These drain into the St. Francis River at a point south of Clay County. The area west of the divide atop Crowley's Ridge is drained by the Cache, Black, and Current Rivers. The Current River flows across the northwest part of the county and into the Black River at a point in Randolph County, which is west of Clay County. The Black River flows into White River at a point south of Clay County.

The many streams and such lakes as Murphy, Victor, Big Taylor, Corning, Woolfolk, Lower Woolfolk, Old River, and others furnish an abundant supply of surface water for recreation, farming, and industry. The supply of groundwater is abundant. Wells, ten inches in diameter and drilled to a depth of about 120 feet, furnish an unfailing flow of good to fair quality water at a rate of about 1,500 to 1,800 gallons per minute.

Climate

Clay County has long hot summers and rather cool winters. An occasional cold wave brings near freezing or subfreezing temperatures but seldom much snow. Precipitation is fairly heavy throughout the year, with a slight peak in winter, and prolonged droughts are rare. Summer precipitation falls mainly in afternoon thunderstorms and is adequate for all crops.

Table 3 gives data on temperature and precipitation for the survey area, as recorded at Corning, Arkansas, for



is 79 degrees, and the average daily maximum is 91 degrees. The highest temperature, 108 degrees, was recorded on July 28, 1952.

Growing degree days, shown in Table 3, are equivalent to "heat units." Beginning in spring, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

Of the total annual precipitation, 24 inches, or 52 percent, usually falls during the period April through September, which includes the growing season for most crops. Two years in ten, the April through September rainfall is less than 18 inches. The heaviest rainfall in 1 day during the period of record was 6.47 inches at Corning on September 26, 1972. Thunderstorms occur about 57 times each year, 22 of them in summer.

The average seasonal snowfall is 8 inches. The greatest snow depth at any one time during the period of record was 8 inches.

The average relative humidity in mid-afternoon is

After a guide for classifying and naming the soils was worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, roads, and other details that help in drawing boundaries accurately. The soil map at the back of this publication was prepared from aerial photographs.

The areas shown on a soil map are called soil map units. Some map units are made up of one kind of soil, others are made up of two or more kinds of soil, and a few have little or no soil material at all. Map units are discussed in the sections "General soil map for broad land use planning" and "Soil maps for detailed planning."

While a soil survey is in progress, samples of soils are taken as needed for laboratory measurements and for engineering tests. The soils are field tested, and interpretations of their behavior are modified as necessary during the course of the survey. New interpretations are added to meet local needs, mainly through field observations of different kinds of soil in different uses under different levels of management. Also, data are assembled from

ing a site for a road or building or other structure. The kinds of soil in any one map unit differ from place to place in slope, depth, stoniness, drainage, or other characteristics that affect their management.

Loamy and clayey soils that formed in alluvial sediment on flood plains, natural levees, and slack water areas characterized by broad flats and low terraces

These soils are in units 1 through 9 and together make up about 82 percent of the county. They are the Southern Mississippi Valley Alluvium Land Resource Area. The soils east of Crowley's Ridge formed in sediment of the St. Francis River and its local tributaries. The soils west of Crowley's Ridge formed in sediment of the Black River and its local tributaries. Soils in slack water areas on broad flats formed in loesslike material.

1. Amagon

Poorly drained, level, loamy soils on broad flats and in shallow depressions along natural drainageways

This map unit is in the northwestern and southeastern parts of the county. The soils are on broad flats on the lower parts of natural levees and in shallow depressions along natural drainageways. They formed in loamy sediment. Natural drainageways are mainly slow flowing intermittent streams.

This map unit occupies about 8 percent of the county. About 85 percent of it is Amagon soils, and the remaining 15 percent is minor soils and water areas.

Amagon soils are poorly drained and have a silt loam surface layer. These soils are saturated with water in late winter and early in spring.

The minor soils in this map unit are the poorly drained Calhoun, Foley, and Fountain soils and the somewhat poorly drained Dundee soils.

The soils in this map unit are used mainly for cultivated crops, but frequently flooded areas are used mostly for woodland. Wetness is the main limitation to use of these soils. Fieldwork is delayed several days after a rain because of excess water, and surface drains are needed.

When adequately drained, the soils have medium potential for row crops and small grains. Flooded areas have low potential for most cultivated crops. The soils have high potential for woodland, but wetness is a limitation

This map unit is in the northwestern part of the county. The soils formed in loamy sediment. They are on broad flats and in depressions on natural levees and on old flood plains along abandoned stream channels. Natural drainageways are mainly slow flowing intermittent streams.

This map unit makes up about 3 percent of the county. About 60 percent of it is Wardell soils, 16 percent is Foley soils, and the remaining 24 percent is minor soils.

Wardell soils are at slightly lower elevations than Foley soils. They have a surface layer of fine sandy loam, and Foley soils have a surface layer of silt loam. Both the Wardell and the Foley soils are poorly drained and have a seasonal high water table.

The minor soils in this map unit are the poorly drained Amagon, Bonn, Fountain, Kobel, and Tuckerman soils and the somewhat poorly drained Patterson soils. The well drained Bosket soils and the somewhat excessively drained Beulah soils are also in this map unit.

The soils in this map unit are used mainly for cultivated crops, except for small patches of hardwood trees along drainageways. Wetness is the main limitation, and the water table is within 12 inches of the surface during winter and early in spring.

The soils have medium potential for growing row crops. Farming operations are commonly delayed several days after a rain because of excess water, and surface drains are needed. The soils have a high potential for woodland; however, harvesting of lumber is usually limited to the drier seasons. Wetness is a severe limitation and difficult to overcome; therefore, these soils have low potential for residential and urban uses.

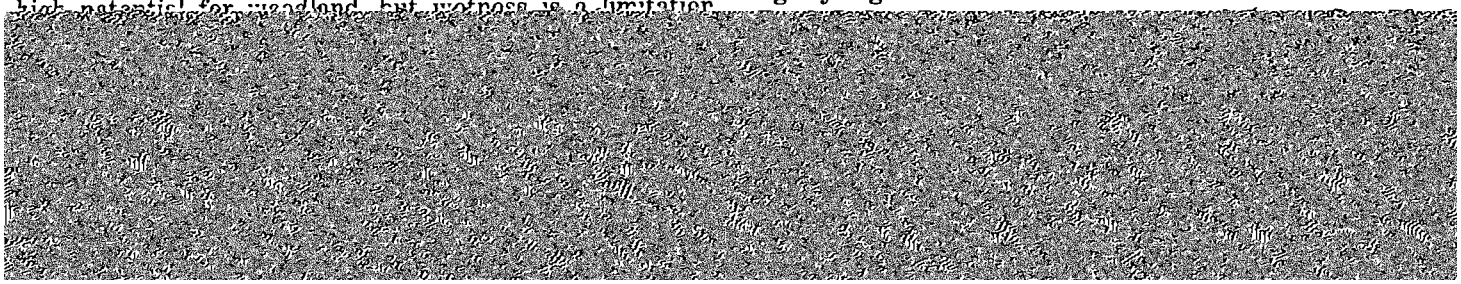
3. Bosket-Dexter-Beulah

Well drained and somewhat excessively drained, gently undulating and undulating, loamy soils on natural levees

This map unit is in the western part of the county. These soils formed in loamy and sandy alluvium along higher parts of natural levees. They are in gently undulating or undulating areas of alternating low ridges and narrow swales.

This map unit makes up about 6 percent of the county. About 36 percent of it is Bosket soils, 34 percent is Dexter soils, 10 percent is Beulah soils, and 20 percent is minor soils.

Beulah soils are somewhat excessively drained and are slightly higher in elevation than the well drained Bosket



The soils have medium to high potential for row crops and small grains. Erosion is a moderate to severe hazard along upper parts of slopes. The soils have high potential for woodland and for most urban uses.

4. Foley-Crowley-Jackport

Poorly drained, level, loamy and clayey soils, on broad flats and slack water areas

This map unit extends from north to south in the central part of the county. The soils formed in loamy and clayey sediment. The Foley and Crowley soils are on broad flats, and the Jackport soils are on broad slack water areas.

This map unit makes up about 34 percent of the county. Foley soils make up about 33 percent, Crowley soils about 18 percent, Jackport soils about 18 percent, and minor

The minor soils in this map unit are the poorly drained Jackport and Wardell soils.

The soils in this map unit that are protected from flooding are used mainly for cultivated crops. Where they are not protected, the soils are frequently flooded and are used mostly for woodland and wildlife habitat. Wetness is the main limitation to use of these soils for farming and most other purposes.

When adequately drained, the soils have medium potential for row crops and high potential for growing rice. Frequently flooded soils have low potential for most cultivated crops. These soils have high potential for woodland and wetland wildlife habitat. They have low potential for residential and other urban uses. Flooding, wetness, and shrink swell characteristics are severe limitations for most urban uses.

poorly drained. Both the Beulah and the Patterson soils have a surface layer of fine sandy loam. Patterson soils have a seasonal high water table.

The minor soils in this map unit are the well drained Bosket and Dubbs soils, the somewhat poorly drained Dundee soils, and the poorly drained Wardell soils.

The soils of this map unit are used mainly for cultivated crops. Droughtiness and wetness are the main limitations to use of these soils for cultivated crops.

The soils have medium potential for row crops and small grains. Droughtiness is a moderate limitation for the Beulah soils, and wetness is a moderate limitation for the Patterson soils. These soils have high potential for woodland. Beulah soils have high potential for most urban uses, but, because of their wetness, Patterson soils have low potential for most urban uses.

8. Commerce

Somewhat poorly drained, level, loamy soils on flood plains

This map unit is in the eastern part of the county. The

This map unit is used mainly for cultivated crops and pasture. Wetness is the main limitation to use of these soils for farming. Fieldwork may be delayed a few days after a rain because of excess water, and surface drains may be needed.

When adequately drained, the soils in this unit have medium potential for pasture and row crops. They have high potential for woodland. These soils have medium to low potential for most urban uses, because some areas are occasionally flooded.

Loamy and gravelly soils that formed in windlaid sediment and coastal plain sediment on uplands characterized by narrow ridges that have moderately steep sides

These soils are in map units 10 and 11, and together they make up about 18 percent of the county. They are in the Crowley's Ridge part of the Southern Mississippi Valley Silty Uplands Land Resource Area. These soils formed in wind-sorted material from ancient flood plains

formed in coastal plain sediment of high gravel content. These soils are on narrow ridges that have moderately sloping and moderately steep sides and narrow winding valleys between ridges.

This map unit makes up about 5 percent of the county. About 57 percent of the map unit is Brandon soils, about 28 percent is Saffell soils, and the remaining 15 percent is minor soils.

Brandon and Saffell soils are both well drained. Brandon soils have a silt loam surface layer, and Saffell soils have a surface layer of gravelly fine sandy loam.

The minor soils in this map unit are the moderately

latter map unit is underlain by a fragipan at a depth of less than 40 inches, but other soil qualities are favorable for residential and other nonfarm uses.

In some areas there are soils that have high potential for rice production but low potential for nonfarm uses, for example, soils of the Foley-Crowley-Jackport map unit. Wetness and shrink-swell potential are the main limitations to nonfarm uses of these soils. These limitations can be overcome by proper design and installation of foundations. It should be noted, however, that these soils have medium potential for cultivated crops, and many farmers have provided sufficient drainage for these

A *soil complex* consists of areas of two or more soils that are so intricately mixed or so small in size that they cannot be shown separately on the soil map. Each area in-

acid in the subsoil, and strongly acid to moderately alkaline in the underlying material. Permeability is low, and available water capacity is high. The water table is seasonally high and is within 12 inches of the surface dur-

This undifferentiated group has low potential for farming because of the hazard of frequent flooding. In most years the flooding occurs during the period of December to June. Crops that require a short growing season such as soybeans can be grown, but some years flooding is likely to damage the crop. Most of the area is within a

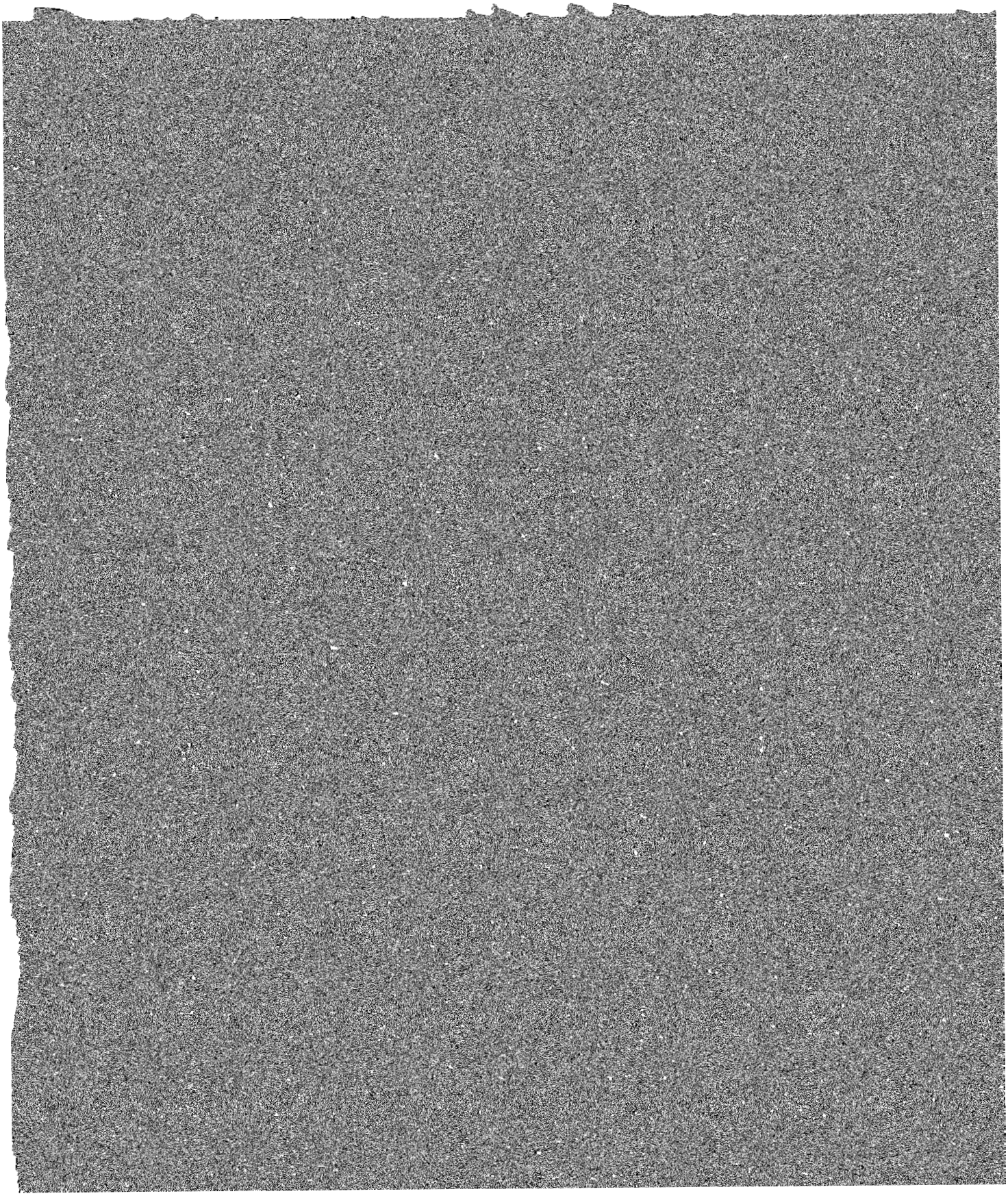
This soil has a high potential for growing cottonwood, cherrybark oak, and Nuttall oak. It has no significant limitation for woodland use or management.

This soil has high potential for dwellings, local roads and streets, light industry, and septic tank absorption fields. Sewage lagoons and sanitary landfills have severe

14—Bonn-Foley complex. This complex consists of Bonn and Foley soils that are so intermingled it was im-

1; the Foley soil in capability unit IIIw-3; woodland suitability group 3w9.

15—Rocket fine sandy loam, gently undulating. This



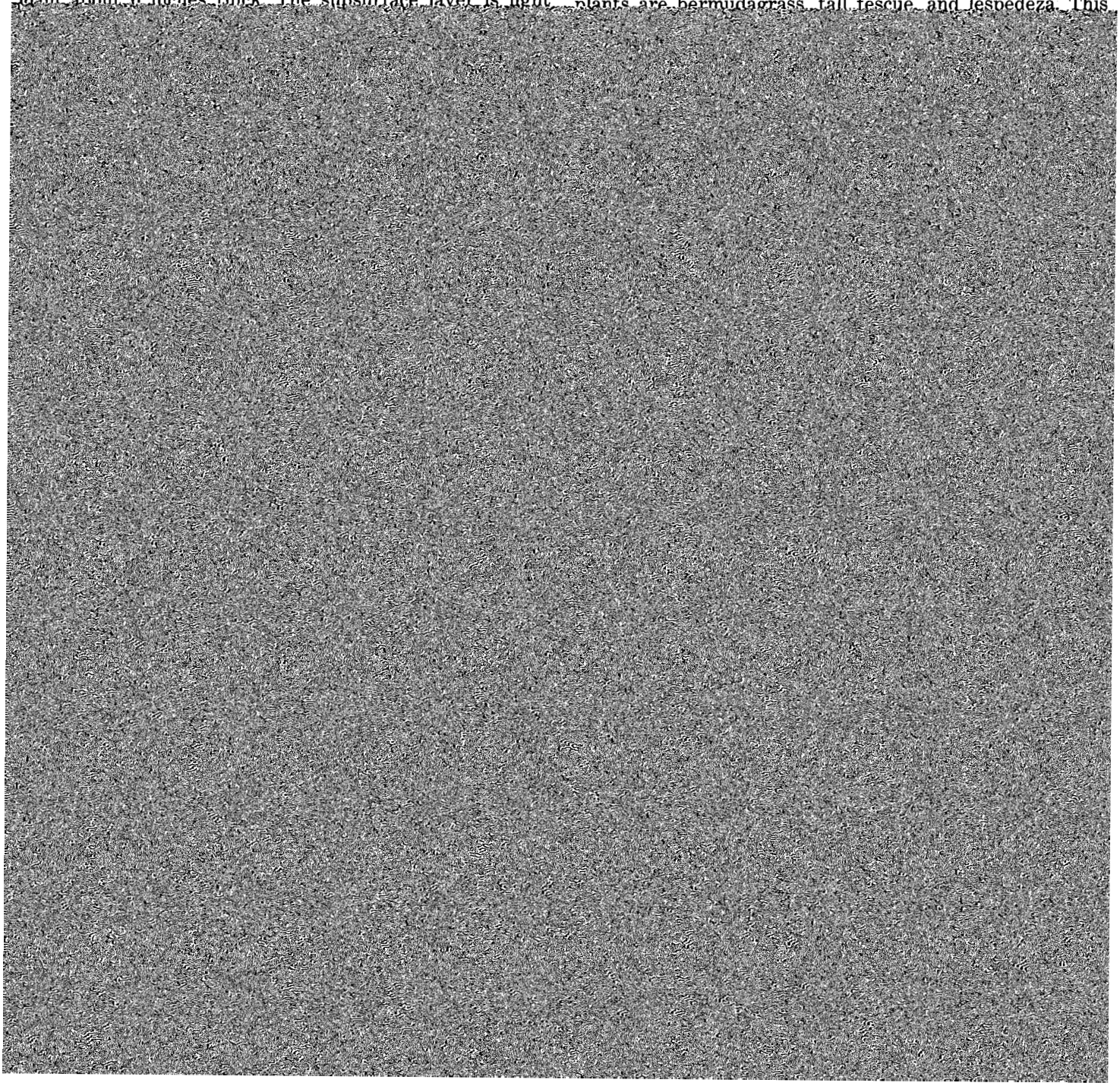
tion fields. The moderately rapid permeability below a depth of 28 inches is a severe limitation for this association. These soils have severe limitations for light industry. Brandon soil in capability unit VIe-1; woodland suitability group 3r7. Saffell soil in capability unit VIe-1; woodland suitability group 4f7.

19—Calhoun silt loam. This level poorly drained soil is on broad flats. Slope is less than 1 percent. Individual areas range in size from 20 to 500 acres.

Typically, the surface layer is dark grayish brown silt loam about 6 inches thick. The subsurface layer is light

This Collins soil is moderate in natural fertility, and content of organic matter is low. It is strongly or very strongly acid throughout, except for the surface layer where limed. Permeability is moderate, and available water capacity is high.

Collins silt loam has medium potential for growing row crops and small grains. Occasional flooding for short durations is a slight to moderate hazard. The main crops are cotton, soybeans, corn, and small grains. This soil has high potential for pasture and hay crops. Adapted pasture plants are bermudagrass, tall fescue, and lespedeza. This



this can be overcome by using special equipment and by logging during drier seasons.

This group has a very low potential for urban use. Wetness and flooding are the main limitations. They can be overcome only by major flood control and drainage measures. Capability unit IVw-1; woodland suitability group 1w5.

22—Crowley silt loan. This level soil is on broad flats. Slope is less than 1 percent. Individual areas range in size from about 20 to more than 1,000 acres.

Typically, the surface layer is dark grayish brown, mottled silt loam about 6 inches thick. The subsurface layer is grayish brown, mottled silt loam about 9 inches thick. The upper part of the subsoil is grayish brown, mottled silty clay about 17 inches thick. The middle part is grayish brown, mottled silty clay loam about 8 inches thick. The

Typically, the surface layer is brown silt loam about 7 inches thick. The upper part of the subsoil is dark brown silt loam about 33 inches thick. The lower part is dark brown loam about 15 inches thick. The underlying material is dark brown fine sandy loam.

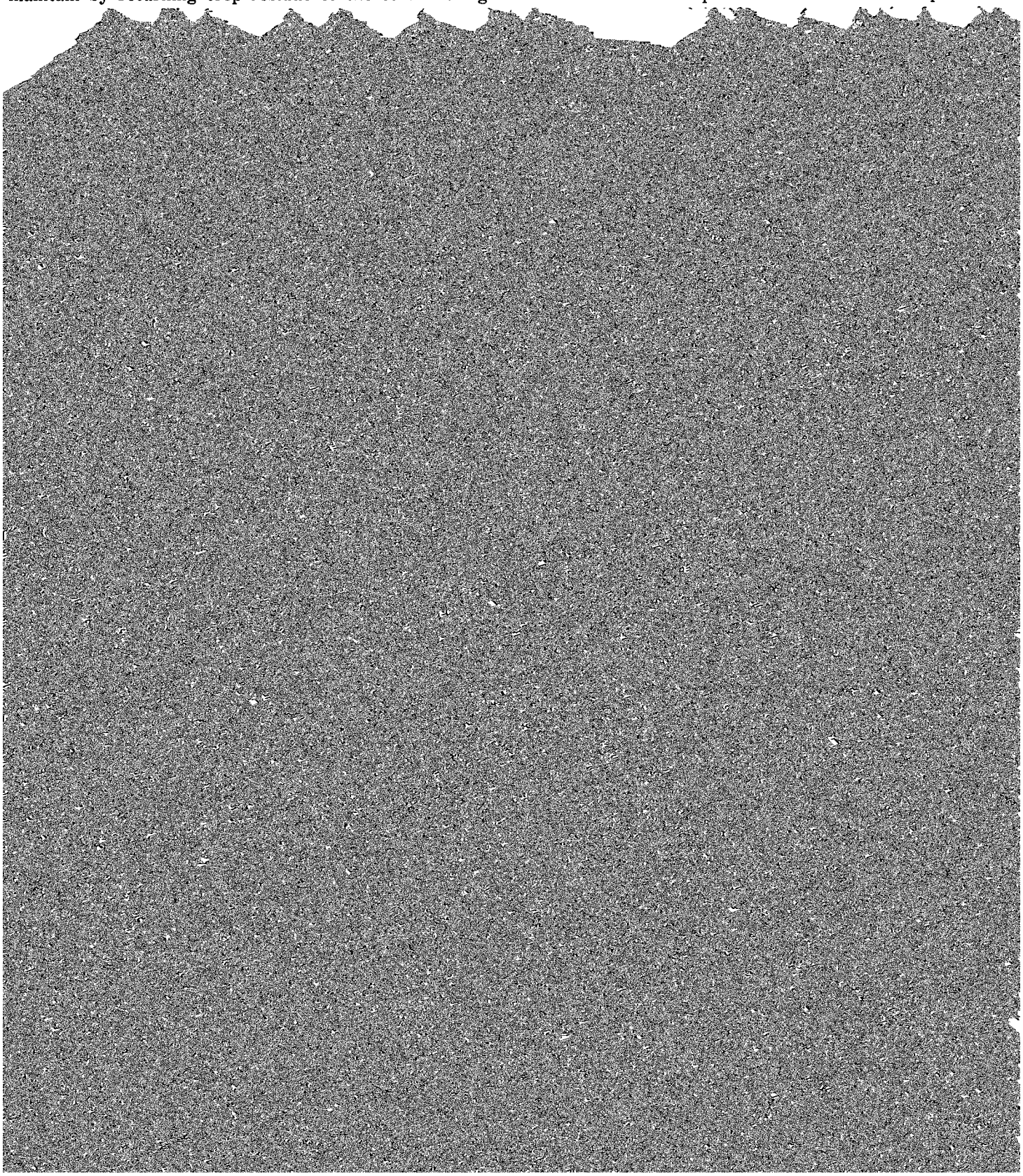
Included with this soil in mapping are a few areas of Bosket and Dundee soils, a few small areas with a level surface, and small areas with a fine sandy loam surface.

This soil is moderate in natural fertility, and content of organic matter is low. Permeability is moderate, and available water capacity is high. The soil is medium acid to strongly acid in the surface layer except where limed and strongly acid to very strongly acid in the subsoil and underlying material.

This Dexter soil has medium to high potential for growing row crops and small grains. Erosion is a moderate

This soil responds well to fertilization, and tilth is easy to maintain by returning crop residue to the soil. The high

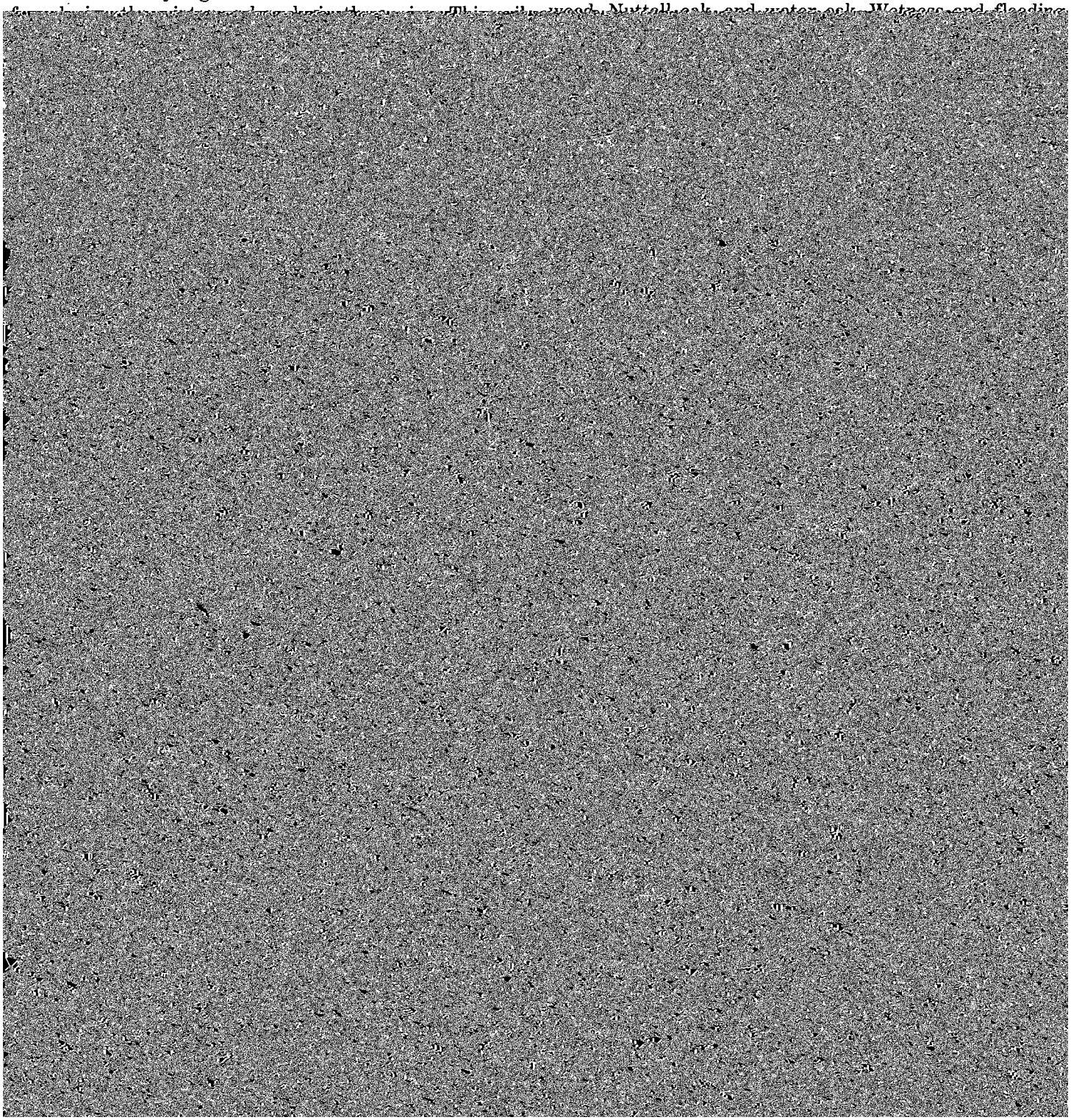
29—Jackport silty clay. This level soil is on broad flats that were backswamps of former streams. Slope is less



This soil is high in natural fertility, and content of organic matter is medium. The soil is strongly acid to neutral in the surface layer, slightly acid to moderately alkaline in the subsoil, and neutral to moderately alkaline in the underlying material. Permeability is very slow, and available water capacity is medium to high. The water table is seasonally high and within 12 inches of the sur-

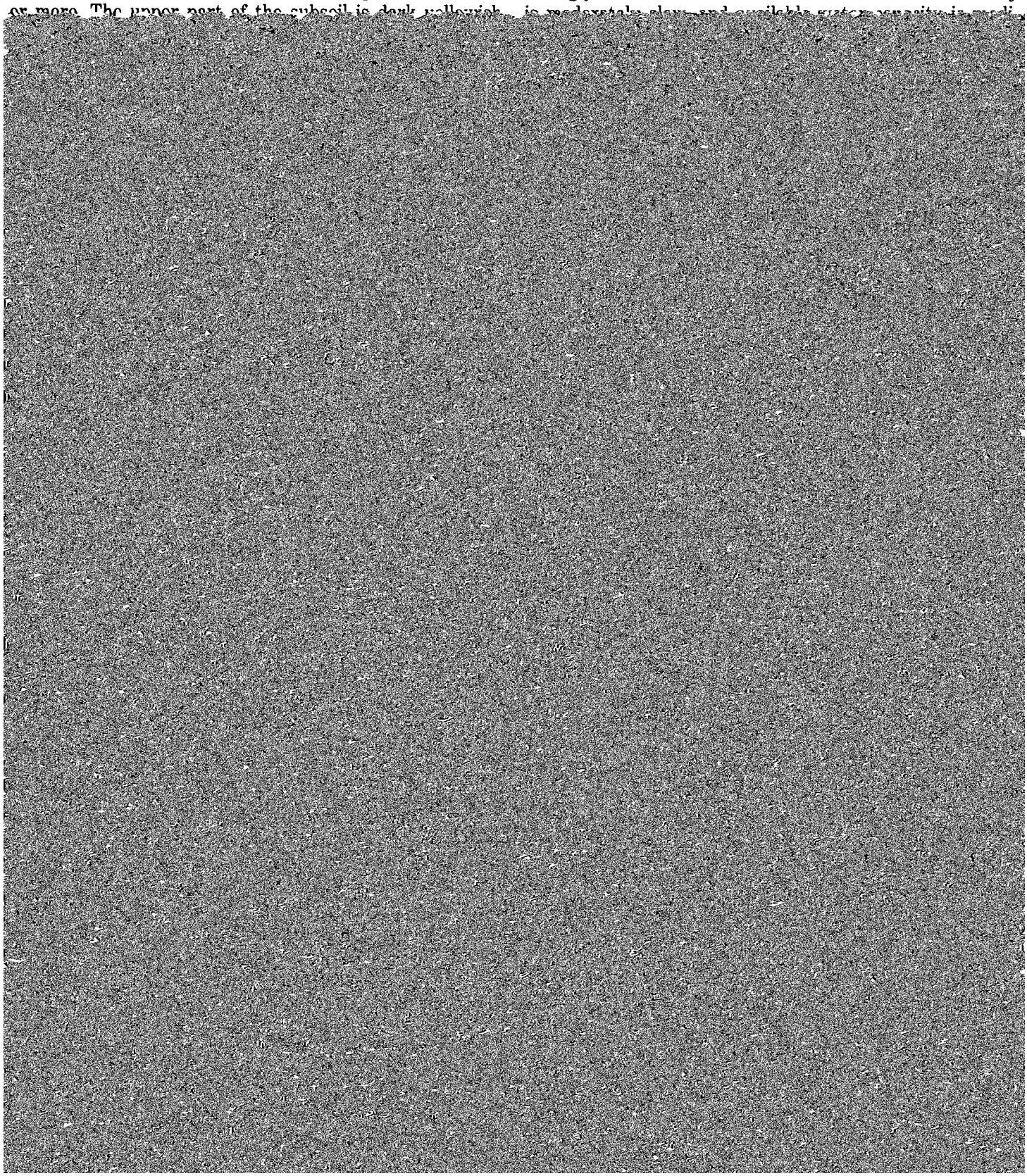
table is seasonally high, and flooding is frequent during winter and early in spring.

This undifferentiated group of soils has low potential for row crops because of the hazard of frequent flooding. It has moderately high potential for woodland and high potential for wildlife habitat; it is used mainly for these purposes. Some important trees are green ash, cotton-



Typically, the surface layer is brown silt loam about 5 inches thick. The subsoil extends to a depth of 72 inches or more. The upper part of the subsoil is dark yellowish

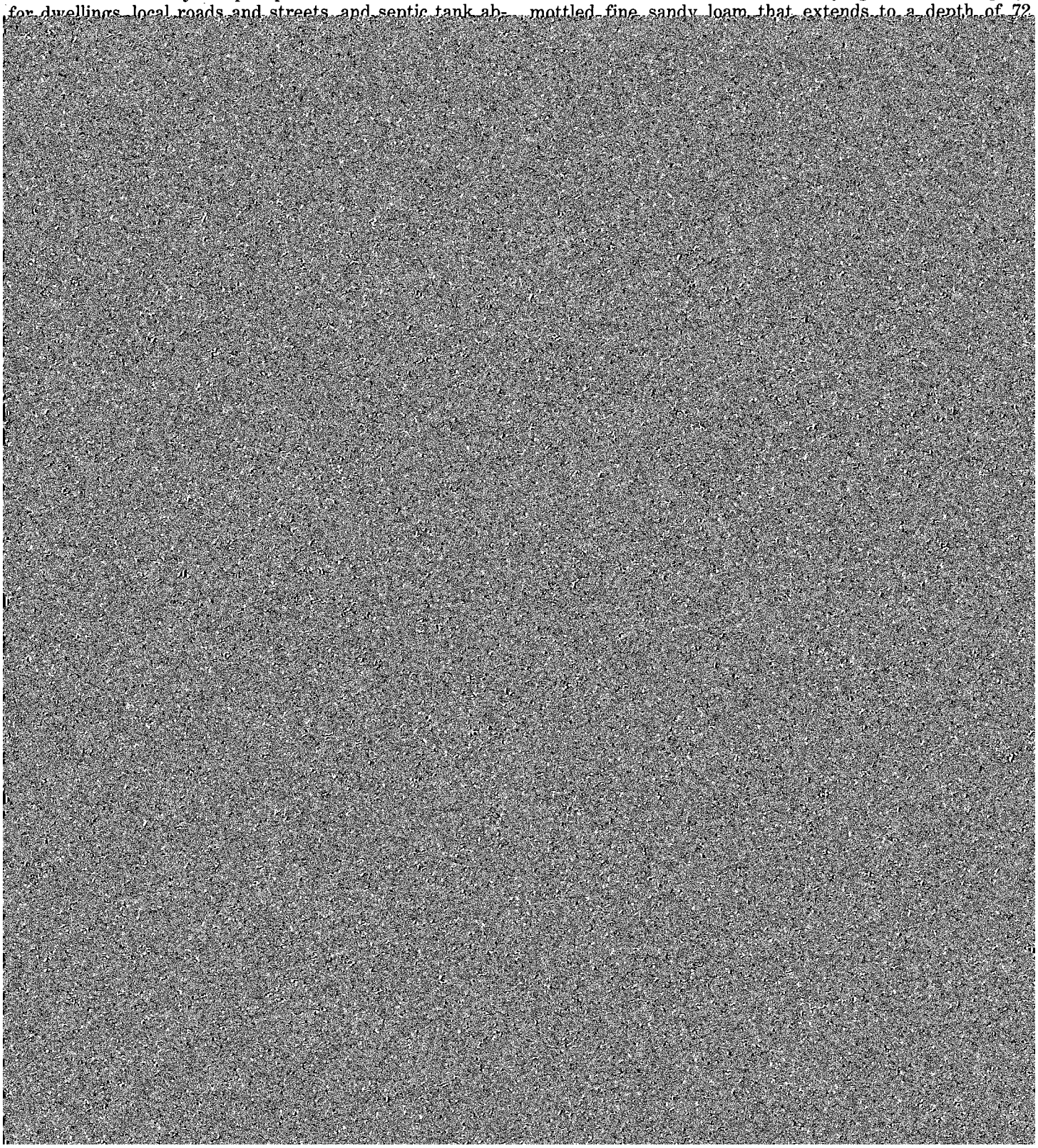
acid or medium acid in the surface layer and very strongly acid to medium acid in the subsoil. Permeability is moderately slow, and available water capacity is medi-



low-poplar. It has no significant limitation for woodland use and management.

This association has low potential for most urban uses. Soils with moderately steep slopes have severe limitations for dwellings, local roads and streets, and septic tank ab-

subsoil is gray, mottled fine sandy loam about 6 inches thick. The middle part is gray, mottled sandy clay loam about 28 inches thick. The lower part is gray, mottled loam 14 inches thick. The underlying material is gray, mottled fine sandy loam that extends to a depth of 72



This Wardell soil has medium potential for growing row crops. Farming operations are commonly delayed several days after a rain because of excess water, and surface drains are needed. The main crop is soybeans. Other suitable crops are cotton and grain sorghum. Adapted pasture plants are bermudagrass and tall fescue. This soil responds well to fertilization, and tilth is easy to maintain by returning crop residue to the soil.

This soil has high potential for woodland. Some important trees are cottonwood, water oak, and sweetgum. Wetness is a limitation to equipment use in managing and harvesting the tree crop, but this limitation is usually overcome by logging during the drier seasons.

This soil has low potential for most urban uses. Wetness is a severe limitation for dwellings, streets, and industrial sites. Slow permeability and wetness are severe limitations for septic tank absorption fields. These limitations are difficult or impractical to overcome. Capability

Contractors can find information that is useful in locating sources of sand and gravel, roadfill, and topsoil. Other information indicates the presence of bedrock, wetness, or very firm soil horizons that cause difficulty in excavation.

Health officials, highway officials, engineers, and many other specialists also can find useful information in this soil survey. The safe disposal of wastes, for example, is closely related to properties of the soil. Pavements, sidewalks, campsites, playgrounds, lawns, and trees and shrubs are influenced by the nature of the soil.

Crops and pasture

W. WILSON FERGUSON, conservation agronomist, Soil Conservation Service, assisted in preparing this section.

The major management concerns in the use of the soils for crops and pasture are described in this section. In ad-

Annual cover crops or grasses and legumes should be grown regularly in the cropping system if the erosion hazard is severe or if the crops grown leave only small amounts of residue. Seedbed preparation should be delayed until spring to secure maximum benefit from crop residue. Residue should be shredded and spread evenly to provide protective cover and active organic matter to the soils.

A plowpan commonly develops in loamy soils that are improperly tilled or are tilled frequently with heavy equipment. Keeping tillage to a minimum, varying the depth of tillage, and tilling when soil moisture content is favorable will help prevent formation of a plowpan. Growing deep-rooted grasses and legumes in the cropping system will help break up plowpans.

If left bare, many soils tend to puddle, pack, and crust during periods of heavy rainfall. Growing cover crops and managing crop residue help preserve or improve tilth.

Perennial grasses or legumes, or mixtures of these, are grown for pasture and hay. The mixtures generally consist of either a summer or a winter perennial grass and a suitable legume.

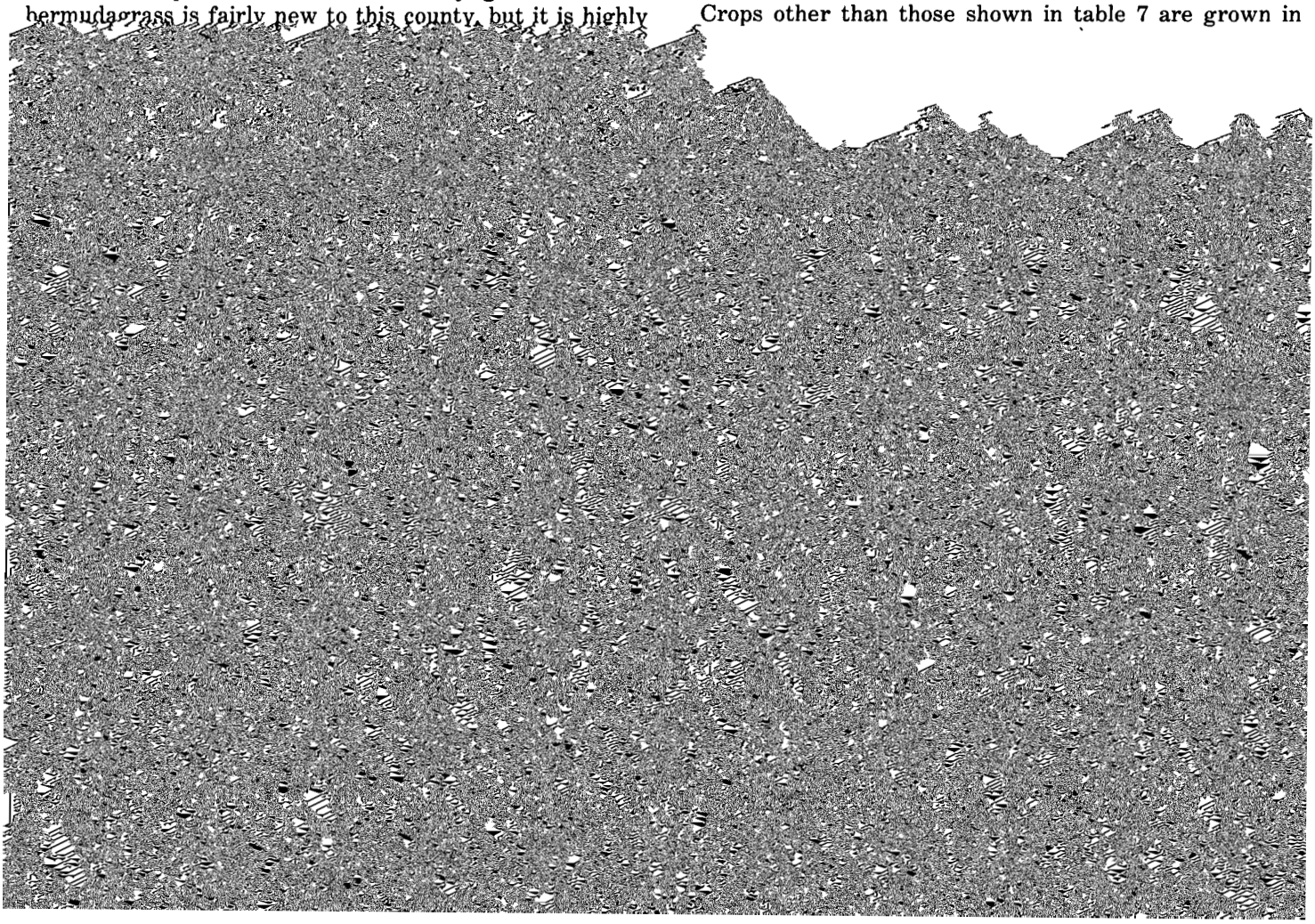
Coastal bermudagrass and common bermudagrass are the summer perennials most commonly grown. Coastal bermudagrass is fairly new to this county, but it is highly

The management needed to achieve the indicated yields of the various crops depends on the kind of soil and the crop. Such management provides drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate tillage practices, including time of tillage and seedbed preparation and tilling when soil moisture is favorable; 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 residues, barnyard manure, and green-manure crops; harvesting crops with the smallest possible loss; and timeliness of all fieldwork.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown; that good quality irrigation water is uniformly applied in proper amounts as needed; and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of the soils 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 7 are grown in



Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

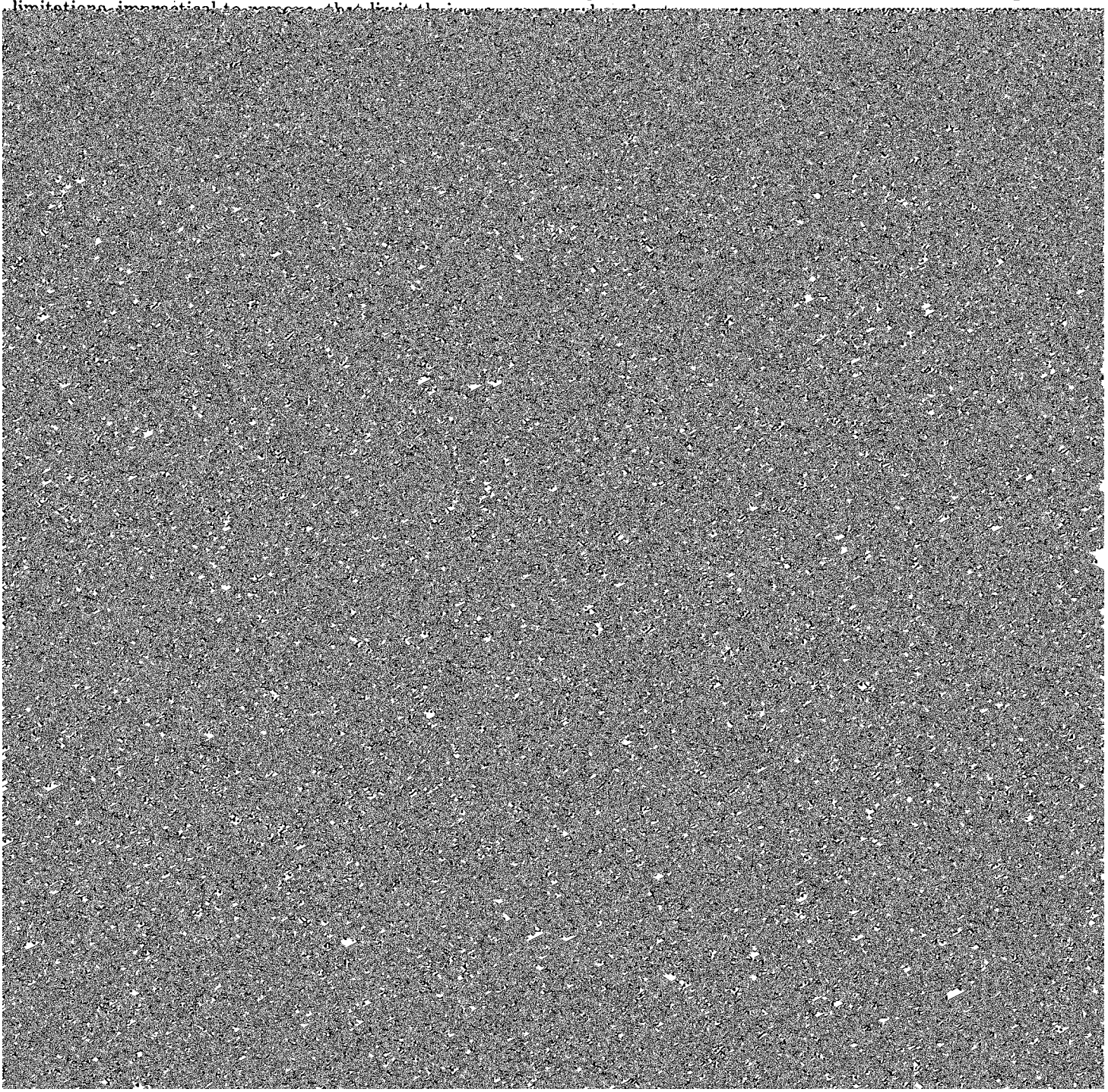
Class III soils have severe limitations that reduce the choice of plants, or that require special conservation practices, or both.

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

nut, cucumbertree, black cherry, red oak, black oak, white oak, hickory, ash, and sycamore.

Woodland, including woodland pasture, now makes up only about 27,049 acres, or 7 percent of the land area of the county, according to the 1969 Census of Agriculture. About 14,000 acres of the woodland is in the Black River Wildlife Management Area. The rest is privately owned. In recent years, there has been a trend to convert several hundred acres each year from woodland to cropland. It is expected that this trend will continue, but at a gradually



ment is not limited to a particular kind of equipment or time of year; *moderate* indicates a short seasonal limitation or a need for some modification in management or equipment; *severe* indicates a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Seedling mortality ratings indicate the degree that the soil affects expected mortality of planted tree seedlings. Plant competition is not considered in the ratings. Seedlings from good planting stock that are properly planted during a period of sufficient rainfall are rated. A rating of *slight* indicates that the expected mortality of the planted seedlings is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

The *potential productivity* of merchantable or *important trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Important trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

Trees to plant are those that are suitable for commercial wood production and that are suited to the soils.

Engineering

This section provides information about the use of soils for building sites, sanitary facilities, construction material, and water management. Among those who can benefit from this information are engineers, landowners, community planners, town and city managers, land developers, builders, contractors, and farmers and ranchers.

The ratings in the engineering tables are based on test data and estimated data in the "Soil properties" section. The ratings were determined jointly by soil scientists and engineers of the Soil Conservation Service using known relationships between the soil properties and the behavior of soils in various engineering uses.

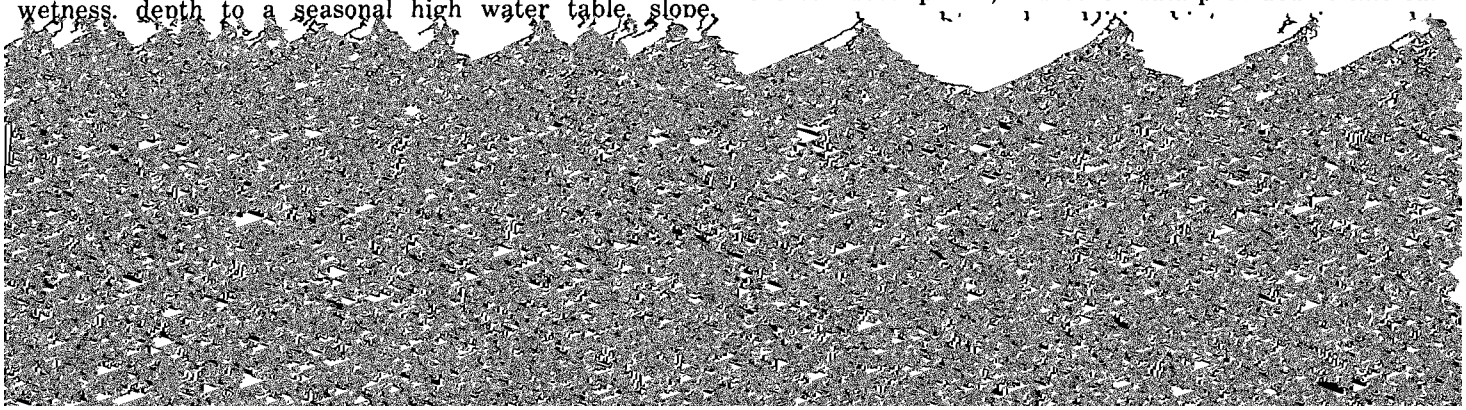
Among the soil properties and site conditions identified by a soil survey and used in determining the ratings in this section were grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock that is within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope,

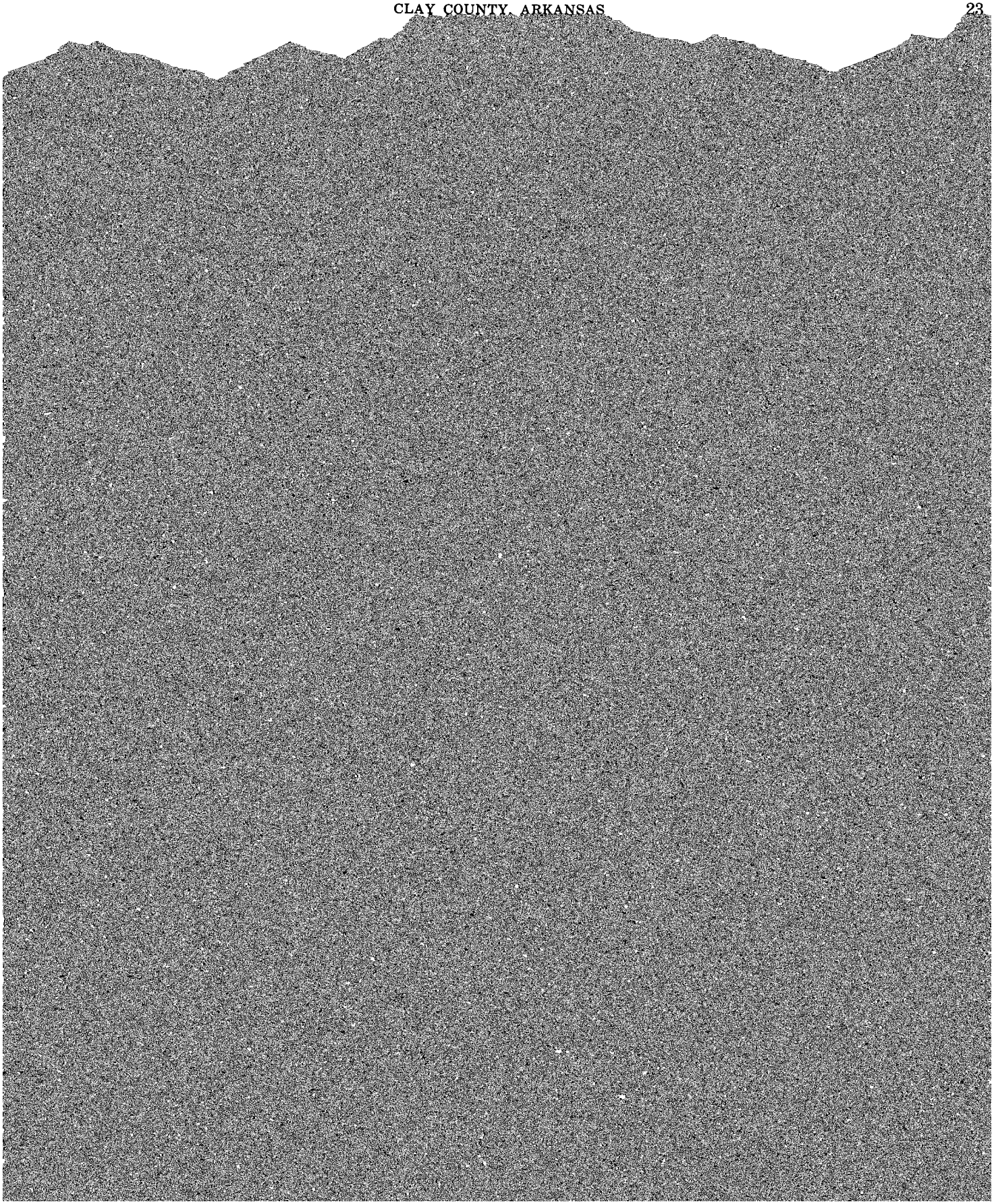
These factors of soil behavior affect construction and maintenance of roads, airport runways, pipelines, foundations for small buildings, ponds and small dams, irrigation projects, drainage systems, sewage and refuse disposal systems, and other engineering works. The ranges of values can be used to (1) select potential residential, commercial, industrial, and recreational uses; (2) make preliminary estimates pertinent to construction in a particular area; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for location of sanitary landfills, onsite sewage disposal systems, and other waste disposal facilities; (5) plan detailed onsite investigations of soils and geology; (6) find sources of gravel, sand, clay, and topsoil; (7) plan farm drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; (8) relate performance of structures already built to the properties of the kinds of soil on which they are built so that performance of similar structures on the same or a similar soil in other locations can be predicted; and (9) predict the trafficability of soils for cross-country movement of vehicles and construction equipment.

Data presented in this section are useful for land-use planning and for choosing alternative practices or general designs that will overcome unfavorable soil properties and minimize soil-related failures. Limitations to the use of these data, however, should be well understood. First, the data are generally not presented for soil material below a depth of 5 or 6 feet. Also, because of the scale of the detailed map in this soil survey, small areas of soils that differ from the dominant soil may be included in mapping. Thus, these data do not eliminate the need for onsite investigations, testing, and analysis by personnel having expertise in the specific use contemplated.

The information is presented mainly in tables. Table 9 shows, for each kind of soil, the degree and kind of limitations for building site development; table 10, for sanitary facilities; and table 12, for water management. Table 11 shows the suitability of each kind of soil as a source of construction materials.

The information in the tables, along with the soil map, the soil descriptions, and other data provided in this sur-





by the ease of working and spreading the soil material in preparing a seedbed and by the ability of the soil material to support plantlife. Also considered is the damage that can result at the area from which the topsoil is taken.

The ease of excavation is influenced by the thickness of suitable material, wetness, slope, and amount of stones. The ability of the soil to support plantlife is determined by texture, structure, and the amount of soluble salts or toxic substances. Organic matter in the A1 or Ap horizon greatly increases the absorption and retention of moisture and nutrients. Therefore, the soil material from these horizons should be carefully preserved for later use.

Embankments, dikes, and levees require soil material that is resistant to seepage, erosion, and piping and has favorable stability, shrink-swell potential, shear strength, and compaction characteristics. Large stones and organic matter in a soil downgrade the suitability of a soil for use in embankments, dikes, and levees.

Drainage of soil is affected by such soil properties as permeability; texture; depth to bedrock, hardpan, or other layers that affect the rate of water movement; depth to the water table; slope; stability of ditchbanks; susceptibility to flooding; salinity and alkalinity; and availability of outlets for drainage.

sive maintenance, limited use, or by a combination of these measures.

The information in table 13 can be supplemented by information in other parts of this survey. Especially helpful are interpretations for septic tank absorption fields, given in table 10, and interpretations for dwellings without basements and for local roads and streets, given in table 9.

Camp areas require such site preparation as shaping and leveling for tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facili-

In table 14, the soils in the survey area are rated according to their potential to support the main kinds of wildlife habitat in the area. This information can be used in planning for parks, wildlife refuges, nature study areas, and other developments for wildlife; selecting areas that are suitable for wildlife; selecting soils that are suitable for creating, improving, or maintaining specific elements of wildlife habitat; and 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* means that the element of

buds, catkins, twigs, bark, or foliage that wildlife eat. Major soil properties that affect growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of native plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are commercially available and suitable for planting on soils rated *good* are Russian-olive, autumn-olive, and crabapple.

Coniferous plants are cone-bearing trees, shrubs, or ground cover plants that furnish habitat or supply food in the form of browse, seeds, or fruitlike cones. Soil properties that have a major effect on the growth of coniferous plants are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, cedar, and juniper.

Shrubs are bushy woody plants that produce fruit, buds, twigs, bark, or foliage used by wildlife or that provide cover and shade for some species of wildlife. Major soil properties that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and moisture. Shrubs are not rated as a habitat element in this survey.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites, exclusive of submerged or floating aquatics. They produce food or cover for wildlife that use wetland as habitat. Major soil properties affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and sur-

Wetland habitat consists of open, marshy or swampy, shallow water areas where water-tolerant plants grow. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, and beaver.

Rangeland habitat consists of areas of wild herbaceous plants and shrubs. It is not rated as habitat for wildlife in this survey.

Soil properties

Extensive data about soil properties are summarized on the following pages. The two main sources of these data are the many thousands of soil borings made during the course of the survey and the laboratory analyses of selected soil samples from typical profiles.

In making soil borings during field mapping, soil scientists can identify several important soil properties. They note the seasonal soil moisture condition or the presence of free water and its depth. For each horizon in the profile, they note the thickness and color of the soil material; the texture, or amount of clay, silt, sand, and gravel or other coarse fragments; the structure, or the natural pattern of cracks and pores in the undisturbed soil; and the consistence of the soil material in place under the existing soil moisture conditions. They record the depth of plant roots, determine the pH or reaction of the soil, and identify any free carbonates.

Samples of soil material are analyzed in the laboratory

Texture is described in table 15 in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in soil material that is less than 2 millimeters in diameter. "Loam," for example, is soil material that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If a soil contains gravel or other particles coarser than sand, an appropriate modifier is added, for example, "gravelly loam." Other texture terms are defined in the Glossary.

The two systems commonly used in classifying soils for engineering use are the Unified Soil Classification System (Unified) (*2*) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO) (*1*).

The *Unified* system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter, plasticity index, liquid limit, and organic-matter content. Soils are grouped into 15 classes—eight classes of coarse-grained soils, identified as GW, GP, GM, GC, SW, SP, SM, and SC; six classes of fine-grained soils, identified as ML, CL, OL, MH, CH, and OH; and one class of highly organic soils, identified as Pt. Soils on the borderline between two classes have a dual classification symbol, for example, CL-ML.

The *AASHTO* system classifies soils according to those properties that affect their use in highway construction and maintenance. In this system a mineral soil is classified in one of seven basic groups ranging from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines. At the other extreme, in group A-7, are fine-grained soils. Highly organic soils are classified in group A-8 on the basis of visual inspection.

When laboratory data are available, the A-1, A-2, and A-7 groups are further classified as follows: A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, and A-7-6. As an additional refinement, the desirability of soils as subgrade material can be indicated by a group index number. These numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The estimated AASHTO classification, without group index numbers, is given in table 15. Also in table 15 the percentage, by weight, of rock fragments more than 3 inches in diameter is estimated for each major horizon. These estimates are determined mainly by observing volume percentage in the field and then converting that, by formula, to weight percentage.

Percentage of the soil material less than 3 inches in diameter that passes each of four sieves (U.S. standard) is estimated for each major horizon. The estimates are based on tests of soils that were sampled in the survey area and in nearby areas and on field estimates from many borings made during the survey.

Liquid limit and *plasticity index* indicate the effect of water on the strength and consistence of soil. These indexes are used in both the Unified and AASHTO soil classification systems. They are also used as indicators in making general predictions of soil behavior. Range in liquid limit and plasticity index are estimated on the basis of test data from the survey area or from nearby areas and on observations of the many soil borings made during the survey.

In some surveys, the estimates are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterburg limits extend a marginal amount across classification boundaries (1 or 2 percent), the classification in the marginal zone is omitted in table 15.

Physical and chemical properties

Table 16 shows estimated values for several soil characteristics and features that affect behavior of soils in engineering uses. These estimates are given for each major horizon, at the depths indicated, in the typical pedon of each soil. The estimates are based on field observations and on test data for these and similar soils.

Permeability is estimated on the basis of known relationships among the soil characteristics observed in the field—particularly soil structure, porosity, and gradation or texture—that influence the downward movement of water in the soil. The estimates are for vertical water movement when the soil is saturated. Not considered in the estimates is lateral seepage or such transient soil features as plowpans and surface crusts. Permeability of the soil is an important factor to be considered in planning and designing drainage systems, in evaluating the potential of soils for septic tank systems and other waste disposal systems, and in many other aspects of land use and management.

Available water capacity is rated on the basis of soil characteristics that influence the ability of the soil to hold water and make it available to plants. Important characteristics are content of organic matter, soil texture, and soil structure. Shallow-rooted plants are not likely to use the available water from the deeper soil horizons. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design of irrigation systems.

Soil reaction is expressed as a range in pH values. The range in pH of each major horizon is based on many field checks. For many soils, the values have been verified by laboratory analyses. Soil reaction is important in selecting the crops, ornamental plants, or other plants to be grown; in evaluating soil amendments for fertility and stabilization; and in evaluating the corrosivity of soils.

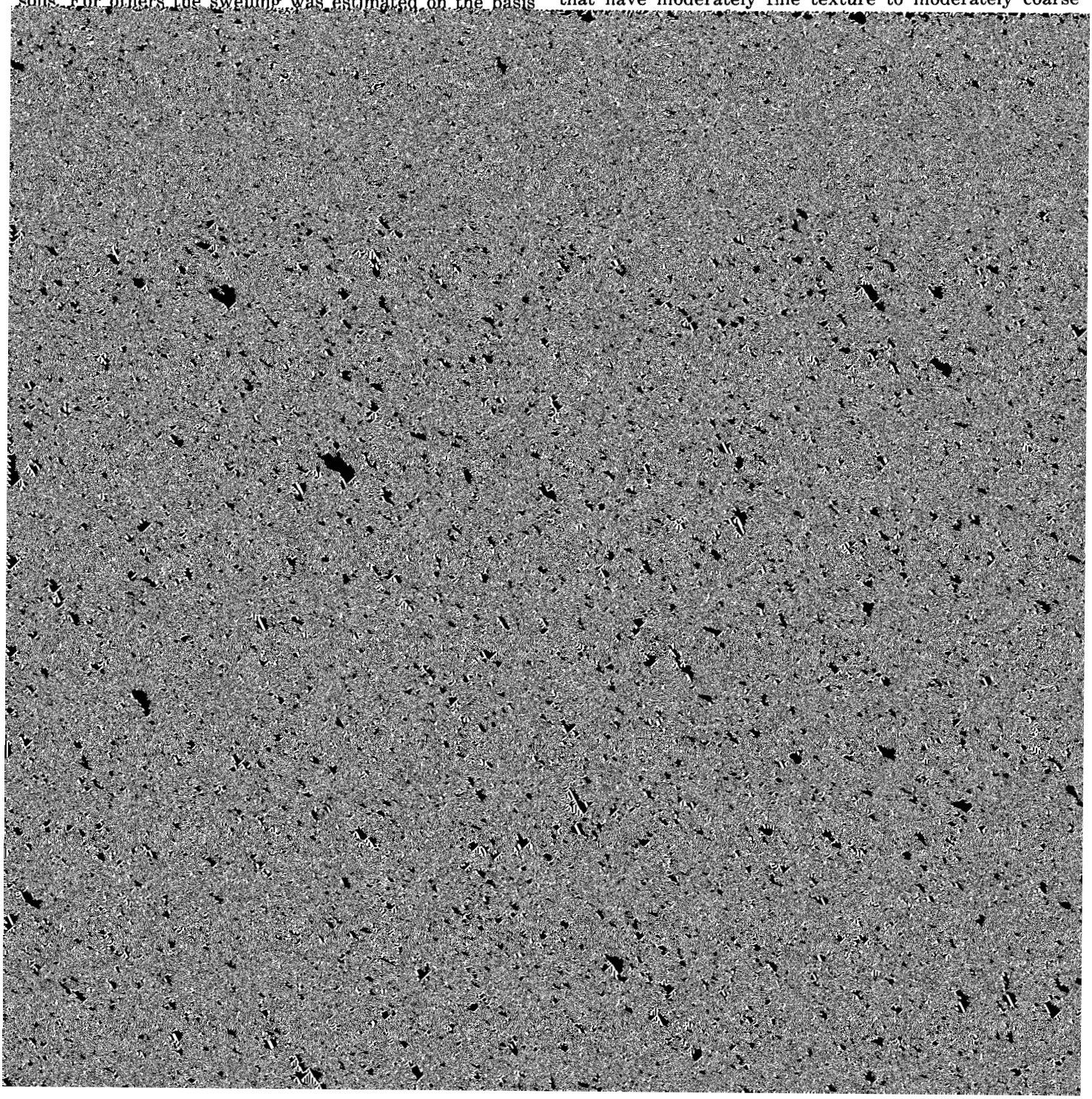
Salinity is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of the nonirrigated soils. The salinity of individual irrigated fields is affected by the quality of the irrigation water and by the frequen-

cy of water application. Hence, the salinity of individual fields can differ greatly from the value given in table 16. Salinity affects the suitability of a soil for crop production, its stability when used as a construction material, and its potential to corrode metal and concrete.

Shrink-swell potential depends mainly on the amount and kind of clay in the soil. Laboratory measurements of the swelling of undisturbed clods were made for many soils. For others the swelling was estimated on the basis

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

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse



Information about the seasonal high water table helps in assessing the need for specially designed foundations, the need for specific kinds of drainage systems, and the need for footing drains to insure dry basements. Such information is also needed to decide whether or not construction of basements is feasible and to determine how septic tank absorption fields and other underground installations will function. Also, a seasonal high water table affects ease of excavation.

Depth to bedrock is shown for all soils that are underlain by bedrock at a depth of 5 to 6 feet or less. For many soils, the limited depth to bedrock is a part of the definition of the soil series. The depths shown are based on measurements made in many soil borings and on other observations during the mapping of the soils. The kind of bedrock and its hardness as related to ease of excavation is also shown. Rippable bedrock can be excavated with a single-tooth ripping attachment on a 200-horsepower tractor, but hard bedrock generally requires blasting.

Cemented pans are hard subsurface layers, within a depth of 5 or 6 feet, that are strongly compacted (indurated). Such pans cause difficulty in excavation. The hardness of pans is similar to that of bedrock. A rippable pan can be excavated, but a hard pan generally requires blasting.

Physical and chemical analyses of selected soils

Physical and chemical data resulting from laboratory analyses can be useful to the soil scientist in classifying soils. These data are helpful in estimating available water capacity, acidity, cation exchange cpacity, mineralogical composition, organic matter content, and other soil test characteristics of the soil series in this survey area.

Soil pH was determined on 1:1 soil to water mixture. Available phosphorus was extracted with the Bray No. 1 solution (0.03 *N* ammonium fluoride and 0.025 *N* hydrochloric acid) and measured colorimetrically.

The bases were extracted with 1*N*, pH 7.0, ammonium acetate. Calcium, potassium, and sodium were determined with a flame-photometer and magnesium was measured by atomic absorption. The extractable acidity was determined by the barium chloride-triethanolamine method (*18*).

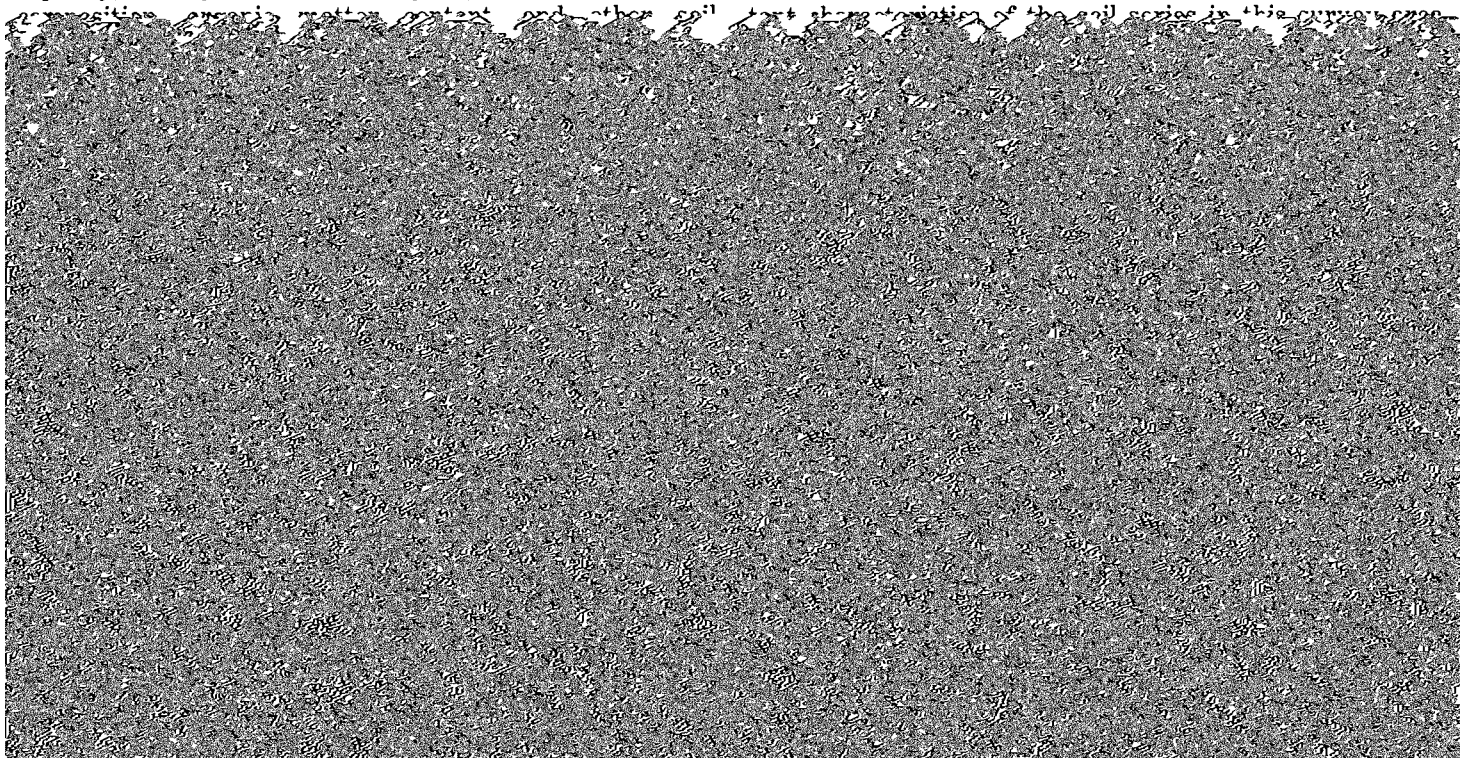
The total extractable calcium, potassium, magnesium, sodium, and extractable acidity is an approximation of the cation exchange capacity of the soil. Except in soils that contain soluble salts, base saturation was determined by dividing this total into the sum of calcium, potassium, magnesium, and sodium, and multiplying by 100.

Soil series and morphology

In this section, each soil series recognized in the survey area is described in detail. The descriptions are arranged in alphabetic order by series name.

Characteristics of the soil and the material in which it formed are discussed for each series. The soil is then compared to similar soils and to nearby soils of other series. Then a pedon, a small three-dimensional area of soil that is typical of the soil series in the survey area, is described. The detailed descriptions of each soil horizon follow standards in the Soil Survey Manual (*7*). Unless otherwise noted, colors described are for moist soil.

Following the pedon description is the range of impor-



Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam; weak medium granular structure; friable; many fine roots; few small dark concretions; medium acid; abrupt smooth boundary.

A2g—6 to 12 inches; light brownish gray (10YR 6/2) silt loam; common fine distinct dark yellowish brown mottles; weak medium subangular blocky structure; friable; common fine pores; few small dark concretions; strongly acid; clear smooth boundary.

B21tg—12 to 25 inches; light brownish gray (10YR 6/2) silt loam; common medium distinct dark yellowish brown (10YR 4/4) and few fine faint light gray mottles; moderate medium subangular blocky structure; firm; common medium pores; patchy clay films in pores and on faces of peds; few small dark concretions; very strongly acid; gradual wavy boundary.

B22tg—25 to 44 inches; light brownish gray (10YR 6/2) silty clay loam; few fine distinct dark yellowish brown and common fine faint light gray mottles; moderate medium subangular blocky structure; firm; common medium pores; patchy clay films on faces of peds and in pores; few fine dark concretions; very strongly acid; gradual boundary.

B3g—44 to 60 inches; gray (10YR 5/1) silty clay loam; few medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; firm; light gray silt coatings on faces of peds; few fine dark concretions and black patchy stains on faces of peds; slightly acid; clear wavy boundary.

Cg—60 to 72 inches; gray (10YR 5/1) silty clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; massive; firm; few lenses and small pockets of light gray (10YR 7/1) silt; common fine dark concretions; moderately alkaline.

Thickness of the solum ranges from 50 to 70 inches or more. Reaction is very strongly acid to medium acid in the A horizon, very strongly acid to slightly acid in the B horizon, and strongly acid to moderately alkaline in the C horizon.

The A horizon is generally less than 15 inches thick, but it ranges to 20 inches. The Ap horizon has a hue of 10YR, a value of 4 or 5, and a chroma of 2. The A2g horizon has a hue of 10YR, a value of 6, and a chroma of 1 or 2. Texture is silt loam or fine sandy loam.

The B2tg horizon either has a hue of 10YR, a value of 6, and a chroma of 1 or 2, or it has a hue of 2.5Y, a value of 5 or 6, and a chroma of 2. Texture is silt loam and silty clay loam. Few to common fine or medium yellowish brown or gray mottles are throughout the horizon. The B3 horizon has a hue of 10YR, values of 5 to 7, and a chroma of 1. Texture is loam, silt loam, or silty clay loam.

The Cg horizon has a hue of 10YR or 2.5Y, a value of 5 or 6, and a chroma of 1. Texture is silty clay loam, silt loam, or loam. Medium sized brown and yellow mottles along with small pockets or veins of light gray silt are common.

Beulah series

The Beulah series consists of somewhat excessively drained undulating soils on the higher parts of natural levees bordering bayous and along abandoned stream

Ap—0 to 7 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; many fine roots; strongly acid; abrupt smooth boundary.

B21—7 to 30 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak medium subangular blocky structure; very friable; common fine roots; strongly acid; clear wavy boundary.

B22—30 to 39 inches; yellowish brown (10YR 5/4) fine sandy loam; weak fine subangular blocky structure; very friable; few fine roots; strongly acid; clear wavy boundary.

C1—39 to 46 inches; yellowish brown (10YR 5/4) loamy fine sand; single grained; very friable; strongly acid; clear wavy boundary.

C2—46 to 72 inches; brown (10YR 5/3) loamy sand; single grained; loose; medium acid.

Thickness of the solum ranges from 24 to 50 inches. Reaction is strongly acid or medium acid in the A horizon, very strongly acid or strongly acid in the B horizon, and strongly acid to slightly acid in the C horizon.

The A horizon is less than 10 inches thick in most pedons. It has a hue of 10YR, a value of 4, and a chroma of 2 or 3. Texture is fine sandy loam or sandy loam.

The B2 horizon either has a hue of 10YR, a value of 4 or 5, and a chroma of 4, or it has a hue of 7.5YR, a value of 4, and a chroma of 4. Texture ranges from fine sandy loam to loam.

The C horizon has a hue of 10YR, a value of 5, and a chroma of 3 or 4. Texture is loamy sand, loamy fine sand, or fine sandy loam.

Bonn series

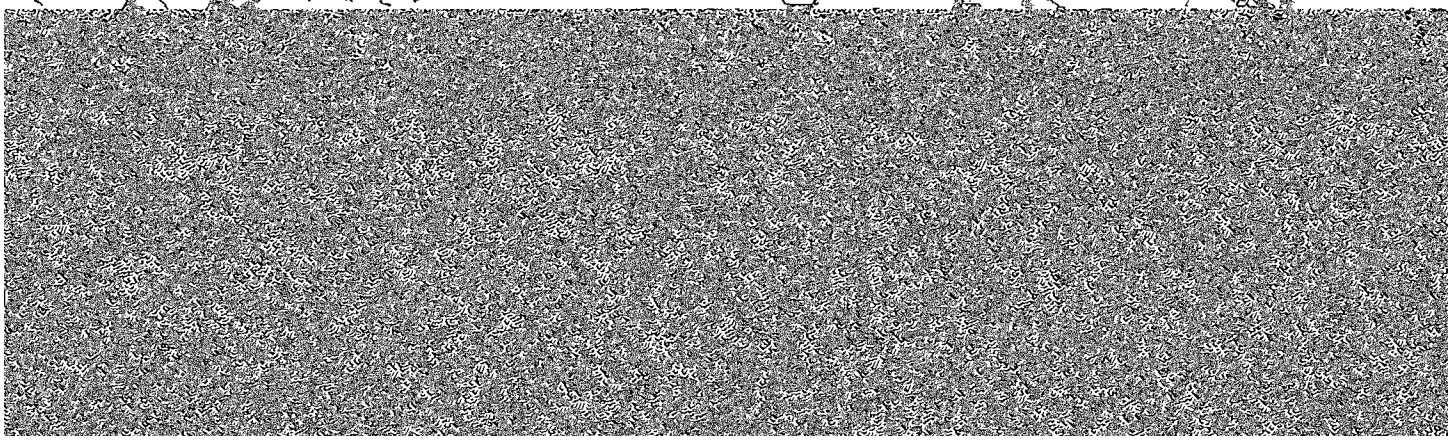
The Bonn series consists of poorly drained, very slowly permeable soils that formed in silty sediment that has many characteristics similar to those of loess. These soils are on broad flats. The native vegetation is open stands of hardwoods (predominantly post oaks) and an understory of forbs and grasses. Slope is generally less than 1 percent.

Bonn soils are geographically associated with Calhoun, Crowley, and Foley soils. Crowley and Calhoun soils are on broad flats and do not have a natric horizon. Foley soils are also on broad flats and do not have a high content of sodium and magnesium in the upper part of the B horizon.

Typical pedon of Bonn silt loam in an idle area of the Bonn-Foley complex, in the SW1/4NE1/4SE1/4, sec. 35, T. 21 N., R. 5 E.:

Ap—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; very friable; common fine roots; common dark concretions; very strongly acid; abrupt smooth boundary.

B&A2g—4 to 13 inches; grayish brown (10YR 5/2) silty clay loam;



B24tg—38 to 51 inches; olive gray (5Y 5/2) silty clay loam; common medium distinct dark yellowish brown (10YR 4/4) and olive (5Y 4/3) mottles; weak coarse prismatic parting to moderate medium angular

The Ap horizon is 6 to 9 inches thick. It has a hue of 10YR, a value of 3, and a chroma of 2 or 3. The A3 horizon is 0 to 11 inches thick. It has a hue of 10YR, values of 3 through 5, and a chroma of 4

Calhoun series

The Calhoun series consists of poorly drained, slowly permeable soils that formed in loamy sediment. These soils are on broad flats. They are saturated with water late in winter and early in spring. The native vegetation is mixed hardwoods. Slope is generally less than 1 percent.

Calhoun soils are geographically associated with Amagon and Foley soils. Amagon soils are on the lower parts of old natural levees and lack tonguing of the A2 horizon into the B horizon. Foley soils are on broad flats and have a natric horizon.

Typical pedon of Calhoun silt loam, in a cultivated area [illegible]

Typical pedon of Collins silt loam, occasionally flooded, in a cultivated area in the NE1/4SE1/4NW1/4, sec. 2, T. 21 N., R. 7 E.:

Ap—0 to 6 inches; brown (10YR 4/3) silt loam; weak medium granular structure; friable; common fine roots; strongly acid; abrupt smooth boundary.

C1—6 to 14 inches; brown (10YR 4/3) silt loam; massive; friable; few fine roots; common fine pores; strongly acid; clear smooth boundary.

C2—14 to 18 inches; brown (10YR 4/3) silt loam; few medium faint pale brown (10YR 6/3) mottles; massive; friable; common fine pores; strongly acid; clear smooth boundary.

C3—18 to 24 inches; brown (10YR 5/3) silt loam; few fine faint dark brown and light brownish gray (10YR 6/2) mottles; massive; friable; common fine pores; strongly acid; clear smooth boundary.

C4—24 to 39 inches; pale brown (10YR 6/3) silt loam; common medium

IIC2—52 to 62 inches; grayish brown (10YR 5/2) fine sandy loam; common medium distinct dark yellowish brown (10YR 4/4) and brown (10YR 4/3) mottles; massive; friable; few fine brown concretions; few dark brown soft masses; neutral; clear smooth boundary.

IIIC3—62 to 72 inches; grayish brown (2.5Y 5/2) silty clay loam; common medium prominent strong brown (7.5YR 5/6) mottles; weak fine subangular blocky structure; firm; common fine pores; common black and brown stains; neutral.

Thickness of the solum ranges from 20 to 40 inches. Reaction is medium acid to neutral in the A horizon, slightly acid to mildly alkaline in the B horizon, and neutral or mildly alkaline in the C horizon.

B3g—40 to 72 inches; olive gray (5Y 5/2) silty clay loam; common medium distinct grayish brown (2.5Y 5/2) and common medium prominent strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; patchy distinct clay films on faces of peds; few fine pores; common fine and medium concretions; abundant black stains; few old roots and root channels; moderately alkaline.

Thickness of the solum ranges from about 40 to 75 inches. Reaction is very strongly acid to medium acid in the A horizon, very strongly acid to slightly acid in the B2tg horizon, and medium acid to moderately alkaline in the B3g horizon.

The A horizon ranges from 12 to 25 inches in thickness. The Ap

Dubbs series

The Dubbs series consists of well drained, moderately permeable soils that formed in loamy alluvium. These soils are on natural levees bordering abandoned stream channels. The native vegetation is mixed hardwoods. Slope ranges from 0 to 3 percent.

Dubbs soils are geographically associated with Beulah and Dundee soils. Beulah soils are on higher parts of natural levees bordering bayous and are coarser textured than Dubbs soils. Dundee soils are on lower parts of natural levees bordering abandoned stream channels and are more poorly drained than Dubbs soils.

Typical pedon of Dubbs very fine sandy loam, in a cultivated area in the NE1/4NE1/4NE1/4, sec. 20, T. 19 N., R. 8 E.:

Ap—0 to 8 inches; brown (10YR 4/3) very fine sandy loam; weak fine granular structure; very friable; many fine roots; medium acid; abrupt smooth boundary.

B1—8 to 16 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; friable; common fine roots; few fine pores; strongly acid; clear smooth boundary.

B21t—16 to 27 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium subangular blocky structure; friable; common fine pores; strongly acid; clear smooth boundary.

B22t—27 to 37 inches; dark yellowish brown (10YR 4/4) silt loam; few medium distinct grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; friable; common fine pores; very

Typical pedon of Dundee silt loam in a cultivated area in the SE1/4NW1/4NW1/4, sec. 15, T. 19 N., R. 5 E.:

Ap—0 to 7 inches; brown (10YR 4/3) silt loam; weak medium granular structure; friable; common fine roots; medium acid; abrupt smooth boundary.

B1g—7 to 16 inches; grayish brown (10YR 5/2) silt loam; common fine faint dark grayish brown and distinct yellowish brown mottles; weak medium subangular blocky structure; friable; few fine roots; common fine pores; few dark concretions; strongly acid; clear smooth boundary.

B21tg—16 to 31 inches; grayish brown (10YR 5/2) silt loam; few fine faint light brownish gray and distinct yellowish brown mottles; weak medium subangular blocky structure; friable; few patchy clay films on faces of peds; few fine roots; few fine pores; few fine brown and black concretions; very strongly acid; gradual wavy boundary.

B22tg—31 to 41 inches; grayish brown (10YR 5/2) silty clay loam; common medium faint light brownish gray (10YR 6/2) and distinct yellowish brown (10YR 5/4, 5/6) mottles; moderate medium subangular blocky structure; firm; patchy distinct clay films on faces of peds; few fine pores; common fine brown and black concretions; common black stains; very strongly acid; gradual wavy boundary.

B3g—41 to 59 inches; light brownish gray (10YR 6/2) silt loam; common medium distinct yellowish brown (10YR 5/6) and dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; friable; few patchy clay films on faces of peds; common fine brown and black concretions; common black and brown stains; very strongly acid; gradual wavy boundary.

Cg—59 to 72 inches; light brownish gray (10YR 6/2) silt loam; common medium distinct yellowish brown (10YR 5/6) and dark yellowish

C2g—14 to 27 inches; grayish brown (10YR 5/2) silt loam; common medium distinct dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; friable; few fine roots; common fine pores; few dark brown stains; strongly acid; gradual wavy boundary.

C3g—27 to 41 inches; grayish brown (10YR 5/2) silt loam; common medium distinct dark yellowish brown (10YR 4/4) and faint light gray (10YR 6/1) mottles; weak medium platy structure; friable; common fine pores; strongly acid; gradual wavy boundary.

C4g—41 to 56 inches; light gray (10YR 6/1) silt loam; common medium distinct dark yellowish brown (10YR 4/4) and faint grayish brown (10YR 5/2) mottles; weak medium platy structure; friable; few fine pores; strongly acid; clear smooth boundary.

Bxb—56 to 72 inches; light brownish gray (10YR 6/2) silt loam; common medium distinct dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/4) mottles; weak coarse prismatic parting to weak medium subangular blocky structure; brittle, firm; common fine pores; light gray silt coatings on faces of prisms; common dark concretions; strongly acid.

Reaction of the soil is strongly acid or very strongly acid throughout except where the surface layer is limed. Depth to buried horizons is 30 to 60 inches.

The A horizon is 5 to 10 inches thick. The A horizon has a hue of 10YR, a value of 4 or 5, and a chroma of 2 or 3.

The C1 horizon has a hue of 10YR, a value of 4 or 5, and a chroma of 2 or 3. The Cg horizon has a hue of 10YR, a value of 5 or 6, and a chroma of 1 or 2. Common fine or medium brown and yellow mottles are present throughout this horizon.

Foley series

prismatic parting to moderate medium subangular structure; firm; patchy clay films on faces of peds; gray silt streaks in vertical seams between prisms; few fine roots; few pores; few medium black concretions; strongly acid; gradual wavy boundary.

B22tg—26 to 40 inches; gray (10YR 5/1) silty clay loam; common medium distinct olive (5Y 5/3) mottles; moderate coarse prismatic parting to moderate medium subangular blocky structure; firm; patchy clay films on faces of peds; gray silt streaks in vertical seams between prisms; few fine roots; few pores; few medium black concretions; few black weblike stains; neutral; gradual wavy boundary.

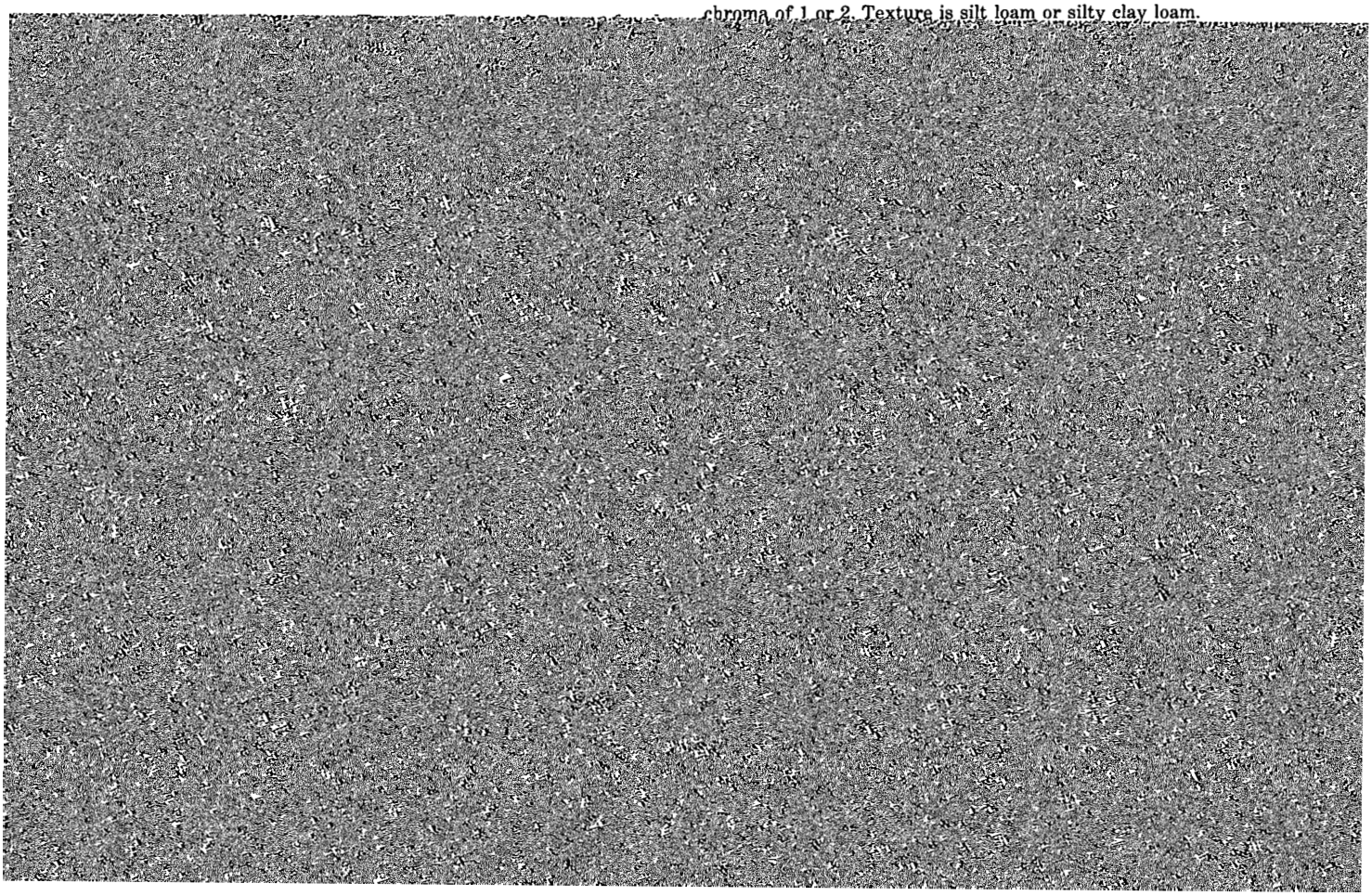
B23tg—40 to 54 inches; gray (10YR 5/1) silty clay loam; common fine distinct olive and yellowish brown mottles; moderate medium prismatic parting to moderate medium subangular blocky structure; firm; patchy clay films on faces of some peds; gray silt streaks in vertical seams between prisms; few old roots; few pores; few black stains; few medium black concretions; few medium calcium carbonate nodules; neutral; gradual wavy boundary.

B3g—54 to 72 inches; olive gray (5Y 5/2) silt loam; common medium distinct gray (10YR 5/1) and strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; few black stains; common medium calcium carbonate nodules; moderately alkaline.

Thickness of the solum ranges from about 40 to more than 72 inches. Reaction is very strongly acid to medium acid in the A horizon and strongly acid to moderately alkaline in the B horizon. Depth to the natric horizon ranges from about 18 to 30 inches.

The A horizon is about 6 to 15 inches thick. The Ap horizon has a hue of 10YR and either a value of 4 or 5 and a chroma of 2 or a value of 5 and a chroma of 3. The A2g horizon has a hue of 10YR and either a value of 5 or 6 and a chroma of 2 or a value of 6 and a chroma of 1.

The B horizon has a hue of 10YR, 2.5Y, or 5Y; values of 4 to 6; and a chroma of 1 or 2. Texture is silt loam or silty clay loam.



extend to about 40 inches; common small and medium dark concretions; common fine pores; neutral; gradual wavy boundary.

B3g—42 to 60 inches; grayish brown (2.5Y 5/2) silty clay loam; common medium distinct yellowish brown (10YR 5/4) and few fine prominent strong brown mottles; weak medium subangular blocky structure; firm; few patchy clay films; few fine pores; few fine black concretions; few medium calcium carbonate concretions; mildly alkaline; gradual wavy boundary.

Cg—60 to 72 inches; grayish brown (2.5Y 5/2) sandy clay loam; common coarse prominent strong brown (7.5YR 5/6) and common medium distinct yellowish brown (10YR 5/4) mottles; massive; firm; common fine black concretions; common black and brown stains; mildly alkaline.

Thickness of the solum ranges from 40 to 60 inches. Reaction is strongly acid or medium acid in the A horizon and slightly acid to moderately alkaline in the B and C horizons.

The A horizon is 6 to 18 inches thick. The Ap horizon has a hue of 10YR, a value of 4 or 5, and a chroma of 2. The A part of the A&B horizon has a hue of 10YR, a value of 5 or 6, and a chroma of 1 or 2.

The B horizon has a hue of 10YR or 2.5Y, a value of 5 or 6, and a chroma of 2. Texture is silt loam or silty clay loam. Few to common fine and medium brown, gray, or yellow mottles are throughout the horizon.

The C horizon has a hue of 10YR or 2.5Y, a value of 5 or 6, and a chroma of 1 or 2. Texture is silt loam, silty clay loam, or sandy clay loam.

Jackport series

The Jackport series consists of poorly drained, very slowly permeable soils that formed in beds of predominantly clayey sediment. These soils are on broad flats that were backswamps of former streams. They have a seasonally high water table late in winter and early in spring. The native vegetation is hardwood forests. Slope is generally less than 1 percent.

Jackport soils are geographically associated with Crowley and Kobel soils. Crowley soils are on broad flats and have an abrupt textural change from the A horizon to

tions; common black stains; few fine dark concretions; mildly alkaline.

Thickness of the solum ranges from about 30 to 60 inches. Reaction is very strongly acid to medium acid in the A horizon, very strongly acid to mildly alkaline in the B horizon, and strongly acid to moderately alkaline in the C horizon.

The A horizon is 4 to 8 inches thick. The Ap horizon has a hue of 10YR, a value of 4 or 5, and a chroma of 2.

The B2tg horizon has a hue of 10YR or 2.5Y, a value of 5, and a chroma of 2. Texture is silty clay or clay. Common medium brown or yellow mottles are present throughout. The B3g horizon has a hue of 10YR, 2.5Y, or 5Y; a value of 5; and a chroma of 2. Texture is silty clay or silty clay loam.

The Cg horizon has a hue of 10YR and either a value of 5 and a chroma of 1 or 2 or a value of 6 and a chroma of 1. It can also have a hue of 2.5Y or 5Y, a value of 5, and a chroma of 2. Texture is silty clay, silty clay loam, or silt loam.

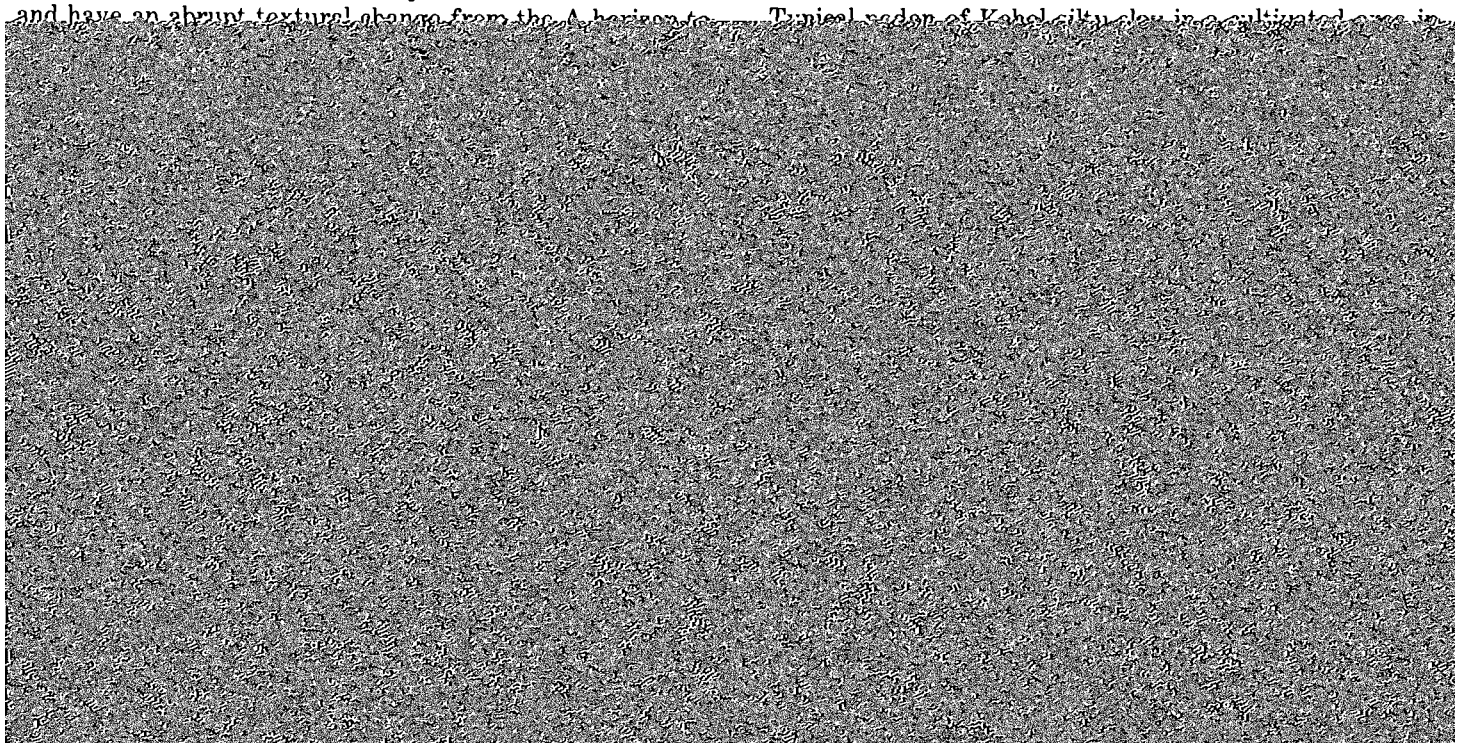
This soil has slightly less than 60 percent clay in the control section which is less than that described in the range for the Jackport series. This difference does not greatly alter the use, behavior, and management of the soil.

Kobel series

The Kobel series consists of poorly drained, very slowly permeable soils that formed in clayey alluvium. These soils are in slack water areas in the flood plains. They have a seasonally high water table late in winter and early in spring. The native vegetation is mixed hardwood forests, predominantly water tolerant species. Slope is generally less than 1 percent.

Kobel soils are geographically associated with Jackport and Wardell soils. Jackport soils are on broad flats of abandoned backswamps and have an argillic horizon. Wardell soils are in depressions on natural levees. They have coarser textures than Kobel soils and have an argillic horizon.

Typical pedon of Kobel silty clay in a cultivated area in

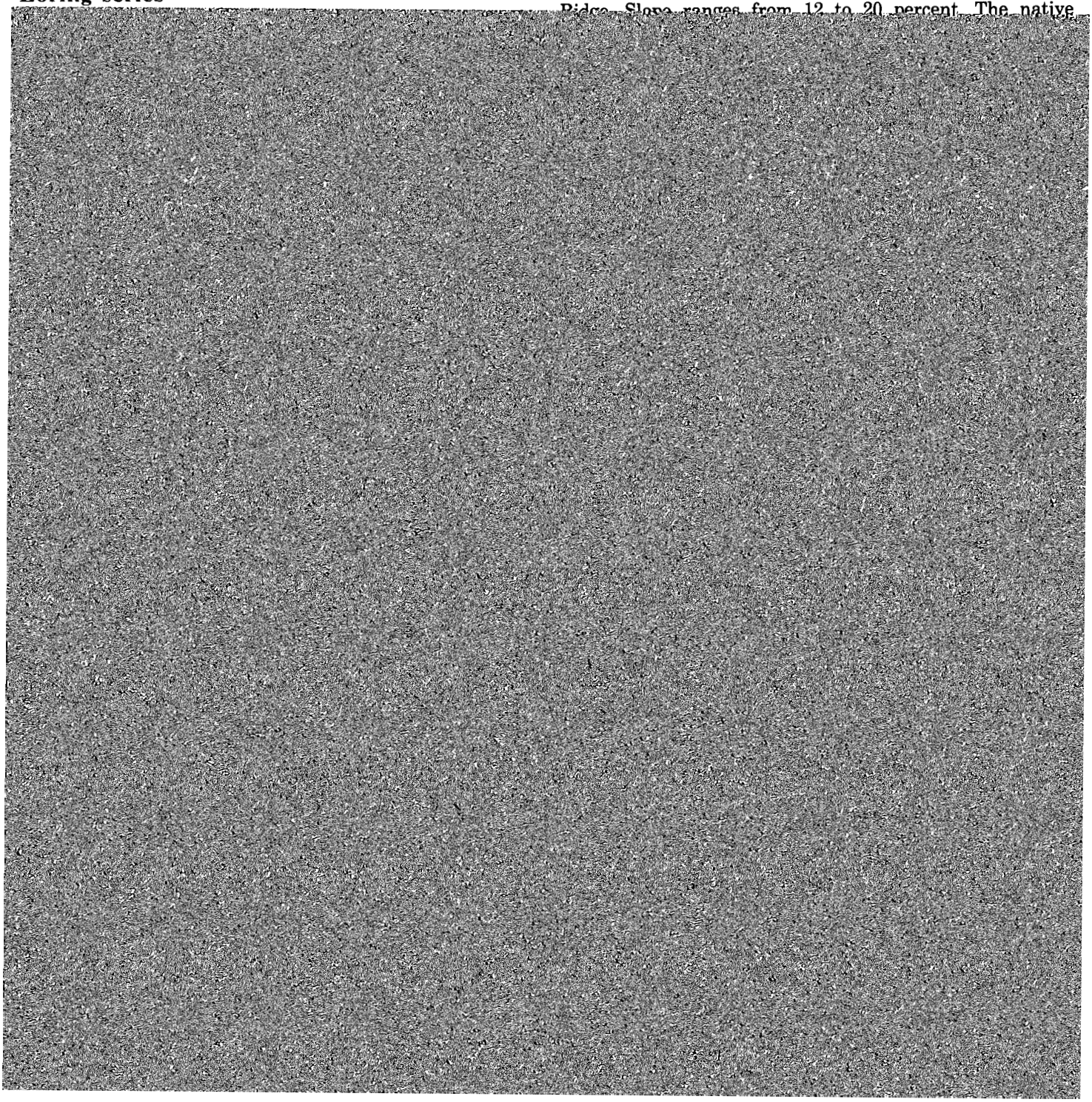


The A horizon is about 3 to 8 inches thick. The A horizon has a hue of 10YR and either a value of 3 and a chroma of 1 or 2 or a value of 4 and a chroma of 2.

The B horizon has a hue of 10YR, values of 4 to 6, and a chroma of 1. Texture is silty clay loam, silty clay, or clay.

The C horizon has a hue of 10YR or 5Y, values of 4 to 6, and a chroma of 1. Texture is typically silty clay or sandy clay, but it ranges from fine sandy loam to clay and is stratified below 40 inches.

Loring series



value of 4, and a chroma of 4, or it has a hue of 7.5YR, a value of 5, and a chroma of 4. Mottles are in shades of yellow, brown, or gray. Depth to the fragipan ranges from 22 to 32 inches.

Memphis series

The Memphis series consists of well drained, moderately permeable soils that formed in deposits of thick loess. These moderately steep soils are on uplands of Crowley's Ridge. Slope ranges from 12 to 20 percent. The native

is mixed hardwood forests. Slope is generally less than 1 percent.

Patterson soils are geographically associated with Beulah, Bosket, Dundee, Tuckerman, and Wardell soils. Beulah and Bosket soils are on higher parts of natural levees and are better drained than Patterson soils. Dundee and Tuckerman soils are on lower parts of natural levees and have finer textures. Wardell soils are in depressions on natural levees and also have finer textures. In addition, Tuckerman and Wardell soils are more poorly drained than Patterson soils.

Typical pedon of Patterson fine sandy loam in a cultivated area in the NW1/4NW1/4SW1/4, sec. 16, T. 19 N., R. 9 E.:

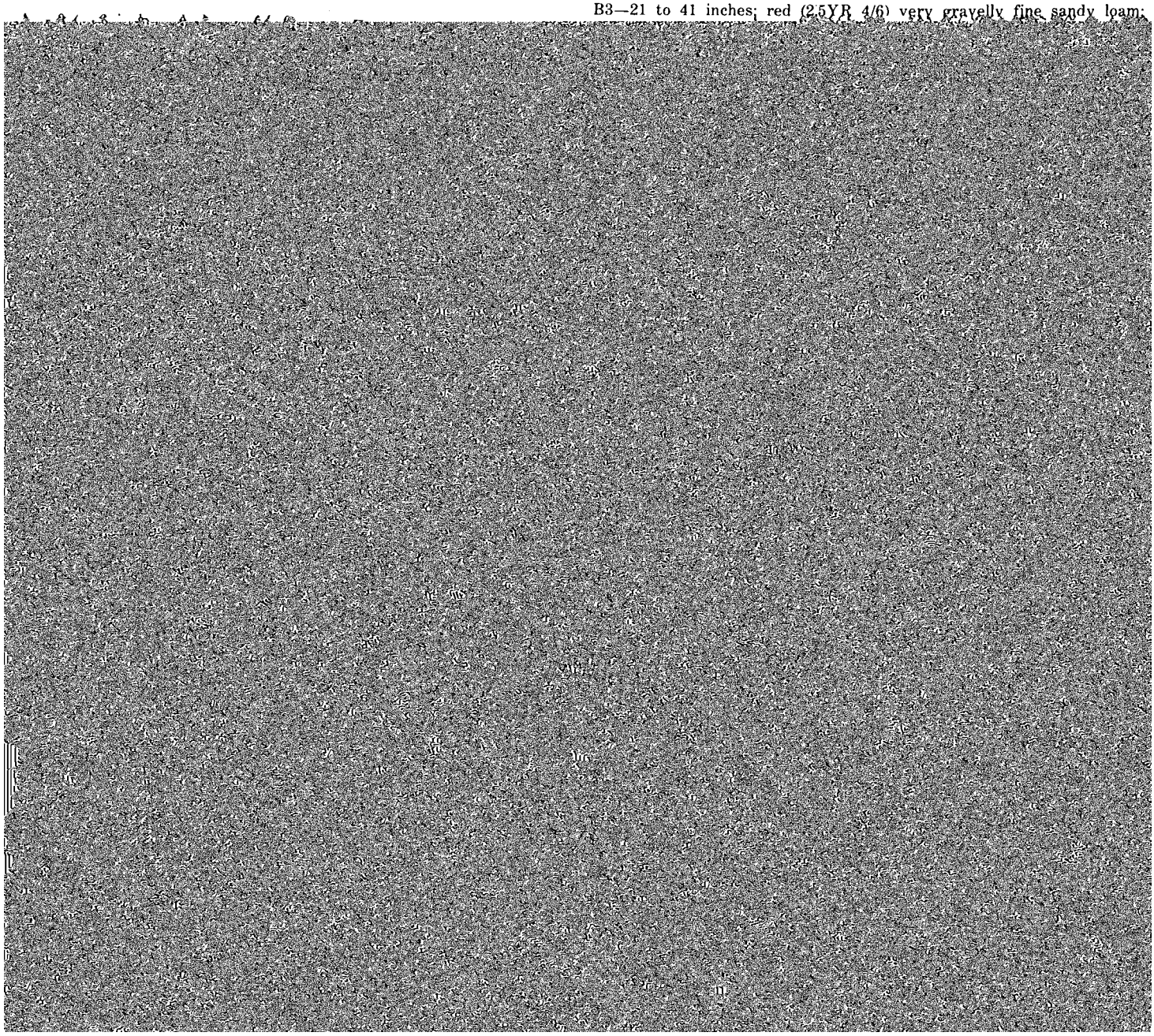
Typical pedon of Saffell gravelly fine sandy loam in an idle area of Brandon-Saffell association, moderately steep, in the SW1/4NW1/4NE1/4, sec. 12, T. 19 N., R. 7 E.:

A1—0 to 2 inches; dark grayish brown (10YR 4/2) gravelly fine sandy loam; weak fine granular structure; very friable; many fine roots; about 15 percent by volume, pebbles as much as 3 inches in diameter; strongly acid; abrupt smooth boundary.

A2—2 to 10 inches; brown (10YR 5/3) gravelly fine sandy loam; weak fine granular structure; very friable; many fine roots; about 20 percent by volume, pebbles as much as 3 inches in diameter; very strongly acid; clear smooth boundary.

B2t—10 to 21 inches; strong brown (7.5YR 5/6) very gravelly sandy clay loam; moderate fine subangular blocky structure; friable; common fine roots; about 40 percent by volume, pebbles as much as 3 inches in diameter; thin patchy clay films on faces of peds; few fine pores; very strongly acid; gradual wavy boundary.

B3—21 to 41 inches; red (2.5YR 4/6) very gravelly fine sandy loam;



gular blocky structure; friable; common pores; few fine roots; very strongly acid; clear wavy boundary.

B21tg—14 to 28 inches; gray (10YR 5/1) sandy clay loam; common medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; firm; patchy clay films on faces of peds; common fine pores; common fine roots; few fine dark concretions; very strongly acid; clear wavy boundary.

B22tg—28 to 42 inches; gray (10YR 6/1) sandy clay loam; common medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; patchy clay films on faces of peds; common fine pores; few fine roots; few fine dark concretions; very strongly acid; clear wavy boundary.

B3g—42 to 56 inches; gray (10YR 6/1) loam; common medium distinct strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable; few fine dark concretions; strongly acid; gradual wavy boundary.

Cg—56 to 72 inches; gray (10YR 6/1) fine sandy loam; common medium distinct strong brown (7.5YR 5/6) mottles; massive; friable; strongly acid.

Thickness of the solum ranges from 36 to 60 inches. Reaction is

B21tg—17 to 31 inches; dark gray (10YR 4/1) sandy clay loam; few fine distinct yellowish brown mottles; moderate medium subangular blocky structure; firm; patchy dark gray clay films on faces of peds and in old root channels; common medium pores; strongly acid; gradual wavy boundary.

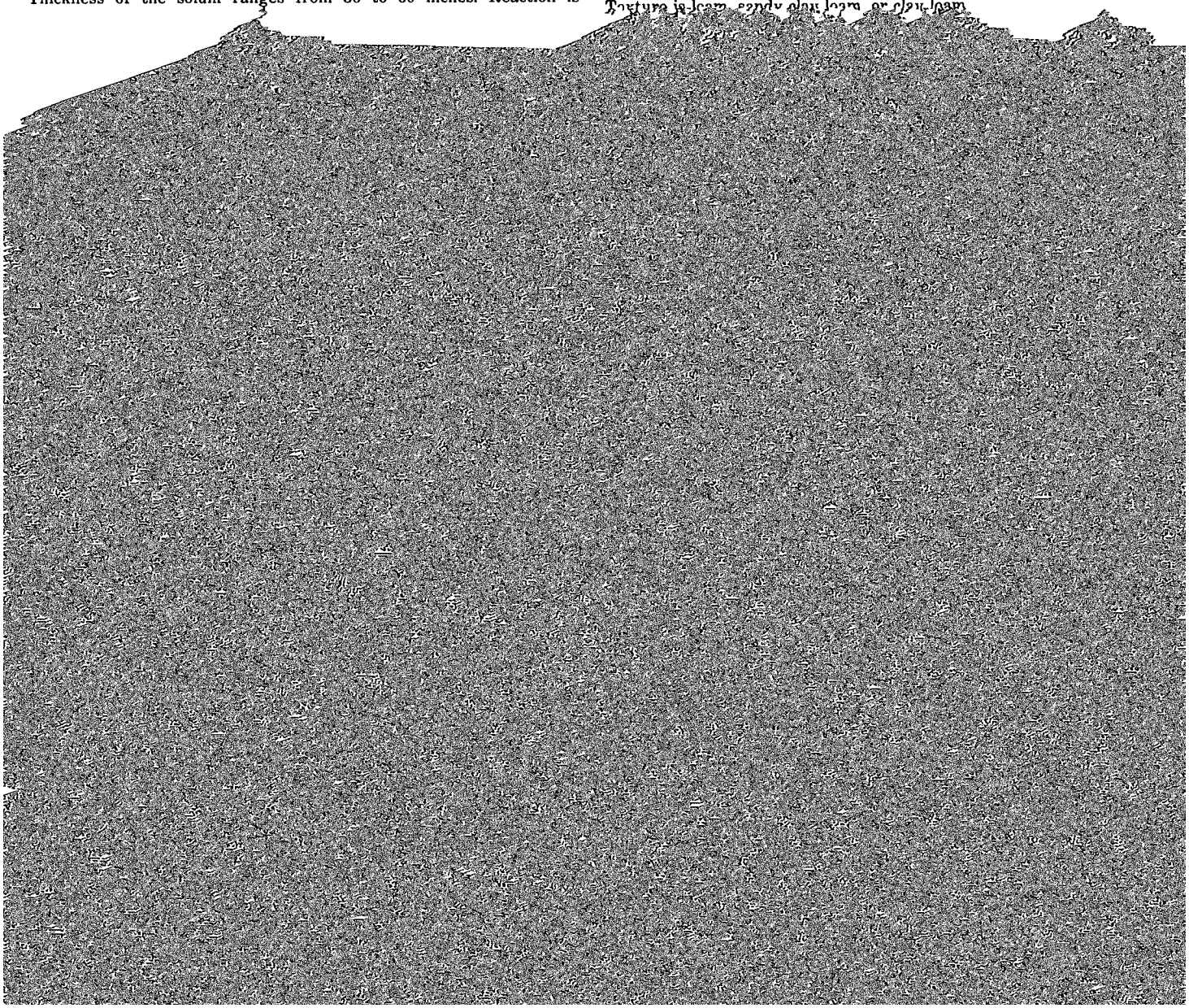
B22tg—31 to 46 inches; dark gray (10YR 4/1) sandy clay loam; few fine distinct yellowish brown mottles; moderate medium subangular blocky structure; firm; patchy dark gray clay films on faces of peds and in old root channels; few fine pores; few fine dark concretions; few black stains; slightly acid; gradual wavy boundary.

Cg—46 to 72 inches; dark gray (10YR 4/1) fine sandy loam; common fine; faint gray mottles; massive; friable; few small concretions; mildly alkaline.

Thickness of the solum ranges from about 24 to 48 inches. Reaction is medium acid to neutral in the A horizon, strongly acid to slightly acid in the B horizon, and medium acid to mildly alkaline in the C horizon.

The A horizon is 6 to 9 inches thick. It has a hue of 10YR, a value of 3, and a chroma of 1 to 3.

The B horizon has a hue of 10YR, a value of 4 or 5, and a chroma of 1. Texture is loam, sandy clay loam, or clay loam.



prefix that suggests something about the properties of the soil. An example is Haplaquents (*Hapl*, meaning simple horizons, plus *aquent*, the suborder of Entisols that have an aquic moisture regime).

SUBGROUP. Each great group may be divided into three subgroups: the central (typic) concept of the great groups, which is not necessarily the most extensive subgroup; the intergrades, or transitional forms to other orders, suborders, or great groups; and the extragrades, which have some properties that are representative of the great groups but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that is thought to typify the great group. An example is Typic Haplaquents.

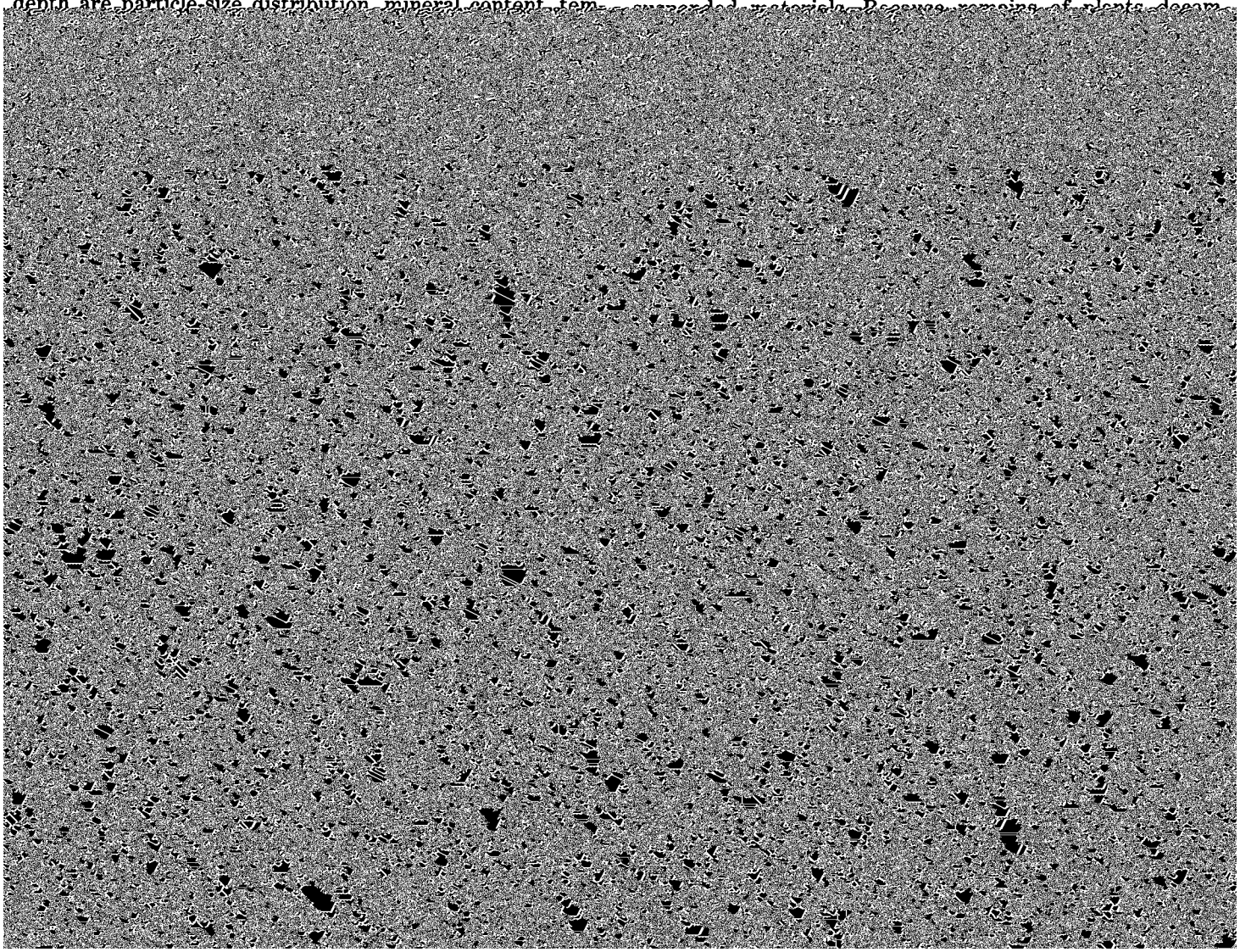
FAMILY. Families are established within a subgroup on the basis of similar physical and chemical properties that affect management. Among the properties considered in horizons of major biological activity below plow depth are particle-size distribution, mineral content, tem-

the kind of soil that forms. In the following paragraphs the factors of soil formation are discussed as they relate to the soils in the survey area.

Climate

The climate of Clay County is characterized by mild winters, warm or hot summers, and generally abundant rainfall. The generally warm temperatures and high precipitation probably are similar to the climate under which the soils in the county formed. The average daily maximum temperature at Corning in July is about 92 degrees F, and the average in January is about 47 degrees F. The total annual rainfall is about 46 inches and is well distributed throughout the year. For additional information about the climate, refer to the section "General nature of the county."

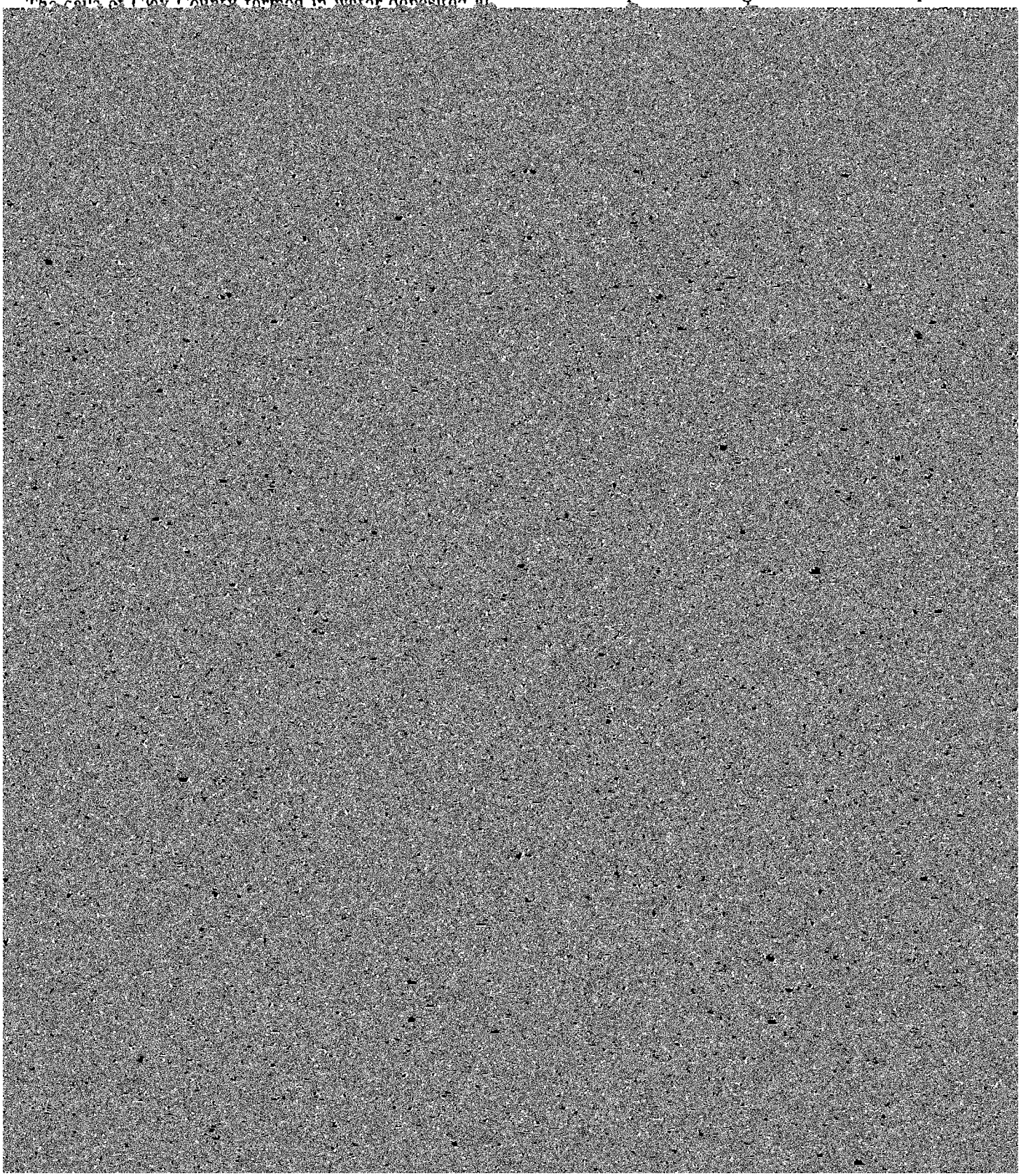
The warm, moist climate promotes rapid soil formation, and the warm temperature encourages rapid chemical reactions. The large amount of water that moves through the soils is instrumental in removing dissolved or suspended materials. Decayed remains of plants decom-



Parent material

The soils of Clay County formed in water deposited al-

The soils on the uplands of the county formed in loess that was deposited during the Pleistocene epoch. This



probable that the sediment now forming most of the land surface in Clay County was deposited during and after the advance of the continental glaciers. The last of these glaciers retreated from the North Central States about 11,000 years ago (*5*, *6*).

Thus, in terms of geological time, the soils in Clay County are young. In terms of soil formation, their age varies widely. On the smoother parts of the uplands, the soils are more mature, but on the stronger slopes where geologic erosion has more nearly kept pace with soil formation, the soils have less thick, less strongly developed horizons. On young natural levees and in areas of local alluvium, the soil material has been in place so short a time that the soils show relatively little evidence of development. Many such areas receive fresh deposits of sediment at frequent intervals. In these areas are soils such as Commerce, Collins, and Falaya.

Processes of soil formation

In this subsection a brief definition of the horizon nomenclature and processes responsible for soil formation are given.

The marks that the soil forming factors leave on the soil are recorded in the soil profile, which is a succession of layers or horizons from the surface to the parent material that has been altered but little by soil forming processes. The horizons differ in one or more properties, such as color, texture, structure, consistence, porosity, and reaction.

Most soil profiles contain three major horizons, called A, B, and C. Very young soils do not have a B horizon.

The A horizon is at the surface. Generally, where it is the horizon of maximum accumulation of organic matter, it is called the A1 horizon or the surface layer. A part of the A horizon can also be the horizon of maximum leaching of dissolved or suspended materials. This part is called the A2 horizon or the subsurface layer.

The B horizon lies immediately beneath the A horizon and is called the subsoil. It is the horizon of maximum accumulation of dissolved or suspended materials such as iron and clay. Commonly the B horizon has a blocky structure and is firmer than the horizons immediately above and below it (*10*).

Beneath the B is the C horizon. The C horizon has been affected little by the soil forming processes, although it can be materially modified by weathering. In some young soils the C horizon immediately underlies the A horizon and has been slightly modified by living organisms, as well as by weathering.

Several processes have been active in the formation of soil horizons in the soils of Clay County. Among these

Accumulation of organic matter in the upper part of the profile to form an A1 horizon has been an important process of soil formation. The soils of Clay County range from high to low in content of organic matter.

Leaching of carbonates and bases has occured to some degree in nearly all the soils of Clay County. Among soil scientists, it is generally accepted that bases are leached downward in soils before silicate clay minerals begin to move. Some of the soils are only slightly leached, but most of the soils in the county are moderately leached, an important factor in horizon development.

Reduction and transfer of iron has occurred to a significant degree in the somewhat poorly drained and poorly drained soils of the county. In the naturally wet soils, this process is called gleying. Gray colors in the layers below the surface indicate the reduction and loss of iron. Some horizons contain reddish or yellowish mottles and concretions derived from segregated iron. Gleying is pronounced in many of the soils. Among the strongly gleyed soils are the Amagon, Calhoun, Jackport, and Kobel soils.

In several soils of Clay County, the translocation of clay minerals has contributed to the formation of horizons. In most places the eluviated A2 horizon has been destroyed by cultivation. Where there is an A2 horizon, its structure is blocky to platy, clay content is less than in the lower horizons, and soil material is lighter in color. Generally, clay films have accumulated in pores and on surfaces of peds in the B horizon. The soils were probably leached of carbonates and soluble salts to a great extent before translocation of silicate clay occurred, even though the content of bases is still high in all soils of the county.

Leaching of bases and translocation of silicate clay are among the most important processes in horizon differentiation in the soils of Clay County.

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Glossary

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

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.

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

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

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

	Inches
Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	More than 9

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

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

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 a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

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

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

Broad-base terrace. A ridge-type terrace built to control erosion by diverting runoff along the contour at a nonscouring velocity. The terrace is 10 to 20 inches high and 15 to 30 feet wide and has gently sloping sides, a rounded crown, and a dish-shaped channel along the upper side. It may be nearly level or have a grade toward one or both ends.

Calcareous soil. A soil containing enough calcium carbonate (commonly with magnesium carbonate) to effervesce (fizz) visibly when treated with cold, dilute hydrochloric acid. A soil having measurable amounts of calcium carbonate or magnesium carbonate.

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.

Channery soil. A soil, that is, by volume, more than 15 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches along the longest axis. A single piece is called a fragment.

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 coat, clay skin.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Coarse fragments. Mineral or rock particles up to 3 inches (2 millimeters to 7.5 centimeters) in diameter.

Coarse textured (light textured) soil. Sand or loamy sand.

Cobblestone (or cobble). A rounded or partly rounded fragment of rock 3 to 10 inches (7.5 to 25 centimeters) in diameter.

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

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures is difficult.

Complex, soil. A mapping unit of two or more kinds of soil occurring in such an intricate pattern that they cannot be shown separately on a soil map at the selected scale of mapping and publication.

Compressible. Excessive decrease in volume of soft soil under load.

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.

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.

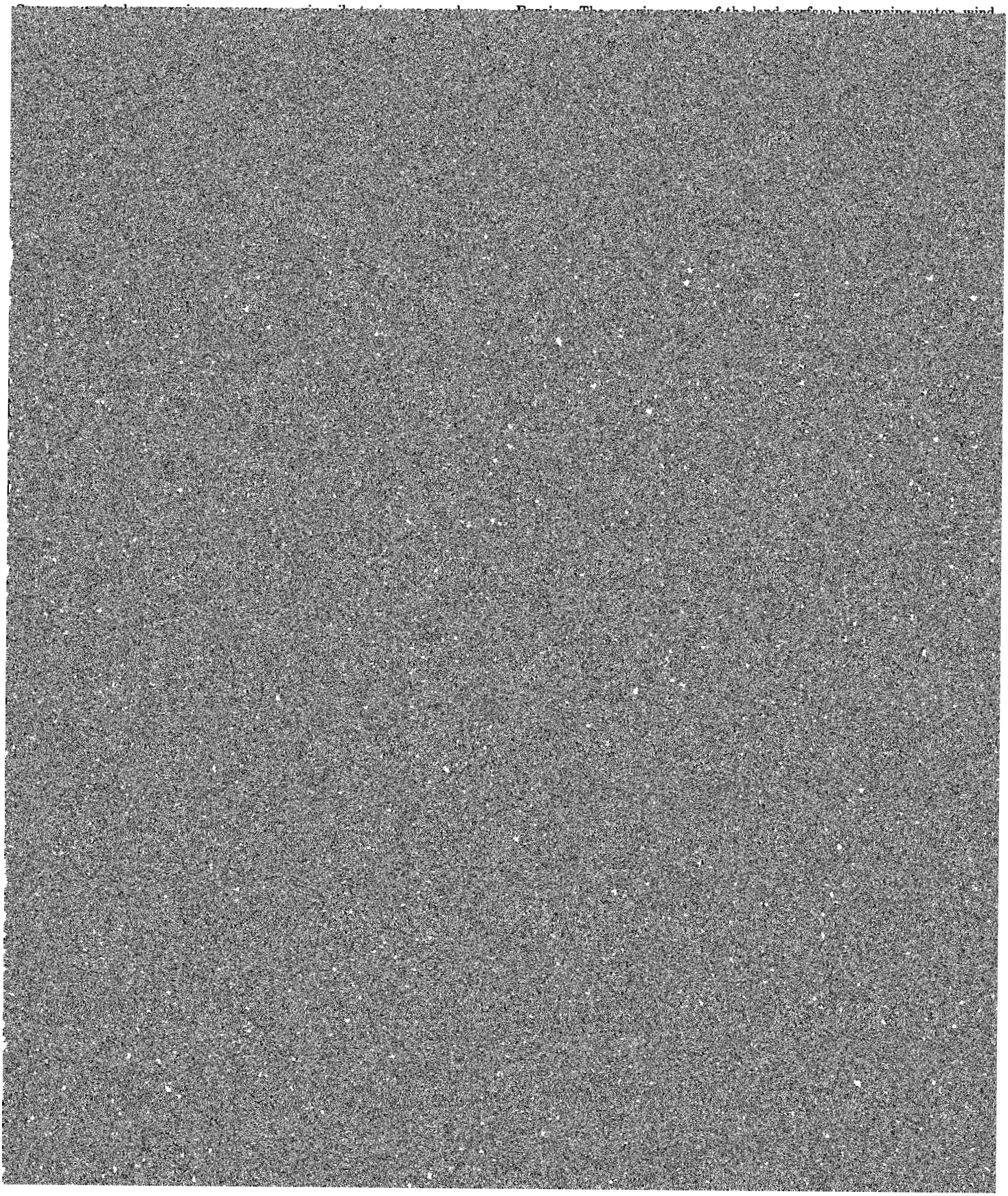
Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping (or contour farming). 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 40 or 80 inches (1 or 2 meters).

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.



Gilgai. Typically, the microrelief of Vertisols—clayey soils having a high coefficient of expansion and contraction with changes in moisture content. Commonly a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope.

Gleyed soil. A soil having one or more neutral gray horizons as a result of waterlogging and lack of oxygen. The term "gleyed" also designates gray horizons and horizons having yellow and gray mottles as a result of intermittent waterlogging.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material from 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.5 centimeters) in diameter.

Green manure (agronomy). A soil-improving crop 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 underlying material below the water table, which is the upper limit of saturation.

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.

Habitat. The natural abode of a plant or animal; refers to the kind of environment in which a plant or animal normally lives, as opposed to the range or geographical distribution.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. The major horizons of mineral soil are as follows:

herent 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.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are—

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

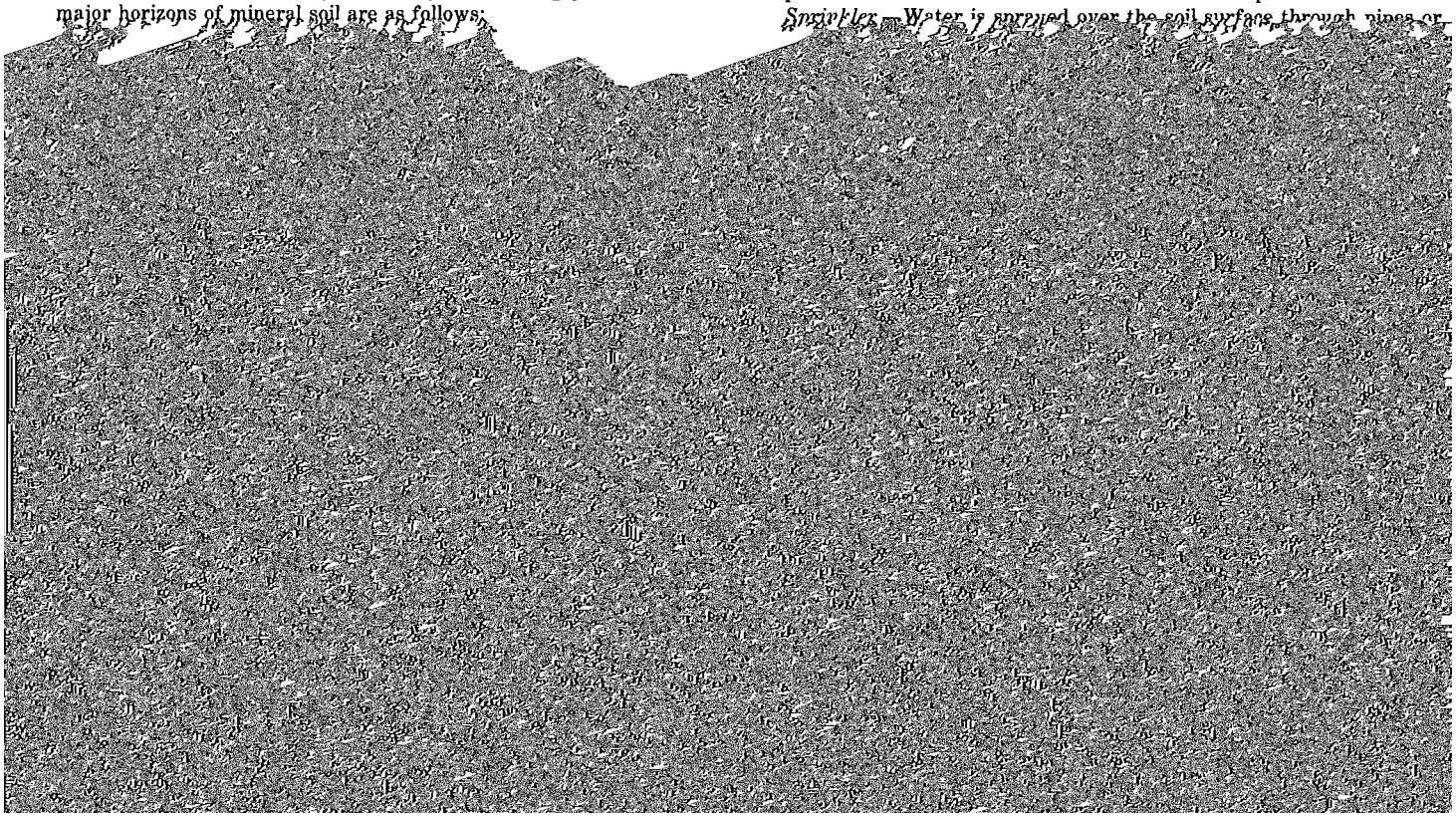
Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

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.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or



Miscellaneous areas. Areas that have little or no natural soil, are too nearly inaccessible for orderly examination, or cannot otherwise be feasibly classified.

Moderately coarse textured (moderately light textured) soil. Sandy loam and fine sandy loam.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from a semisolid to a plastic state.

Rock fragments. Rock or mineral fragments having a diameter of 2 mil-

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diame-

Water table, apparent. A thick zone of free water in the soil. An apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

Water table, artesian. A water table under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole.

Water table, perched. A water table standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

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 a soil or soil material consisting of particles well distributed over a wide range in size or diameter. Such a 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 sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Illustrations

Figure 1.—Cotton growing on Amagon silt loam in the foreground. Crowley's Ridge is in the background.

Figure 2.—Soil blowing and droughtiness are hazards for soybean crops on Beulah fine sandy loam, undulating.

Figure 3.—Bonn-Foley complex soils have low to medium potential for woodland because of high concentration of sodium in the subsoil and excess water.

Figure 4.—Irrigation of rice on Crowley silt loam. The very slowly permeable subsoil is ideal for rice production.

Figure 5.—Rice growing on Crowley silt loam, a soil well suited to this crop.

Figure 6.—Cotton ready for harvest on Dexter silt loam, gently undulating.

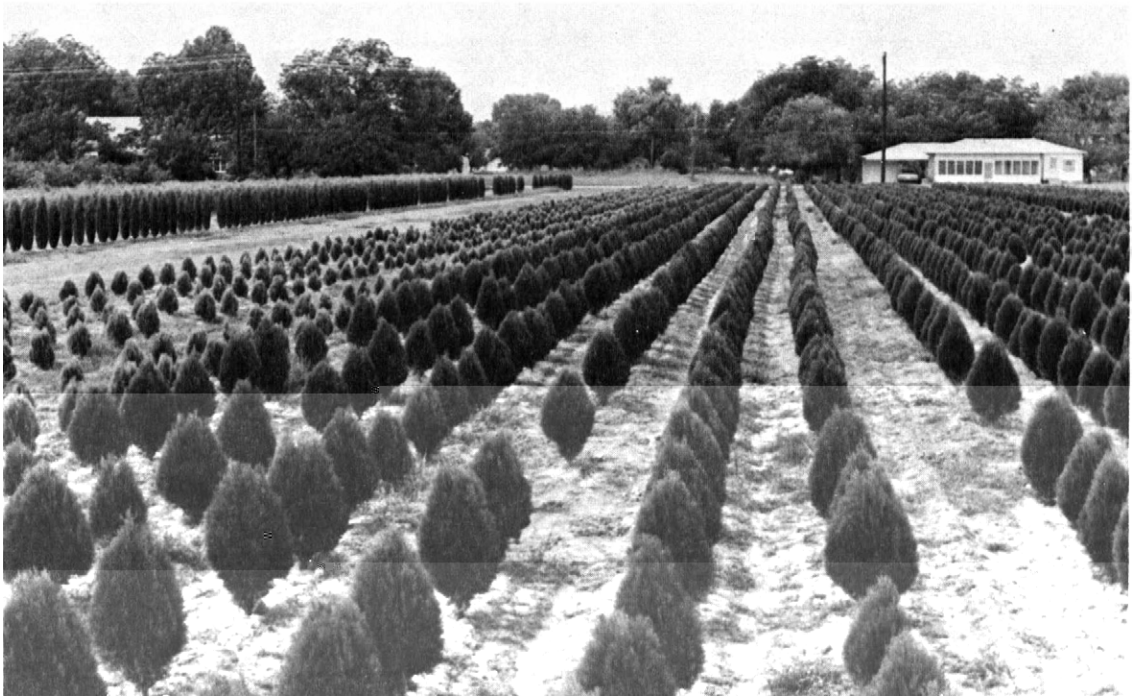


Figure 7.—Falaya silt loam has high potential for growing trees.

Figure 8.—A good stand of soybeans growing on Foley silt loam.

Figure 9.—Grain sorghum ready for harvest on Fountain silt loam.

Figure 10.—Rice nearly ready for harvest on Jackport silty clay.

Figure 11.—Kobel soils, frequently flooded, are covered with water several months [illegible]

Figure 12.—Loring silt loam has high potential for pastures.

Tables

TABLE 1.--ACREAGE OF PRINCIPAL CROPS IN STATED YEARS

Crops	Acres in 1964	Acres in 1969
Soybeans (for beans)	137,975	162,642
Cotton	37,753	35,558
Wheat for grain	28,772	16,821
Other small grain (includes rice)	9,529	10,659
Corn (for all purposes)	12,304	5,567
Sorghum (for all purposes except sirup)	2,059	15,246
Hay (excluding sorghum hay)[1]	4,800	3,284
Pasture and rangeland[1]	13,346	7,499

[1]Excludes hay and pasture acreage on levees.

TABLE 2.--NUMBER OF LIVESTOCK IN STATED YEARS

Livestock	1964	1969
All cattle and calves	18,408	13,382
Milk cows	809	379
Hogs and pigs	10,492	14,917
Chickens[1]	91,643	107,250

[1]More than 3 months old.

TABLE 3.--TEMPERATURE AND PRECIPITATION DATA

Month	Temperature[1]						Precipitation[1]				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days[2]	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- 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----	46.8	27.2	37.0	72	2	0	3.99	1.79	5.77	6	2.2
February---	51.3	30.5	40.9	74	6	18	3.51	2.11	4.75	6	2.3
March------	60.1	38.3	49.2	83	15	145	4.63	2.46	6.39	7	2.0
April------	72.5	49.0	60.8	89	28	330	4.51	2.56	6.09	8	0
May--------	81.0	57.3	69.2	94	36	595	5.48	3.02	7.48	7	0
June-------	89.2	65.3	77.3	101	49	819	3.06	1.52	4.31	5	0
July-------	92.2	68.7	80.5	102	53	946	3.96	2.02	5.54	6	0
August-----	90.9	66.4	78.7	102	52	890	3.04	1.30	4.46	5	0
September--	84.0	59.4	71.7	98	40	651	3.70	1.36	5.57	5	0
October----	74.4	47.5	61.0	92	27	351	2.44	.81	3.74	4	0
November---	60.2	37.4	48.8	81	16	76	4.28	2.08	6.07	5	.6
December---	49.4	30.6	40.1	72	7	22	3.81	2.01	5.27	6	1.1
Year-----	71.0	48.1	59.6	104	0	4,843	46.41	38.15	54.24	70	8.2

[1]Recorded in the period 1951-74 at Corning, Ark.
[2]A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 F).

TABLE 4.--FREEZE DATES IN SPRING AND FALL

Probability	Temperature[1]		
	24 F or lower	28 F or lower	32 F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	March 30	April 12	April 17
2 years in 10 later than--	March 24	April 6	April 13
5 years in 10 later than--	March 11	March 26	April 4
First freezing temperature in fall:			
1 year in 10 earlier than--	October 31	October 26	October 11
2 years in 10 earlier than--	November 6	October 30	October 15
5 years in 10 earlier than--	November 16	November 7	October 25

[1]Recorded in the period 1951-74 at Corning, Ark.

TABLE 5.--GROWING SEASON LENGTH

Probability	Daily minimum temperature during growing season[1]		
	Higher than 24 F	Higher than 28 F	Higher than 32 F
	Days	Days	Days
9 years in 10	224	205	185
8 years in 10	233	212	191
5 years in 10	250	225	203
2 years in 10	267	238	215
1 year in 10	276	244	221

[1]Recorded in the period 1951-74 at Corning, Ark.

TABLE 6.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
10	Amagon silt loam	27,020	6.6
11	Amagon soils, frequently flooded	10,430	2.5
12	Beulah fine sandy loam, gently undulating	6,680	1.6
13	Beulah fine sandy loam, undulating	2,550	0.6
14	Bonn-Foley complex	10,120	2.5
15	Bosket fine sandy loam, gently undulating	7,130	1.7
16	Bosket fine sandy loam, undulating	2,120	0.5
17	Brandon silt loam, 8 to 12 percent slopes	1,490	0.4
18	Brandon-Saffell association, moderately steep	22,440	5.5
19	Calhoun silt loam	1,840	0.5
20	Collins silt loam, occasionally flooded	18,740	4.6
21	Commerce soils, frequently flooded	6,320	1.5
22	Crowley silt loam	26,570	6.5
23	Dexter silt loam, gently undulating	13,790	3.4
24	Dubbs very fine sandy loam	1,170	0.3
25	Dundee silt loam	14,530	3.6
26	Falaya silt loam	25,710	6.3
27	Foley silt loam	48,050	11.7
28	Fountain silt loam	31,120	7.6
29	Jackport silty clay	26,930	6.6
30	Kobel silty clay	17,370	4.2
31	Kobel soils, frequently flooded	18,200	4.5
32	Loring silt loam, 1 to 3 percent slopes	1,190	0.3
33	Loring silt loam, 3 to 8 percent slopes	8,370	2.0
34	Loring silt loam, 8 to 12 percent slopes, eroded	25,038	6.1
35	Memphis association, moderately steep	9,240	2.3
36	Patterson fine sandy loam	9,800	2.4
37	Tuckerman fine sandy loam	1,810	0.4
38	Wardell fine sandy loam	11,700	2.9
	Water	1,620	0.4
	Total	409,088	100.0

TABLE 7.--YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. The estimates were made in 1975. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

TABLE 7.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Cotton lint	Soybeans	Rice	Wheat	Bahiagrass	Common bermuda-grass	Tall fescue
	Lb	Bu	Bu	Bu	AUM[1]	AUM[1]	AUM[1]
Loring:							
33	650	25	---	35	---	---	---
34	500	20	---	30	---	---	---

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed in this table. Absence of an entry indicates that information was not available]

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Woodland suitability group	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Important trees	Site index	
Commerce:							
121	1:5	Slight	Moderate	Slight	Green ash	80	Eastern cottonwood

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Woodland suitability group	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Potential productivity: Important trees	Potential productivity: Site index	Trees to plant
Kobel:							
30	2w6	Slight	Severe	Moderate	Green ash	85	Eastern cottonwood, American sycamore, sweetgum, Nuttall oak.
					Eastern cottonwood	100	
					Cherrybark oak	90	
					Sweetgum	90	
					Water oak	90	
					Pecan	---	
					American sycamore	---	
					Nuttall oak	---	
[1]31	3w6	Slight	Severe	Severe	Green ash	75	Eastern cottonwood, sweetgum.
					Eastern cottonwood	90	
					Water oak	80	
					Water hickory	---	
Loring:							
32, 33, 34	3o7	Slight	Slight	Slight	Cherrybark oak	85	Loblolly pine, yellow-poplar, southern red oak.
					Sweetgum	90	
					Southern red oak	75	
					Loblolly pine	85	
					Water oak	80	
Memphis:							
[1]35	2r8	Slight	Slight	Slight	Cherrybark oak	90	Cherrybark oak, loblolly pine, sweetgum, yellow-poplar.
					Loblolly pine	90	
					Sweetgum	90	
					Water oak	90	
Patterson:							
36	2s5	Slight	Moderate	Moderate	Green ash	70	Green ash, cherrybark oak, Nuttall oak, water oak, willow oak, sweetgum, American sycamore, yellow-poplar.
					Cherrybark oak	95	
					Nuttall oak	85	
					Water oak	85	
					Willow oak	90	
					Sweetgum	90	
Tuckerman:							
37	1w6	Slight	Severe	Moderate	Green ash	80	Green ash, eastern cottonwood, sweetgum, American sycamore, cherrybark oak, Nuttall oak, water oak, willow oak.
					Eastern cottonwood	100	
					Cherrybark oak	95	
					Nuttall oak	95	
					Water oak	95	
					Willow oak	95	
					Sweetgum	---	
Wardell:							
38	1w6	Slight	Severe	Moderate	Eastern cottonwood	90	Eastern cottonwood,

TABLE 9.--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]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Amagon:					
10	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, low strength.
[1]11	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods, low strength.
Beulah:					
12	Severe: cutbanks cave, too sandy.	Slight	Slight	Slight	Slight.
13	Severe: cutbanks cave, too sandy.	Slight	Slight	Moderate: slope.	Slight.
Bonn:					
[1]14:					
Bonn part	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Foley part	Severe: wetness.	Severe: floods, wetness, low strength.	Severe: floods, wetness, low strength.	Severe: floods, wetness, low strength.	Severe: wetness, low strength.
Bosket:					
15	Slight	Slight	Slight	Slight	Moderate: low strength.
16	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength.
Brandon:					
17	Moderate: small stones.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength.
[1]18:					
Brandon part	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Saffell part	Severe: slope, small stones.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Calhoun:					
19	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Collins:					
20	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
Commerce:					
[1]21	Severe: floods, wetness.	Severe: floods.	Severe: floods, wetness.	Severe: floods.	Severe: floods.

See footnote at end of table.

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Crowley:					
22	Severe: wetness, too clayey.	Severe: shrink-swell, low strength, wetness.	Severe: shrink-swell, low strength, wetness.	Severe: shrink-swell, low strength, wetness.	Severe: low strength, shrink-swell.
Dexter:					
23	Slight	Slight	Slight	Slight	Moderate: low strength.
Dubbs:					
24	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.
Dundee:					
25	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Moderate: wetness, shrink-swell.
Falaya:					
26	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Foley:					
27	Severe: wetness.	Severe: floods, wetness, low strength.	Severe: floods, wetness, low strength.	Severe: floods, wetness, low strength.	Severe: wetness, low strength.
Fountain:					
28	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Jackport:					
29	Severe: wetness, too clayey.	Severe: wetness, low strength, shrink-swell.	Severe: wetness, low strength, shrink-swell.	Severe: wetness, low strength, shrink-swell.	Severe: wetness, low strength, shrink-swell.
Kobel:					
30	Severe: wetness, too clayey.	Severe: wetness, shrink-swell.	Severe: wetness, low strength, shrink-swell.	Severe: wetness, low strength, shrink-swell.	Severe: wetness, low strength, shrink-swell.
[1]31	Severe: floods, wetness, too clayey.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.
Loring:					
32	Moderate: low strength, wetness.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.
33	Moderate: low strength, wetness.	Moderate: low strength.	Moderate: low strength.	Moderate: slope, low strength.	Moderate: low strength.
34	Moderate: slope, wetness, low strength.	Moderate: slope, low strength.	Moderate: slope, low strength.	Severe: slope.	Moderate: slope, low strength.
Memphis:					
[1]35	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Patterson: 36	Severe: wetness, too sandy, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.
Tuckerman: 37	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Wardell: 38	Severe: wetness.	Severe: wetness, floods, shrink-swell.	Severe: wetness, floods, shrink-swell.	Severe: wetness, floods, shrink-swell.	Severe: wetness, shrink-swell.

[1]This map unit is made up of two or more dominant kinds of soil. See map unit description for the composition and behavior of the whole map unit.

TABLE 10.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," and "fair." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Septic tank absorption	Sewage lagoon areas	Trench sanitary	Area sanitary	Daily cover for landfill

TABLE 10.--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
Dubbs:					
24	Moderate: percs slowly.	Moderate: seepage.	Slight	Slight	Fair: too clayey.
Dundee:					
25	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey.
Falaya:					
26	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
Foley:					
27	Severe: wetness, percs slowly.	Severe: floods.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Fountain:					
28	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Jackport:					
29	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: wetness, too clayey.
Kobel:					
30	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, wetness.
[1]31	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: too clayey, wetness.
Loring:					
32, 33	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
34	Severe: percs slowly.	Severe: slope.	Slight	Moderate: slope.	Fair: slope.
Memphis:					
[1]35	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.	Poor: slope.
Patterson:					
36	Severe: wetness.	Severe: seepage.	Severe: wetness, seepage, too sandy.	Severe: wetness, seepage.	Fair: thin layer.
Tuckerman:					
37	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
Wardell:					
38	Severe: wetness, percs slowly.	Severe: wetness, seepage.	Severe: wetness, seepage.	Severe: wetness.	Poor: wetness.

[1]This map unit is made up of two or more dominant kinds of soil. See map unit description for the composition and behavior of the whole map unit.

TABLE 11.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and "poor." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Amagon:				
10, [1]11	Poor: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Beulah:				
12, 13	Good	Poor: excess fines.	Unsuited: excess fines.	Good.
Bonn:				
[1]14:				
Bonn part	Poor: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness, excess sodium.
Foley part	Poor: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness, area reclaim.
Bosket:				
15, 16	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Good.
Brandon:				
17	Fair: low strength.	Unsuited: excess fines.	Poor: excess fines.	Fair: slope.
[1]18:				
Brandon part	Fair: low strength.	Unsuited: excess fines.	Poor: excess fines.	Poor: slope.
Saffell part	Fair: slope.	Poor: excess fines.	Fair: excess fines.	Poor: slope, small stones.
Calhoun:				
19	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Collins:				
20	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Commerce:				
[1]21	Fair: low strength, shrink-swell, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Crowley:				
22	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer, wetness.
Dexter:				
23	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
Dubbs:				
24	Fair: shrink-swell, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer, too clayey.

See footnote at end of table.

TABLE 11.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Dundee: 25	Fair: wetness, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
Falaya: 26	Fair: low strength,	Unsuited: excess fines.	Unsuited: excess fines.	Good.

TABLE 12.--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]

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
Amagon: 10, 11	Slight	Moderate: unstable fill, compressible, low strength.	Percs slowly, wetness.	Wetness, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
Beulah: 12, 13	Severe: seepage.	Severe: seepage, piping.	Not needed	Complex slope, droughty, fast intake.	Complex slope, too sandy.	Droughty, slope.
Bonn: 14:						
Bonn part	Slight	Moderate: piping, erodes easily, excess sodium.	Cutbanks cave, percs slowly, excess sodium.	Droughty, excess sodium, wetness.	Not needed	Droughty, erodes easily, excess sodium.
Foley part	Slight	Moderate: unstable fill, compressible, low strength.	Wetness, percs slowly.	Wetness, slow intake.	Wetness	Wetness.
Bosket: 15, 16	Severe: seepage.	Moderate: piping, unstable fill.	Not needed	Complex slope, erodes easily, slope.	Erodes easily, slope.	Erodes easily, slope.
Brandon: 17	Moderate: seepage, slope.	Moserate: seepage, piping, low strength.	Not needed	Slope, erodes easily, seepage.	Slope, erodes easily, piping.	Slope, erodes easily.
18:						
Brandon part	Moderate: seepage, slope.	Moderate: seepage, piping, low strength.	Not needed	Slope, erodes easily, seepage.	Slope, erodes easily, piping.	Slope, erodes easily.
Saffell part	Moderate: seepage.	Moderate: seepage, piping, thin layer.	Not needed	Droughty, fast intake, seepage.	Erodes easily, piping, slope.	Droughty, erodes easily, slope.
Calhoun: 19	Slight	Moderate: piping, erodes easily, low strength.	Percs slowly, cutbanks cave.	Wetness, percs slowly.	Not needed	Wetness.
Collins:						

TABLE 12.--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

TABLE 13.--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
Amagon:				
10, [1]11	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Beulah:				
12	Slight	Slight	Slight	Slight.
13	Slight	Slight	Moderate: slope.	Slight.
Bonn:				
[1]14:				
Bonn part	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, percs slowly.	Severe: wetness.
Foley part	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, percs slowly.	Severe: wetness.
Bosket:				
15	Slight	Slight	Slight	Slight.
16	Slight	Slight	Moderate: slope.	Slight.
Brandon:				
17	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
[1]18:				
Brandon part	Severe: [illegible]	Severe: [illegible]	Severe: [illegible]	Moderate: [illegible]

TABLE 13.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Falaya:				
26	Severe: floods, wetness.	Moderate: floods, wetness.	Severe: floods, wetness.	Moderate: floods, wetness.
Foley:				
27	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, percs slowly.	Severe: wetness.
Fountain:				
28	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Jackport:				
29	Severe: wetness, percs slowly, too clayey.	Severe: wetness, too clayey	Severe: wetness, percs slowly, too clayey.	Severe: wetness, too clayey.
Kobel:				
30	Severe: wetness, percs slowly, too clayey.	Severe: wetness, too clayey	Severe: wetness, too clayey, percs slowly.	Severe: wetness, too clayey.
[1]31	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Loring:				
32, 33	Slight	Slight	Moderate: slope.	Slight.
34	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Memphis:				
[1]35	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Patterson:				
36	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
Tuckerman:				
37	Severe:	Severe:	Severe:	Severe:

TABLE 14.--WILDLIFE HABITAT POTENTIALS

[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	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
Amagon:												
10, [1]11	Fair	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good	---
Beulah:												
12, 13	Fair	Fair	Fair	Good	Poor	---	Very poor.	Very poor.	Fair	Good	Very poor.	---
Bonn:												
[1]14:												
Bonn part	Poor	Poor	Poor	Poor	---	---	Poor	Good	Poor	Poor	Fair	---
Foley part	Fair	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good	---
Bosket:												
15	Good	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
16	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
Brandon:												
17	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
[1]18:												
Brandon part	Poor	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.	---
Saffell part	Poor	Fair	Fair	Fair	Fair	---	Very	Very	Fair	Fair	Very	---

TABLE 14.--WILDLIFE HABITAT POTENTIALS--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	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
Jackport:												

TABLE 15.--ENGINEERING PROPERTIES AND CLASSIFICATIONS

[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: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
Amagon:											
10, 11	0-6	Silt loam	ML, CL, CL-ML	A-4	0	---	100	85-100	85-100	<30	NP-10
	6-25	Silt loam	CL, CL-ML	A-4, A-6	0	---	100	85-100	85-100	25-40	7-18
	25-44	Silt loam, silty clay loam.	CL	A-6, A-7	0	---	100	85-100	85-100	30-45	11-22
	44-72	Silt loam, loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6, A-7	0	---	100	80-100	60-100	20-45	1-22
Beulah:											
12, 13	0-7	Fine sandy loam	SM	A-2, A-4	0	100	100	75-100	25-45	---	NP
	7-39	Fine sandy loam, very fine sandy loam, loam.	SM, ML	A-2, A-4	0	100	100	85-100	25-60	---	NP
	39-72	Loamy sand, loamy fine sand, fine sandy loam.	SM	A-2, A-4	0	100	100	65-100	15-45	---	NP
Bonn:											
14:											
Bonn part	0-4	Silt loam	ML, CL-ML	A-4	0	100	100	95-100	75-100	20-30	2-7
	4-38	Silt loam, silty clay loam.	CL	A-6	0	95-100	90-100	85-100	65-100	30-40	12-22
	38-72	Silt loam, silty clay loam.	CL	A-6, A-4	0	100	95-100	90-100	75-100	28-38	8-18
Foley part	0-10	Silt loam	ML, CL, CL-ML	A-4, A-5, A-6, A-7	0	100	100	95-100	70-100	25-45	3-20
	10-16	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	90-100	30-49	11-25
	16-54	Silty clay loam, silt loam.	CL, CH	A-6, A-7	0	100	100	95-100	90-100	40-60	18-32
	54-72	Silt loam	CL	A-6, A-7	0	100	100	95-100	85-100	30-45	11-20
Bosket:											
15, 16	0-18	Fine sandy loam	SM	A-2, A-4	0	100	100	75-100	25-45	<20	NP-3

TABLE 15.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
Brandon:											
[1]18:											
Brandon part----	0-9	Silt loam-------	ML, CL, CL-ML	A-4	0	100	95-100	90-100	85-100	<30	NP-10
	9-50	Silty clay loam, silt loam.	CL, ML, CL-ML	A-4, A-6	0	95-100	90-100	85-100	75-100	25-40	3-15
	50-72	Very gravelly fine sandy loam, very gravelly silt loam, gravelly loam.	GM, GC, GM-GC	A-2, A-4, A-1	0-5	30-70	20-60	15-55	10-50	<30	NP-10
Saffell part----	0-10	Gravelly fine sandy loam.	GM, SM	A-1, A-2, A-4	0-5	55-85	50-80	35-70	20-45	<20	NP-3
	10-41	Very gravelly fine sandy loam, very gravelly sandy clay loam.	GC, SC, SM-SC, GM-GC	A-2, A-1	0-15	35-85	25-70	20-55	15-35	20-40	4-18
	41-72	Very gravelly sandy loam, very gravelly loamy sand, very gravelly loam.	GC, SC, SM-SC, GM-GC	A-2, A-1	0-15	35-85	25-70	20-55	15-35	20-40	4-18
Calhoun:											
19----------	0-14	Silt loam-------	CL-ML, ML, CL	A-4	0	100	100	100	95-100	<31	NP-10
	14-37	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	95-100	30-45	11-24
	37-72	Silt loam-------	CL, CL-ML	A-6, A-4	0	100	100	100	90-100	25-40	5-20
Collins:											
20----------	0-6	Silt loam-------	ML, CL-ML	A-4	0	100	100	100	80-100	<30	NP-7
	6-72	Silt loam-------	ML, CL-ML	A-4	0	100	100	100	90-100	<30	NP-7
Commerce:											
[1]21----------	0-8	Silt loam-------	CL-ML, CL, ML	A-4	0	100	100	100	75-100	<30	NP-10
	8-30	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	100	85-100	32-45	11-23
	30-72	Stratified fine sandy loam to silty clay loam.	CL-ML, CL, ML	A-4, A-6, A-7	0	100	100	100	75-100	23-45	3-23
Crowley:											
22----------	0-15	Silt loam-------	ML, CL-ML, CL	A-4	0	100	100	95-100	80-100	<30	NP-10
	15-32	Silty clay, silty clay loam.	CH, CL	A-7	0	100	100	95-100	85-100	41-60	20-35
	32-72	Silty clay loam, silty clay.	CL, CH	A-6, A-7	0	100	100	95-100	85-100	38-60	18-35
Dexter:											
23----------	0-7	Silt loam-------	ML, SM, CL-ML, SM-SC	A-4	0	100	100	85-100	45-75	<25	NP-4
	7-40	Silty clay loam, clay loam, silt loam.	CL	A-6, A-4	0	100	100	90-100	70-90	28-40	8-18
	40-72	Sandy clay loam, fine sandy loam, loam.	SC, SM, CL, ML	A-4, A-6	0	100	100	75-95	35-60	<38	NP-16

See footnote at end of table.

TABLE 15.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
Dubbs:											
24	0-8	Very fine sandy loam.	ML, CL-ML, CL	A-4	0	100	100	100	85-100	20-30	3-10
	8-37	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	100	85-100	35-50	15-25
	37-72	Loam to loamy sand.	ML, SM	A-2, A-4	0	100	100	60-85	25-55	<25	NP-3
Dundee:											
25	0-7	Silt loam	CL, CL-ML, ML	A-4, A-6	0	100	100	90-100	75-98	20-35	4-11
	7-31	Loam, silty clay loam, silt loam.	CL, CL-ML	A-4, A-5, A-6, A-7	0	100	100	90-100	70-95	24-44	5-22
	31-72	Loam, fine sandy loam, silt loam, silty clay loam.	CL, CL-ML, ML	A-4	0	100	100	85-100	60-90	10-40	NP-18
Falaya:											
26	0-41	Silt loam	ML, CL-ML, CL	A-4	0	100	100	100	95-100	<30	NP-10
	41-72	Silt loam, silty clay loam.	ML, CL, CL-ML	A-4, A-5, A-6, A-7	0	100	100	100	95-100	25-43	3-16
Foley:											
27	0-10	Silt loam	ML, CL, CL-ML	A-4, A-5, A-6, A-7	0	100	100	95-100	70-100	25-45	3-20
	10-16	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	90-100	30-49	11-25
	16-54	Silty clay loam, silt loam.	CL, CH	A-6, A-7	0	100	100	95-100	90-100	40-60	18-32
	54-72	Silt loam	CL	A-6, A-7	0	100	100	95-100	85-100	30-45	11-20
Fountain:											
28	0-17	Silt loam	CL-ML, ML	A-4	0	100	100	100	95-100	<27	NP-7
	17-60	Silty clay loam, silt loam.	CL	A-6	0	95-100	90-100	90-100	80-100	32-40	11-18
	60-72	Silt loam, sandy clay loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	95-100	90-100	90-100	80-100	25-36	5-14
Jackport:											
29	0-5	Silty clay	CL, CH	A-6, A-7	0	100	100	95-100	85-100	30-55	12-30
	5-16	Silty clay, clay	CH	A-7	0	100	100	95-100	90-100	51-85	25-55
	16-37	Clay	CH	A-7	0	100	100	95-100	90-100	65-85	35-55
	37-72	Silty clay, silty clay loam, silt loam.	CH, CL	A-7	0	100	100	95-100	90-100	45-75	20-45
Kobel:											
30	0-5	Silty clay	CH	A-7	0	100	100	95-100	90-95	55-75	35-50
	5-55	Clay, silty clay, silty clay loam.	CH, CL	A-7	0	100	100	95-100	90-95	45-75	25-50
	55-72	Sandy clay, silty clay, silty clay loam.	CH, CL	A-7	0	100	100	85-95	60-75	45-70	25-45

See footnote at end of table.

TABLE 15.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Kobel:											
131	0-5	Silt loam	CL	A-6, A-7	0	100	100	90-100	70-90	35-45	15-25
	5-55	Clay, silty clay, silty clay loam.	CH, CL	A-7	0	100	100	95-100	90-95	45-75	25-50
	55-72	Sandy clay, silty clay, silty clay loam.	CH, CL	A-7	0	100	100	85-95	60-75	45-70	25-45
Loring:											
32, 33, 34	0-8	Silt loam	ML, CL-ML, CL	A-4, A-6	0	100	100	95-100	90-100	20-35	3-15
	8-27	Silt loam, silty clay loam,	CL	A-6, A-7	0	100	100	95-100	90-100	35-45	15-25

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than; > means more than. Entries under "erosion factors--T" apply to the entire profile. Absence of an entry means data were not available or were not estimated]

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete	Erosion factors: K	Erosion factors: T
	In	In/hr	In/in	pH	Mmhos/cm					
Amagon:										
10, [1]11	0-6	0.6-2.0	0.16-0.24	4.5-6.0	<2	Low	High	High	0.43	5
	6-25	0.2-0.6	0.16-0.24	4.5-6.5	<2	Low	High	High	0.43	
	25-44	0.06-0.2	0.16-0.24	4.5-6.5	<2	Moderate	High	High	0.37	
	44-72	0.06-0.6	0.15-0.24	5.1-8.4	<2	Low	High	High	0.43	
Beulah:										
12, 13	0-7	2.0-6.0	0.10-0.15	4.5-6.0	<2	Low	Low	Moderate	0.20	5
	7-39	2.0-6.0	0.10-0.20	4.5-6.0	<2	Low	Low	Moderate	0.20	
	39-72	>6.0	0.02-0.15	5.1-7.3	<2	Low	Low	Moderate	0.17	
Bonn:										
[1]14:										
Bonn part	0-4	0.2-0.6	0.15-0.23	4.5-7.3	<2	Low	High	Low	0.49	3
	4-38	<0.06	0.08-0.14	5.6-9.0	<2	Low	High	Low	0.49	
	38-72	<0.2	0.08-0.14	6.6-9.0	<2	Low	High	Low	0.49	
Foley part	0-10	0.6-2.0	0.13-0.24	4.5-7.3	<2	Low	High	Low	0.43	3
	10-16	0.2-0.6	0.18-0.24	5.1-7.3	<2	Moderate	High	Low	0.43	
	16-54	<0.06	0.10-0.14	5.1-9.0	<2	Moderate	High	Low	0.43	
	54-72	<0.06	0.10-0.14	6.6-9.0	<2	Low	High	Low	0.49	
Bosket:										
15, 16	0-18	2.0-6.0	0.10-0.15	5.1-6.5	<2	Low	Low	Moderate	0.24	4
	18-42	0.6-2.0	0.10-0.20	5.1-6.5	<2	Low	Low	Moderate	0.32	
	42-72	2.0-6.0	0.10-0.15	5.1-6.5	<2	Low	Low	Moderate	0.32	
Brandon:										
17	0-9	0.6-2.0	0.18-0.23	4.5-5.5	<2	Low	Moderate	High	0.37	3
	9-50	0.6-2.0	0.18-0.23	4.5-5.5	<2	Low	Moderate	High	0.28	
	50-72	2.0-20.0	0.05-0.12	4.5-5.5	<2	Low	Low	High	0.17	
[1]18:										
Brandon part	0-9	0.6-2.0	0.18-0.23	4.5-5.5	<2	Low	Moderate	High	0.37	3
	9-50	0.6-2.0	0.18-0.23	4.5-5.5	<2	Low	Moderate	High	0.28	
	50-72	2.0-20.0	0.05-0.12	4.5-5.5	<2	Low	Low	High	0.17	
Saffell part	0-10	2.0-6.0	0.05-0.10	4.5-5.5	<2	Low	Low	Moderate	0.20	4
	10-41	0.6-2.0	0.06-0.10	4.5-5.5	<2	Low	Low	Moderate	0.28	
	41-72	0.6-2.0	0.06-0.12	4.5-5.5	<2	Low	Low	Moderate	0.17	
Calhoun:										
19	0-14	0.2-0.6	0.21-0.23	4.5-6.0	<2	Low	High	Moderate	0.49	3
	14-37	0.06-0.2	0.20-0.22	4.5-5.5	<2	Moderate	High	Moderate	0.43	
	37-72	0.2-0.6	0.21-0.23	4.5-7.8	<2	Low	High	Moderate	0.43	
Collins:										
20	0-6	0.6-2.0	0.10-0.20	4.5-5.5	<2	Low	Moderate	Moderate	0.43	5
	6-72	0.6-2.0	0.20-0.24	4.5-5.5	<2	Low	Moderate	Moderate	0.43	
Commerce:										
[1]21	0-8	0.6-2.0	0.21-0.23	5.6-7.8	<2	Low	High	Low	0.37	5
	8-30	0.2-0.6	0.20-0.22	6.1-8.4	<2	Moderate	High	Low	0.32	
	30-72	0.2-2.0	0.20-0.23	6.6-8.4	<2	Low	High	Low	0.37	
Crowley:										
22	0-15	0.2-0.6	0.20-0.23	4.5-7.3	<2	Low	High	Moderate	0.43	4
	15-32	<0.06	0.19-0.21	4.5-6.5	<2	High	High	Moderate	0.32	
	32-72	0.06-0.2	0.20-0.22	5.6-8.4	<2	Moderate	High	Moderate	0.32	

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete	Erosion factors: K	Erosion factors: T
	In	In/hr	In/in	pH	Mmhos/cm					
Dexter:										
23----------	0-7	0.6-2.0	0.15-0.24	5.1-6.5	<2	Low--------	Low-------	Moderate	0.37	5
	7-40	0.6-2.0	0.15-0.24	4.5-6.0	<2	Low--------	Moderate	Moderate	0.32	
	40-72	0.6-6.0	0.08-0.18	4.5-5.5	<2	Low--------	Low-------	Moderate	0.24	
Dubbs:										
24----------	0-8	0.6-2.0	0.20-0.22	4.5-6.0	<2	Low--------	Moderate	Moderate	0.37	5
	8-37	0.6-2.0	0.18-0.22	4.5-6.0	<2	Moderate	Moderate	Moderate	0.37	
	37-72	2.0-6.0	0.20-0.22	4.5-6.0	<2	Low--------	Moderate	Moderate	0.37	
Dundee:										
25----------	0-7	0.6-2.0	0.15-0.20	4.5-6.0	<2	Low--------	High------	Moderate	0.37	5

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Risk of corrosion		Erosion factors	
							Uncoated steel	Concrete	K	T
	In	In/hr	In/in	pH	Mmhos/cm					

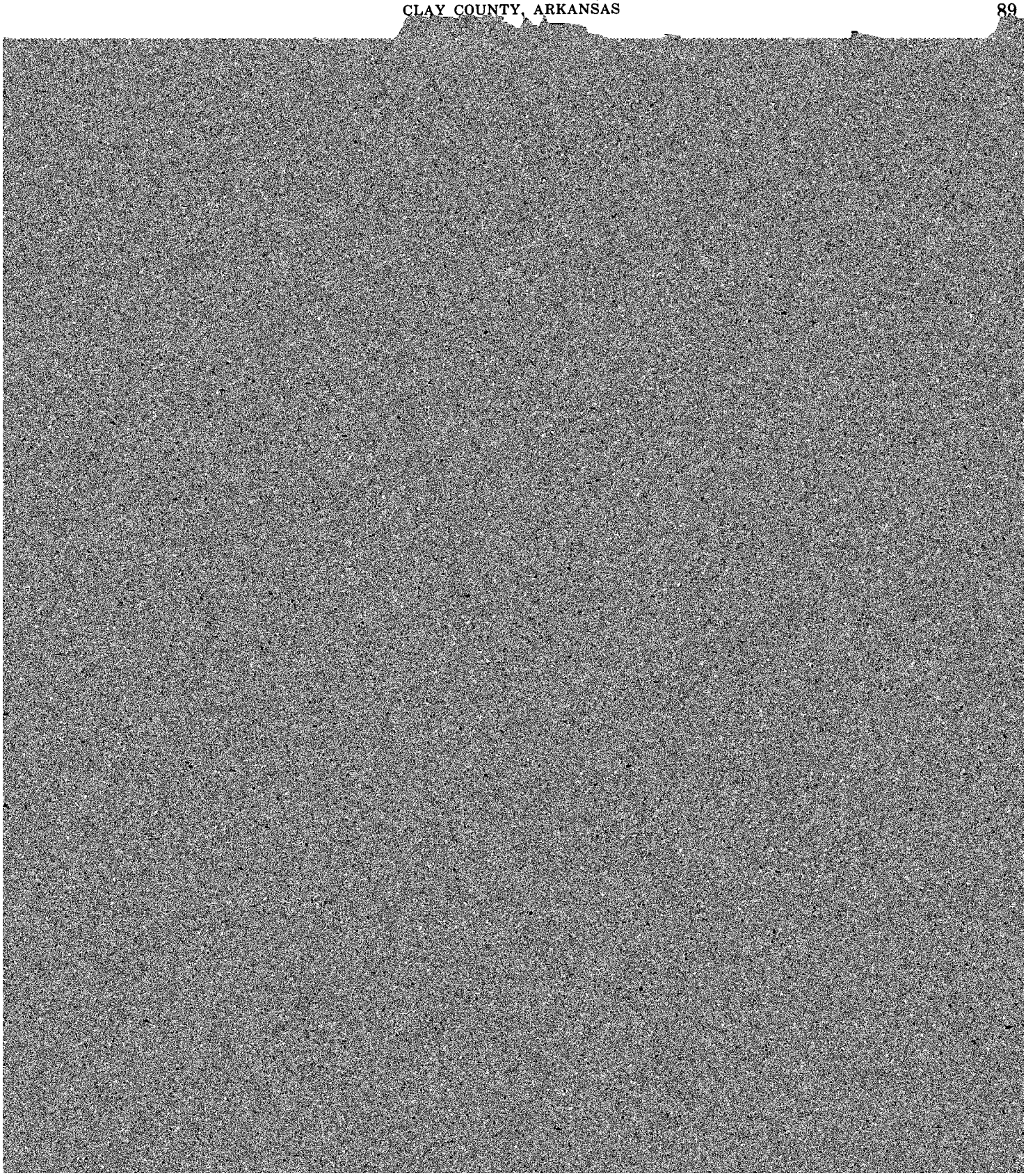


TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Cemented pan	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Depth	Hardness
					Ft			In		In	
Kobel: 30, [1]31	D	Common	Brief to very long.	Oct-May	0-1.0	Perched	Dec-Apr	>60	---	---	---
Loring: 32, 33, 34	C	None	---	---	2.0-3.0	Perched	Dec-Mar	>60	---	---	---
Memphis: [1]35	B	None	---	---	>6.0	---	---	>60	---	---	---
Patterson: 36	C	None	---	---	0-1.0	Apparent	Dec-Apr	>60	---	---	---
Tuckerman: 37	D	None	---	---	0-1.0	Perched	Dec-Apr	>60	---	---	---
Wardell: 38	C	None	---	---	0-1.5	Perched	Nov-Apr	>60	---	---	---

[1]This map unit is made up of two or more dominant kinds of soil. See map unit description for the composition and behavior of the whole map unit.

TABLE 18.--PHYSICAL ANALYSES OF SELECTED SOILS

Soil name and sample number	Depth	Horizon	Particle-size distribution (percent less than 2.0 mm)					
			Very coarse sand through medium sand (2.0-0.25 mm)	Fine sand (0.25)-0.10 mm)	Very fine sand (0.10-0.05 mm)	Total sand (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm
	In							
Crowley silt loam: S74-AR-021-1-(1-6)	0-6	Ap	2	1	4	7	77	16
	6-15	A2g	2	1	4	7	78	15
	15-22	B21tg	0	1	2	3	43	54
	22-32	B22tg	0	1	2	3	43	54
	32-40	B31tg	1	1	4	6	52	42
	40-72	B32tg	2	1	10	13	56	31
Falaya silt loam: S74-AR-021-11-(1-6)	0-6	Ap	0	1	1	2	86	12
	6-14	C1	0	0	1	1	85	14
	14-27	C2g	0	1	1	2	86	12
	27-41	C3g	0	1	2	3	88	9
	41-56	C4g	2	1	2	5	83	12
	56-72	Bxb	4	1	2	7	77	16
Wardell fine sandy loam: S74-AR-021-13-(1-6)	0-6	Ap	7	53	7	66	27	7
	6-9	A12	7	52	6	66	26	8
	9-17	B1g	9	52	6	66	27	7
	17-31	B21tg	10	42	5	57	21	22
	31-46	B22tg	10	42	5	57	18	25
	46-72	Cg	8	76	3	87	4	9

TABLE 19.--CHEMICAL ANALYSES OF SELECTED SOILS

Soil name and sample number	Depth	Horizon	Extractable bases				Extractable acidity	Base saturation	Reaction (1:1 soil)	Organic matter	Available phosphorus
			Ca	Mg	Na	K					

TABLE 20.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Amagon	Fine-silty, mixed, thermic Typic Ochraqualfs
Beulah	Coarse-loamy, mixed, thermic Typic Dystrochrepts
Bonn	Fine-silty, mixed, thermic Glossic Natraqualfs
Bosket	Fine-loamy, mixed, thermic Mollic Hapludalfs
Brandon	Fine-silty, mixed, thermic Typic Hapludults
Calhoun	Fine-silty, mixed, thermic Typic Glossaqualfs
Collins	Coarse-silty, mixed, acid, thermic Aquic Udifluvents
Commerce	Fine-silty, mixed, nonacid, thermic Aeric Fluvaquents
Crowley	Fine, montmorillonitic, thermic Typic Albaqualfs
Dexter	Fine-silty, mixed, thermic Ultic Hapludalfs
Dubbs	Fine-silty, mixed, thermic Typic Hapludalfs
Dundee	Fine-silty, mixed, thermic Aeric Ochraqualfs
Falaya	Coarse-silty, mixed, acid, thermic Aeric Fluvaquents
Foley	Fine-silty, mixed, thermic Albic Glossic Natraqualfs
Fountain	Fine-silty, mixed, thermic Typic Glossaqualfs
Jackport	Very-fine, montmorillonitic, thermic Vertic Ochraqualfs
Kobel	Fine, montmorillonitic, nonacid, thermic Vertic Haplaquepts
Loring	Fine-silty, mixed, thermic Typic Fragiudalfs
Memphis	Fine-silty, mixed, thermic Typic Hapludalfs
Patterson	Coarse-loamy, mixed, thermic Aeric Ochraqualfs
Saffell	Loamy-skeletal, siliceous, thermic Typic Hapludults
Tuckerman	Fine-loamy, mixed, thermic Typic Ochraqualfs
Wardell	Fine-loamy, mixed, thermic Mollic Ochraqualfs

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