United States Department of Agriculture

Soil Conservation Service

In cooperation with Tennessee Agricultural Experiment Station; Obion-Forked Deer Basin Authority; Tennessee Valley Authority; Tennessee Department of Agriculture; and Gibson County Board of Commissioners

Soil Survey of Gibson County, Tennessee

How To Use This Soil Survey

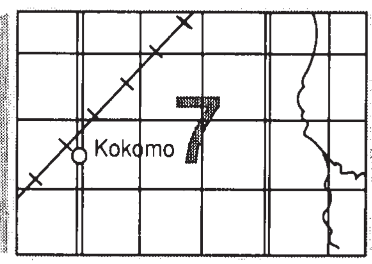
General Soil Map

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

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

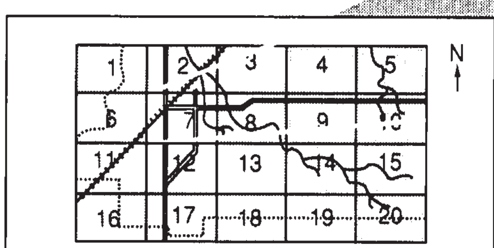
Detailed Soil Maps

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



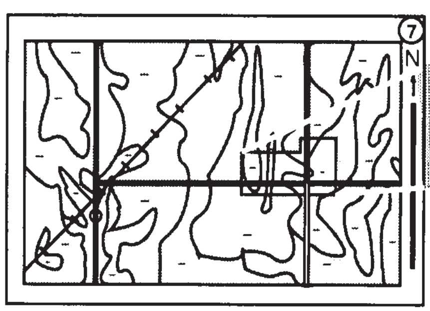
MAP SHEET

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

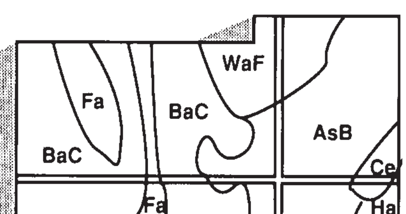


INDEX TO MAP SHEETS

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



MAP SHEET



AREA OF INTEREST

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

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

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

Major fieldwork for this soil survey was completed in 1987. Soil names and descriptions were approved in 1989. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1987. This soil survey was made cooperatively by the Soil Conservation Service and the Tennessee Agricultural Experiment Station. The Gibson County Board of Commissioners, the Obion-Forked Deer Basin Authority, the Tennessee Valley Authority, and the Tennessee Department of Agriculture provided financial assistance for the survey. The survey is part of the technical assistance furnished to the Gibson County Soil Conservation District.

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

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

Cover: Parallel terraces with pipe outlets in an area of Loring silt loam, 5 to 8 percent slopes, severely eroded.

Contents

Issued September 1994

Index to Map Units

Summary of Tables

Foreword

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

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

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

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

Jerry S. Lee
State Conservationist
Soil Conservation Service

Soil Survey of
Gibson County, Tennessee

By Johnson C. Jenkins, Soil Conservation Service

Soils surveyed by Johnson C. Jenkins, Debra K. Brasfield, David M. Tatum, Terry D. Sims, Howard G. Smith, Robert L. Seals, Jr., William McCabe, Jeffrey Hawks, and Robert G. Jordan III

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

GIBSON COUNTY is in the west-central part of Tennessee (fig. 1). It is bounded on the east by Carroll County, on the west by Dyer and Crockett Counties, on the north by Weakley County, and on the south by Madison County. According to the U.S. Census, the population of the county was 49,483 in 1980. The city of Trenton is the county seat and is the geographical center of the county. The county makes up 386,100 acres, or 603 square miles.

Farming is the main economic enterprise in the county. Approximately 65 percent of the acreage is cropland. The county ranks fourth in the State in agricultural products sold. The major crops are soybeans, corn, and cotton. Other important crops are milo, small grain, and truck crops. In recent years industry has become important in the county. The federally owned Milan Ammunition Arsenal and the University of Tennessee Agricultural Experiment Station at Milan have contributed to the economic and agricultural progress of the county.

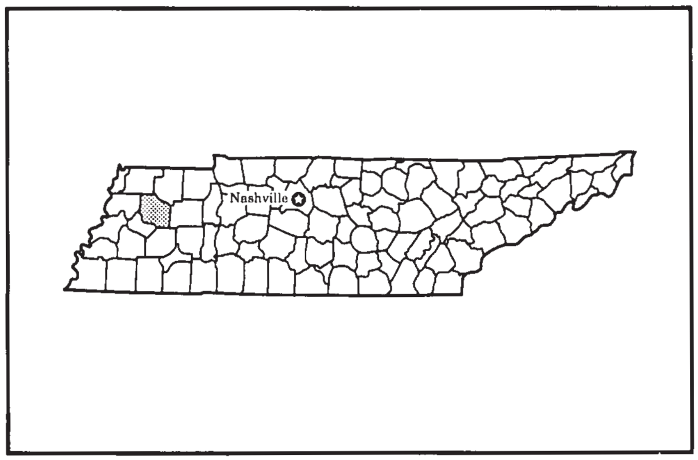


Figure 1.—Location of Gibson County in Tennessee.

General Nature of the County

This section gives general information about Gibson County. It describes history and development; industry and transportation facilities; geology, physiography, and drainage; and climate.

History and Development

Gibson County, which was established on October 21, 1823, was the twelfth county organized in west Tennessee after the Chickasaw Purchase of 1818. The county was named in honor of Col. John H. Gibson, a distinguished soldier and patriot.

The part of west Tennessee that includes Gibson County was first opened for settlement in 1818 by the Chickasaw Purchase. Prior to its establishment, the county was part of the hunting lands deeded to the Chickasaw Indians by George Washington in 1785. For this reason, the county had few settlers until its organization in 1823. In 1822 and 1823, as a result of land grants issued by the government of North Carolina, settlers migrated to the county from central and east Tennessee and the Carolinas. Among the first settlers was the legendary frontiersman and statesman Col. David Crockett, who settled east of Rutherford.

During the Civil War, Gibson County was the setting for several gallant cavalry raids by Nathan Bedford Forrest and others. The fertile soils, abundant rainfall, and long growing season made it possible for the county to be a leader in agriculture. Even before the Civil War, farming was diversified. Cotton was the chief cash crop. In recent years economic instability in the market place and the migration of the boll weevil have forced farmers to expand their production of other crops *(3)*.

Industry and Transportation Facilities

Industries within Gibson County include enterprises engaged in manufacturing, agriculture, construction, transportation, communications, wholesale and retail trades, and public services. The more than 69 manufacturing industries in the county employ more than 50 percent of the nonagricultural work force *(3)*. Manufacturing is the major nonagricultural industry.

Gibson County has a very efficient system of 10 State and Federal highways. Interstate Highway 40 also is in close proximity to the county. Because of the excellent network of State and Federal highways, every part of the county is accessible for the easy movement of farm products and freight. The county is served by seven freight carriers, three bus lines, and three railroad systems. Humboldt Municipal Airport and the Gibson County Airport provide air service. McKellar Field, which is in Jackson, Tennessee, is the nearest commercial airport.

Geology, Physiography, and Drainage

Gibson County is centrally located on the West Tennessee Plain, midway between the major drainage of the Mississippi River and the Tennessee River. The geologic material in which the soils formed are Pleistocene loess, Tertiary coastal plain sediments, and recent alluvium. The upland surfaces are blanketed by layers of loess. The thickness of the loess ranges from more than 20 feet in the western part of the county to less than 4 feet in the eastern part. The windblown silt and fine sand were originally deposited across a topographic surface of low relief eroded from Tertiary rocks of the Claiborne, Wilcox, and Jackson Formations, all of which consist primarily of sand that has lenses of clay and silt and irregular, lenticular beds of lignite. Recent alluvium, which was deposited by streams, has been mixed with the silt and fine sand washed from the surrounding uplands.

The topography in the western and central parts of the county is characterized by undulating or sloping ridges and the adjoining hilly side slopes. Some steep slopes border the major drainageways. The soils in these areas are well drained to somewhat poorly drained. The uplands are dissected by many small drainageways, which develop into broad flood plains. The soils on flood plains generally are poorly drained or somewhat poorly drained. Stream terraces have developed as nearly level benches along some of the major drainageways. The soils on these terraces are moderately well drained to poorly drained.

The eastern part of the county is made up mainly of long, irregularly shaped ridges that have steep side slopes. The soils in these areas are well drained or moderately well drained. The uplands are highly dissected by narrow drainageways. The flood plains are level and narrow. The soils on the flood plains are moderately well drained or somewhat poorly drained.

The county is drained by two major river systems—the Forked Deer River and the Obion River, which flow westerly into the Mississippi River. The northern part of the county is drained by the South Fork and Rutherford Fork of the Obion River. The southern part is drained by the North Fork and Middle Fork of the Forked Deer River. The flood plains are broad and flat and are 2 miles wide in some areas. The water in the rivers and their tributaries is sluggish, and flooding periodically occurs.

Climate

Gibson County has long, hot summers and rather cool winters. An occasional cold wave in winter brings temperatures that are near or below freezing but seldom brings much snow. Precipitation is fairly heavy throughout the year, and prolonged droughts are rare. Summer precipitation falls mainly during afternoon thunderstorms. The amount of precipitation is adequate for all of the crops commonly grown in the county.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Milan, Tennessee, in the period 1951 to 1984. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 38 degrees F and the average daily minimum temperature is 28 degrees. The lowest temperature on record, which occurred at Milan on February 2, 1951, is -23 degrees. In summer, the average temperature is 77 degrees and the average daily maximum temperature is 88 degrees. The highest recorded temperature, which occurred on July 27, 1952, is 108 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is nearly 54 inches. Of this, about 27 inches, or 50 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 23 inches. The heaviest 1-day rainfall during the period of record was 13.6 inches at Milan on September 13, 1982. Thunderstorms occur on about 53 days each year. Severe local storms, including tornadoes, strike occasionally. They are of short duration and cause damage in scattered areas.

The average seasonal snowfall is about 10 inches. The greatest snow depth at any one time during the period of record was 10 inches. On an average of 4 days, at least 1 inch of snow is on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 55 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 75 percent of the time possible in summer and 55 percent in winter. The prevailing wind is from the south. Average windspeed is highest, 11 miles per hour, in spring.

How This Survey Was Made

This survey was made to provide information about the soils in the survey area. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; and the kinds of crops and native plants growing on the soils. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material from which the soil formed. The unconsolidated material generally is devoid of roots and other living organisms and has been changed little by other biological activity.

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

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

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

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

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

Map Unit Composition

A map unit delineation on a soil map represents an area dominated by one major kind of soil or an area dominated by two or three kinds of soil. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural objects. In common with other natural objects, they have a characteristic variability in their properties. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of soils of other taxonomic classes. Consequently, every map unit is made up of the soil or soils for which it is named and some soils that belong to other taxonomic classes. In the detailed soil map units, these latter soils are called inclusions or included soils. In the general soil map units, they are called soils of minor extent.

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

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

General Soil Map Units

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

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

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

The names of the soils at the boundaries of the general soil map of this county do not in all instances match those of the soils in adjacent counties. Differences result from variations in soil patterns and map scales and from recent advances in soil classification.

1. Loring-Memphis-Grenada

Nearly level to hilly, moderately well drained and well drained soils formed in thick deposits of loess; on uplands and high terraces

This unit consists of predominantly undulating and rolling soils on loess-covered ridgetops and side slopes. Slopes range from 2 to 8 percent in most areas, but they range from 8 to 20 percent in a few areas on short, steep side slopes and from 0 to 2 percent in some areas on terraces.

Most of the soils in this unit are used as cropland. The major crops are corn, cotton, soybeans, and grain sorghum. The soils are highly susceptible to erosion. Conservation tillage systems are needed to maintain productivity, especially in hilly areas.

This unit makes up about 30 percent of the county. It is about 58 percent Loring soils, 13 percent Memphis soils, and 11 percent Grenada soils (fig. 2). Soils of minor extent make up about 18 percent of the unit. They include Calloway, Routon, Collins, Center, Falaya, and Providence soils.

Loring soils are moderately well drained. They are on narrow and broad ridgetops and undulating to hilly side slopes. They have a compact, slowly permeable fragipan in the lower part of the subsoil. Slopes range from 2 to 20 percent.

Memphis soils are well drained. They are on terraces and undulating ridgetops and side slopes on the highest parts of the landscape. Slopes range from 0 to 8 percent.

Grenada soils are moderately well drained. They are on smooth, undulating ridgetops and on foot slopes. They have a compact, slowly permeable fragipan in the lower part of the subsoil. Slopes range from 2 to 5 percent.

This unit is well suited to suited to crop production if erosion is controlled. The slope and the hazard of erosion are the main concerns in farming the steeper parts of the uplands. In some areas erosion has so reduced the available water capacity that the soils are most productive under a permanent cover of plants, such as pasture species and hay. Some undulating areas are fairly productive. In these areas conservation tillage systems can help to control further erosion and maintain productivity.

This unit is well suited to trees. Most of the climatically adapted hardwoods grow well. Loblolly pine can help to control gully and sheet erosion in the steeper, more severely eroded areas. The Loring and Grenada soils are seasonally wet. As a result, logging activities should be restricted to summer and early fall.

The moderately well drained Loring and Grenada soils are suited to building site development. The major limitation is the wetness caused by a perched water table above the fragipan. The slow permeability and the seasonal wetness are severe limitations on sites for septic tank absorption fields. Low strength is a severe limitation on sites for local roads and streets. The well drained Memphis soils are well suited to most urban uses.

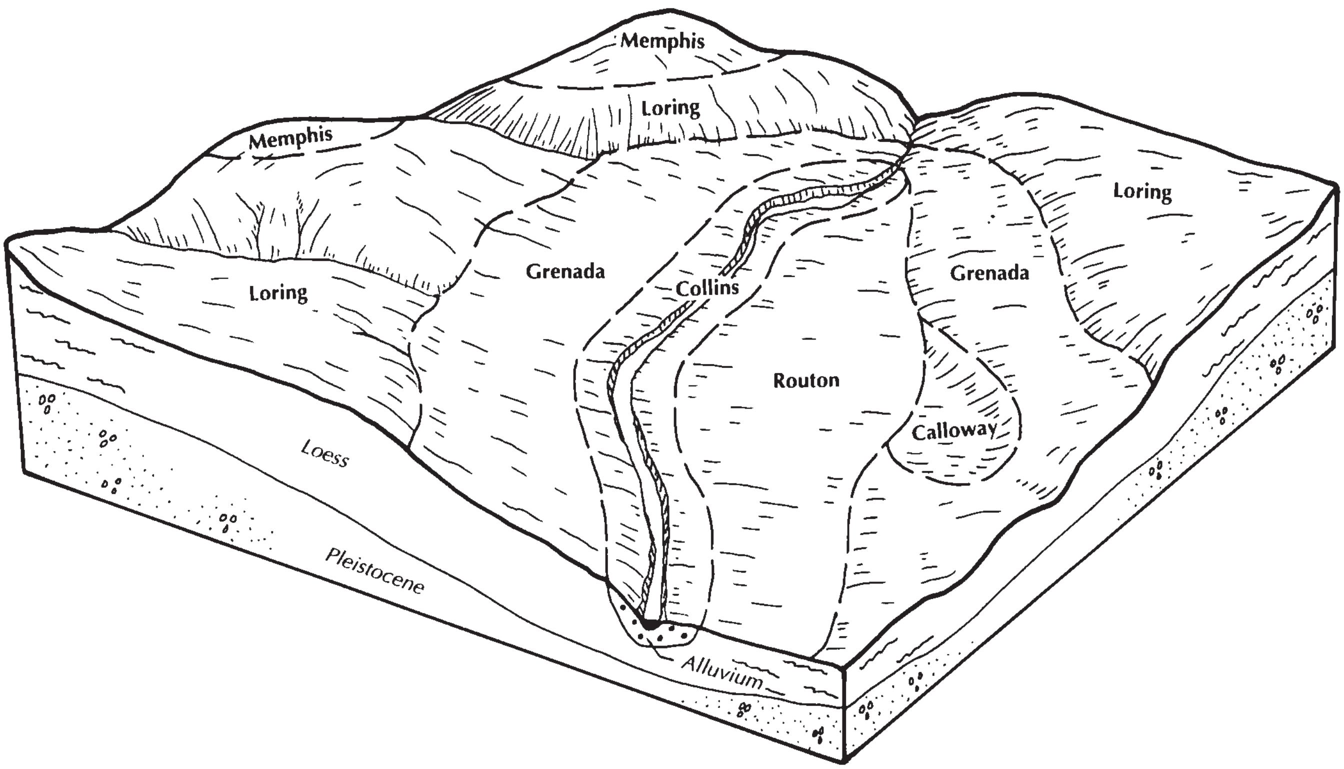


Figure 2.—Pattern of soils in the Loring-Memphis-Grenada general soil map unit.

2. Providence-Lexington-Smithdale

Undulating to steep, moderately well drained and well drained soils formed in moderately thick deposits of loess and in loamy coastal plain sediments; on dissected uplands and terraces

This unit consists of predominantly rolling to hilly soils on ridgetops and side slopes. Slopes range from 2 to 40 percent.

About 60 percent of the acreage in this unit is used as cropland. The major crops are corn, cotton, soybeans, and grain sorghum. Most of the soils are highly susceptible to erosion. Conservation tillage systems are needed to reduce the hazard of further erosion and to maintain productivity. Because of a severe hazard of erosion and a low available water capacity, the soils on steep side slopes are unsuited to row crops. Most of the steeper areas are used as permanent pasture or as woodland.

This unit makes up about 40 percent of the county. It is about 50 percent Providence soils, 20 percent Lexington soils, and about 7 percent Smithdale soils (fig. 3). Soils of minor extent make up about 23 percent of the unit. They include Grenada, Loring, Calloway, Collins, and Center soils.

Providence soils are moderately well drained. They are on narrow, undulating ridges and on hilly side slopes. They formed in moderately thick deposits of loess and in the underlying coastal plain sediments. They have a compact, moderately slowly permeable fragipan in the lower part of the subsoil. Slopes range from 2 to 30 percent.

Lexington soils are well drained. They are on undulating ridges and on steep side slopes. They formed in moderately thick deposits of loess and in the underlying loamy coastal plain sediments. Slopes range from 2 to 30 percent.

Smithdale soils are well drained. They are on steep side slopes. They formed in loamy coastal plain sediments. Slopes range from 12 to 40 percent.

The soils on undulating ridges are suited to row crops if erosion is controlled. Well established conservation tillage systems, including no-till planting, reduce the hazard of erosion and maintain productivity.

In most areas this unit is well suited to trees. Most of the climatically adapted hardwoods grow well. Loblolly pine can help to control gully and sheet erosion on the steeper, more severely eroded soils.

This unit is suited or poorly suited to building site development and septic tank absorption fields. The wetness caused by a perched water table in the moderately well drained Providence soils and the slope are the major limitations.

3. Rosebloom-Arkabutla

Nearly level, poorly drained and somewhat poorly drained soils; on flood plains

This unit consists of soils on the broader, wetter flood plains along the Forked Deer and Obion Rivers and their major tributaries. Most areas are flooded every winter and spring. Some are ponded throughout the year. Slopes range from 0 to 2 percent.

Most of the acreage in this unit is woodland. A few areas of the somewhat poorly drained Arkabutla soils are used as pasture or cropland. The natural vegetation is mostly bottom-land hardwoods. In the wettest areas, however, stands of baldcypress, water tupelo, and wetland shrubs and sedges are dominant.

This unit makes up about 11 percent of the county. It is about 69 percent Rosebloom soils and 29 percent Arkabutla soils (fig. 4). Soils of minor extent make up about 2 percent of the unit. They include Routon, Center, Falaya and Collins soils.

Rosebloom soils are poorly drained. They are in the lowest areas on the larger flood plains. Slowly moving or standing water recedes very slowly from these areas, leaving only a small amount of sediments each year. Some areas are covered by 1 to 3 feet of water throughout the year. Slopes range from 0 to 2 percent.

Arkabutla soils are somewhat poorly drained. They are in the slightly higher positions on large flood plains. They are somewhat higher because they have received more sediments than the Rosebloom soils. Slopes range from 0 to 2 percent.

In most areas this unit is not suited to crop production. Several large areas have been cleared and have been partially drained by ditches and levees. These drained areas are used for grain sorghum or soybeans. Planting and harvesting are difficult or impossible in some years because of wetness and flooding.

This unit is suited to trees. Most of the climatically adapted bottom-land hardwoods grow well, but they do

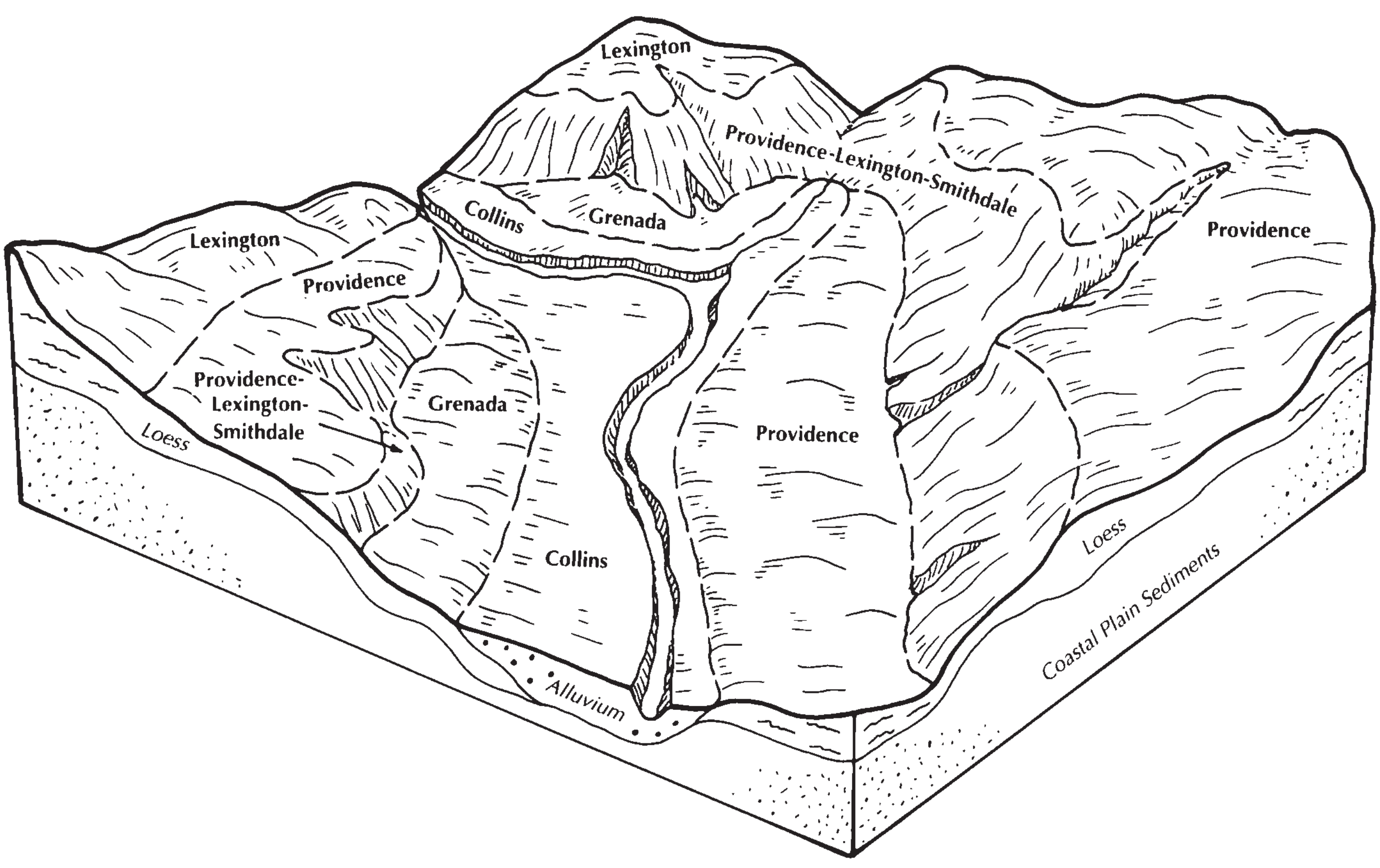


Figure 3.—Pattern of soils in the Providence-Lexington-Smithdale general soil map unit.

not grow well in areas that remain ponded throughout the year. These ponded areas are suited to baldcypress, water tupelo, and wetland shrubs and sedges. Logging activities are restricted to dry periods during summer and fall. The unit provides excellent food and cover for wetland wildlife.

This unit is not suited to most urban uses because of the flooding and the wetness.

4. Routon-Grenada-Center

Nearly level to undulating, poorly drained to moderately well drained soils; on stream terraces

This unit consists of soils that formed in loess on stream terraces. Slopes range from 0 to 5 percent.

Most of the soils in this unit are used as cropland. The rest are used as pasture or woodland. The major crops are corn, soybeans, and grain sorghum. Cotton is grown in some areas of the moderately well drained soils.

This unit makes up about 14 percent of the county. It is about 48 percent Routon soils, 26 percent Grenada soils, and 7 percent Center soils (fig. 5). Soils of minor extent make up about 19 percent of the unit. They include Calloway, Falaya, Loring, Arkabutla, and Rosebloom soils.

Routon soils are poorly drained. They are in the lower, flatter areas on stream terraces and in upland depressions. Slopes range from 0 to 3 percent.

Grenada soils are moderately well drained. They are on gentle knolls, foot slopes, and smooth benches on stream terraces. They have a compact, slowly permeable fragipan in the lower part of the subsoil. Slopes range from 2 to 5 percent.

Center soils are somewhat poorly drained. They are slightly higher on stream terraces than the Routon soils. Slopes range from 1 to 3 percent.

The Routon and Center soils are suited to cropland. Wetness in early spring limits the choice of crops to summer annuals, such as grain sorghum and soybeans. Fairly good yields of these crops can be obtained if good management is applied. The Grenada soils are suited to crop production if erosion is controlled. Well established conservation tillage systems, including no-till planting, reduce the hazard of erosion and maintain productivity.

This unit is well suited to trees. Most bottom-land hardwoods grow well. The soils are seasonally wet. As a result, logging activities should be restricted to summer and fall.

In most areas this unit is poorly suited to building site development and septic tank absorption fields because of the wetness and the slow permeability.

5. Falaya-Collins

Nearly level, somewhat poorly drained and moderately well drained soils; on flood plains

This unit consists of somewhat poorly drained and moderately well drained soils on broad and narrow flood plains along the major streams and their tributaries. The Falaya soils are flooded every winter and spring. The Collins soils usually are flooded in the winter and spring of every other year. Slopes range from 0 to 2 percent.

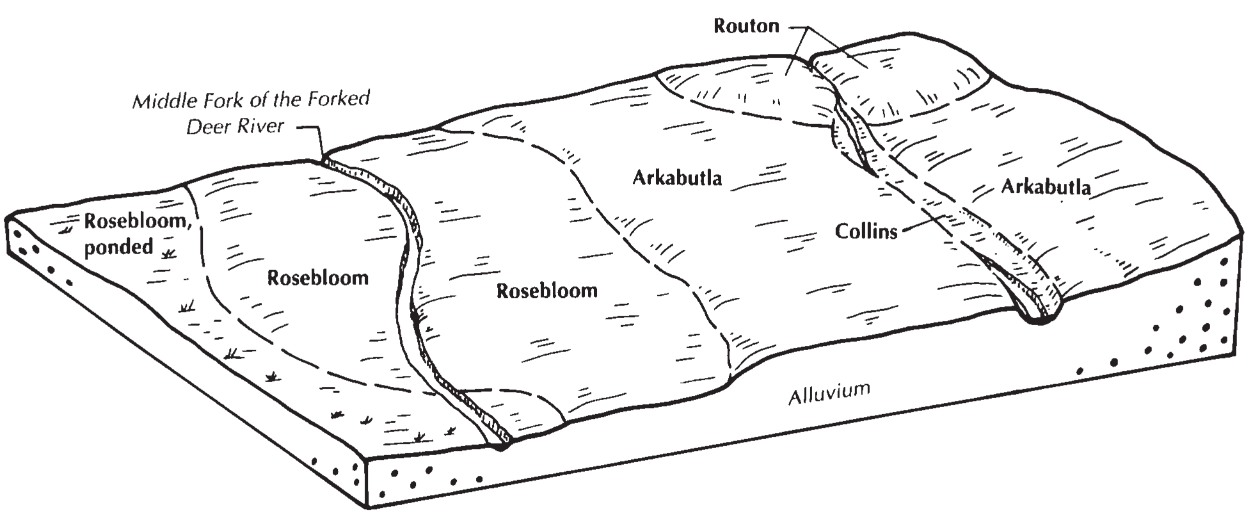


Figure 4.—Pattern of soils in the Rosebloom-Arkabutla general soil map unit.

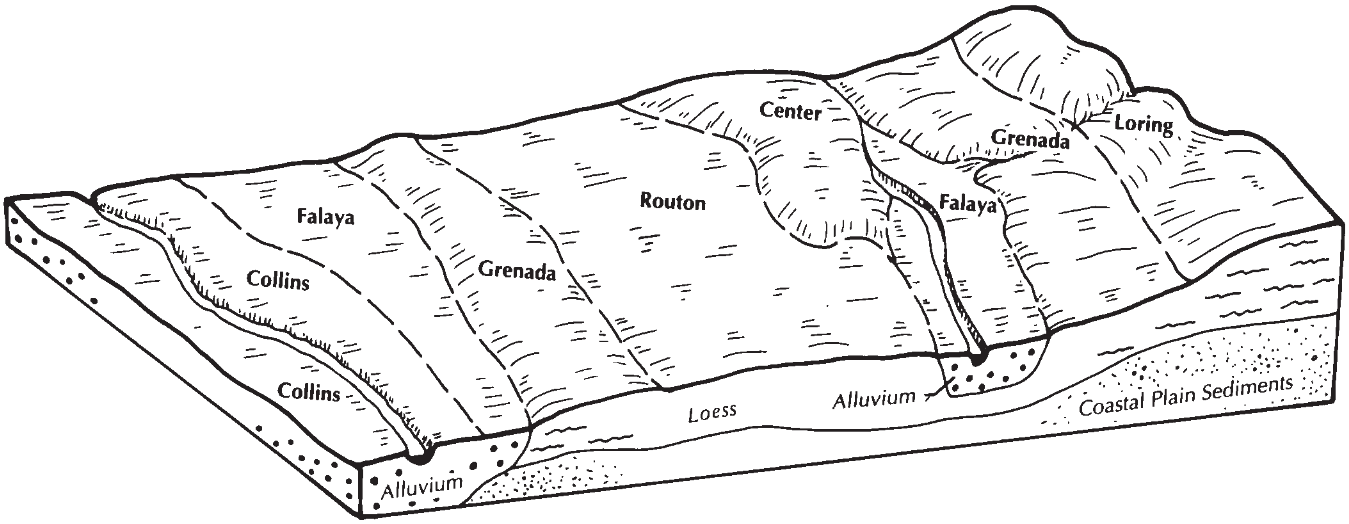


Figure 5.—Pattern of soils in the Routon-Grenada-Center and Falaya-Collins general soil map units.

Most of the acreage in this unit is cropland. The rest is used as pasture or woodland.

This unit makes up about 5 percent of the county. It is about 60 percent Falaya soils and 35 percent Collins soils (fig. 5). Soils of minor extent make up about 5 percent of the unit. They include Routon, Center, Arkabutla, and Rosebloom soils.

Falaya soils are somewhat poorly drained. They are in the lowest positions on broad flood plains and along narrow tributaries. Slopes range from 0 to 2 percent.

Collins soils are moderately well drained. They are in the slightly higher positions on broad flood plains, adjacent to steep side slopes, and on narrow secondary stream bottoms in the dissected uplands. Slopes range from 0 to 2 percent.

In most areas this unit is suited or well suited to crop production. The major crops are corn, soybeans, and grain sorghum. The Falaya soils are best suited to water-tolerant summer annuals. The Collins soils are suited to most of the climatically adapted crops. Both soils are highly productive if good management is applied. The hazard of flooding requires careful attention.

This unit is well suited to trees. Most bottom-land hardwoods grow well. Seasonal wetness and flooding limit logging activities to summer and fall.

This unit is poorly suited to building site development and sanitary facilities because of the flooding and the seasonal wetness.

Detailed Soil Map Units

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

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the substratum, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the substratum. They also can differ in slope, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Loring silt loam, 2 to 5 percent slopes, severely eroded, is a phase of the Loring series.

Some map units are made up of two or more major soils. These map units are called soil complexes or undifferentiated groups.

A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Loring-Urban land complex, 2 to 8 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils in a mapped area are not uniform. An area can be made up of only one of the major soils, or it can be made up of all of them. Rosebloom and Waverly silt loams, frequently flooded, is an undifferentiated group in this survey area.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Urban land is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of Tables") give properties of the soils and the limitations, capabilities, and suitability for many uses. The "Glossary" defines many of the terms used in describing the soils.

Ar—Arkabutla silt loam, frequently flooded. This soil is very deep, nearly level, and somewhat poorly drained. It is on flood plains along the Forked Deer and Obion Rivers and their larger tributaries. Individual areas occur as elongated strips about 40 to 500 acres in size. Slopes range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:

0 to 5 inches—dark yellowish brown silt loam

Subsoil:

5 to 18 inches—mottled dark yellowish brown, light brownish gray, and strong brown silty clay loam

18 to 40 inches—light gray silty clay loam that has red and brown mottles

Substratum:

40 to 50 inches—bluish gray silty clay loam that has dark brown mottles

50 to 60 inches—gray silty clay loam that has red and gray mottles

Included with this soil in mapping are a few small areas of the poorly drained Rosebloom soils, which are intermingled throughout the unit, and a few small areas of the poorly drained Routon soils in the slightly higher positions on the landscape. The Rosebloom and Routon soils make up about 10 percent of the unit.

Also included are intermingled small areas of soils that are similar to the Arkabutla soil but are medium acid or slightly acid in one or more layers below the surface layer and, adjacent to steep side slopes and along channelized rivers, a few narrow bands of a soil that has one or more layers of loamy or sandy material.

Important soil properties—

Permeability: Moderate
Available water capacity: High
Soil reaction: Strongly acid or very strongly acid throughout the profile unless lime has been added
Flooding: Frequent, generally lasting from several days to more than a week in winter and early in spring
Seasonal high water table: At a depth of about 1.0 to 1.5 feet

In most areas this soil is used as woodland. In some areas it has been cleared is used mainly for soybeans or grain sorghum (fig. 6). The cleared areas are protected from flooding by levees. The soil provides excellent food and cover for wildlife.

This soil is poorly suited to cropland. The excessive wetness and flooding are severe limitations affecting most row crops, including those grown in areas where an extensive system of drainage ditches and levees has been installed. Many areas are ponded for several weeks in spring.

This soil is suited to hay and pasture if the species selected for planting are those that are water tolerant, such as tall fescue and white clover. Roots, water, and air can easily penetrate the soil late in spring and in summer, when the soil dries out.

This soil is well suited to water-tolerant trees, including cherrybark oak, water oak, green ash, sweetgum, American sycamore, and eastern cottonwood. The main concern in managing timber is the susceptibility to compaction and rutting. Seedling mortality and plant competition also are management concerns. Rutting and compaction are caused by the use of heavy equipment during wet periods. Puddling also can occur when the soil is wet. Logging during dry periods in summer and fall and using low-pressure ground equipment result in less damage to the soil and help to maintain productivity. Adequate site preparation and maintenance are needed to keep undesirable plants from interfering with natural or artificial reforestation.

This soil is not suited to most urban uses because of the flooding and the seasonal high water table. It is not suitable as a site for septic tank absorption fields because of the hazard of flooding and the seasonal wetness. Low strength and the flooding are severe limitations on sites for local roads and streets. The risk of corrosion on uncoated steel and concrete in structures and underground utilities is severe.

The capability subclass is IVw.

CaB2—Calloway silt loam, 1 to 3 percent slopes, eroded. This soil is very deep, undulating, and somewhat poorly drained. It is in concave areas on uplands and on nearly level benches on stream terraces. It has a slowly permeable fragipan in the subsoil. Individual areas are about 5 to 50 acres in size.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:

0 to 4 inches—dark brown silt loam

Subsoil:

4 to 10 inches—brownish yellow silt loam that has brown and gray mottles

10 to 18 inches—light gray silt loam that has yellow and brown mottles

18 to 38 inches—a fragipan of grayish brown silt loam that has yellow and brown mottles

38 to 44 inches—a fragipan of yellowish brown silt loam that has gray, brown, and yellow mottles

44 to 60 inches—a fragipan of strong brown silt loam that has yellow, gray, and brown mottles

Included with this soil in mapping are intermingled small areas of Grenada, Center, and Routon soils. The moderately well drained Grenada soils are on the slightly higher ridgetops. The moderately well drained Center soils and the poorly drained Routon soils are on the slightly lower flats and in depressions near drainageways. The Grenada, Center, and Routon soils make up about 10 percent of the unit.

Also included are a few small areas of soils that are similar to the Calloway soil but are somewhat less eroded or have a plow layer that consists of subsoil material.

Figure 6.—Grain sorghum in an area of Arkabutla silt loam, frequently flooded.

Important soil properties—

Permeability: Moderate above the fragipan; slow in the fragipan

Available water capacity: Moderate above the fragipan; low in the fragipan

Soil reaction: Very strongly acid to medium acid in the upper part of the profile and strongly acid to mildly alkaline in the lower part

Flooding: None

Hazard of erosion: Moderate

Seasonal high water table: Perched above the fragipan at a depth of about 1 to 2 feet

In most areas this soil is used for soybeans or cotton. In a few areas it is used for corn, wheat, grain sorghum, hay, or pasture.

This soil is suited to row crops and small grain. The rooting depth, the available water capacity, and the hazard of erosion are the main management concerns. Root penetration is restricted to the part of the profile above the fragipan and to grayish tongues within the fragipan. Crops respond well to applications of fertilizer and lime, but the available water capacity restricts yields in most years. A suitable crop rotation and conservation tillage help to prevent excessive erosion. A tillage system that includes contour farming, no-till planting, and stubble mulching helps to control runoff and increases the water supply.

This soil is well suited to hay and pasture, but plant selection and good management are important. Such plants as tall fescue and white clover do not require a deep root zone and can tolerate short periods of wetness. The soil is poorly suited to deep-rooted plants that are sensitive to wetness, such as alfalfa. Stands of these plants start to thin out after the first or second year. Because of the perched water table, the soil is soggy and is too soft for grazing for several weeks in winter and early in spring. Yields are moderate or low in dry years because of a limited amount of available water.

This soil is well suited to trees, including cherrybark oak, sweetgum, water oak, and loblolly pine. The main concerns in managing timber are the susceptibility to compaction and rutting and plant competition. Compaction and rutting are caused by the use of heavy equipment during wet periods. Puddling also can occur when the soil is wet. Logging during dry periods in summer and fall and using low-pressure ground equipment result in less damage to the soil and help to maintain productivity. Adequate site preparation and maintenance are needed to keep undesirable plants from interfering with natural or artificial reforestation.

This soil is poorly suited to most urban uses because of the perched seasonal high water table. The slow permeability and the perched seasonal high water table are severe limitations on sites for septic tank absorption fields. Low strength is a severe limitation on sites for local roads and streets. The risk of corrosion in structures and underground utilities is severe on uncoated steel and moderate on concrete.

The capability subclass is IIe.

Ce—Center silt loam. This soil is very deep, nearly level, and somewhat poorly drained. It is on loess-covered stream terraces. Individual areas are about 5 to 50 acres in size. Slopes range from 0 to 3 percent.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:
0 to 9 inches—brown silt loam

Subsoil:
49 to 21 inches—yellowish brown silty clay loam that has brown and gray mottles
21 to 35 inches—light brownish gray silty clay loam that has brown mottles
35 to 47 inches—light brownish gray silt loam that has brown mottles

Substratum:
47 to 63 inches—light olive brown silt loam that has brown and gray mottles
63 to 80 inches—yellowish brown silt loam that has gray and yellow mottles

Included with this soil in mapping are a few small areas of the poorly drained Routon soils in slight depressions. Also included are a few small areas of Calloway soils on foot slopes. Included soils make up about 10 percent of the unit.

Important soil properties—

Permeability: Moderately slow
Available water capacity: High
Soil reaction: Strongly acid to slightly acid in the upper part of the profile and medium acid to neutral below a depth of about 4 feet
Flooding: None
Hazard of erosion: Slight
Seasonal high water table: At a depth of 1.0 to 2.5 feet

In most areas this soil is used for row crops, mainly soybeans, corn, and grain sorghum. In a few areas it is used for wheat, hay, or pasture.

This soil is well suited to row crops. The seasonal wetness does not interfere with the growth of summer annuals. If properly managed, the soil can produce moderately high yields in most years.

This soil is well suited to hay and pasture, but plant selection and good management are important. The soil is well suited to water-tolerant plants, such as tall fescue and white clover, but it is poorly suited to deep-rooted plants that are sensitive to wetness, such as alfalfa. Stands of alfalfa thin out after the first or second year. Because of the seasonal high water table, the soil is soggy and is too soft for grazing for several weeks in winter and early in spring.

This soil is well suited to trees, including yellow-poplar, eastern cottonwood, cherrybark oak, sweetgum, water oak, American sycamore, and loblolly pine. The main concerns in managing timber are the susceptibility to compaction and rutting and plant competition. Rutting and compaction are caused by the use of heavy equipment during wet periods. Puddling also can occur when the soil is wet. Logging during dry periods in summer and fall and using low-pressure ground equipment result in less damage to the soil and help to maintain productivity. Adequate site preparation and maintenance are needed to keep undesirable plants from interfering with natural or artificial reforestation.

This soil is poorly suited to most urban uses because of the seasonal high water table. The moderately slow permeability and the seasonal high water table are severe limitations on sites for septic tank absorption fields. Low strength is a severe limitation on sites for local roads and streets. The risk of corrosion on uncoated steel and concrete in structures and underground utilities is severe.

The capability subclass is IIw.

Co—Collins silt loam, occasionally flooded. This soil is very deep, nearly level, and moderately well drained. It is on flood plains. Individual areas occur as long, narrow strips about 10 to 250 acres in size. Slopes range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:

0 to 8 inches—dark yellowish brown silt loam

Substratum:

8 to 37 inches—yellowish brown silt loam that has gray and brown mottles

37 to 62 inches—light gray silt loam that has brown and yellowish brown mottles

Included with this soil in mapping are a few small areas of the somewhat poorly drained Falaya and Arkabutla soils in the slightly lower positions on the landscape. These soils make up about 10 percent of the unit.

Also included are some areas of soils that are similar to the Collins soil but are medium acid or slightly acid in one or more layers below the surface layer, are along streambanks and are well drained, or occur as a few narrow bands adjoining steep side slopes and along channelized rivers and have one or more layers of loamy or sandy material.

Important soil properties—

Permeability: Moderate
Available water capacity: High
Soil reaction: Strongly acid or very strongly acid throughout the profile unless lime has been added
Flooding: Occasional, brief, usually in winter or early in spring
Seasonal high water table: At a depth of 2 to 5 feet

In most areas this soil is used for row crops, mainly soybeans, grain sorghum, and corn. In some areas it is used for hay or pasture (fig. 7).

This soil is well suited to row crops. Brief flooding is a hazard in most areas used as cropland, but summer annuals are not damaged during most growing seasons. The soil can produce high yields of small grain crops, but the crops can be damaged by occasional flooding. Lime and fertilizer, which should be applied according to the results of soil tests, are needed for sustained yields.

This soil is well suited to hay and pasture, but plant selection and good management are important. Such plants as tall fescue and white clover do not require a deep root zone and can tolerate short periods of wetness. The soil is poorly suited to deep-rooted plants that are sensitive to wetness, such as alfalfa, because of the seasonal high water table and the occasional flooding. Stands of alfalfa thin out after the first or second year. Because of the seasonal high water table, the soil is soggy and is too soft for grazing for several days at a time in winter and early in spring.

This soil is well suited to trees, including green ash, yellow-poplar, eastern cottonwood, cherrybark oak, American sycamore, and sweetgum. The main concern in managing timber is plant competition. Adequate site preparation and maintenance are needed to keep undesirable plants from interfering with natural or artificial reforestation. The susceptibility to compaction and rutting and seedling mortality also are management concerns. Rutting and compaction are caused by the use of heavy equipment during wet periods. Puddling also can occur when the soil is wet. Logging during dry periods in summer and fall and using low-pressure ground equipment result in less damage to the soil and help to maintain productivity.

This soil is poorly suited to most urban uses because of the flooding and the seasonal high water table. The flooding is a severe hazard on sites for dwellings, small commercial buildings, and local roads and streets. The soil is not suitable as a site for septic tank absorption fields because of the flooding and the seasonal wetness. The risk of corrosion on uncoated steel and concrete in structures and underground utilities is severe.

The capability subclass is IIw.

Fa—Falaya silt loam, frequently flooded. This soil is very deep, nearly level, and somewhat poorly drained. It is on flood plains. Individual areas occur as long, narrow strips about 25 to 450 acres in size. Slopes range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:

0 to 5 inches—dark yellowish brown silt loam

Substratum:

5 to 15 inches—brown silt loam that has gray and brown mottles

15 to 42 inches—light brownish gray silt loam that has brown and yellow mottles

42 to 60 inches—gray silt loam that has brown, yellow, and gray mottles

Figure 7.—Cattle grazing in an area of Collins silt loam, occasionally flooded. Lexington, Smithdale, and Providence soils, 12 to 30 percent slopes, severely eroded, are in the background.

Included with this soil in mapping are a few small areas of the poorly drained Rosebloom and Waverly and moderately well drained Collins soils and small areas of the somewhat poorly drained Arkabutla soils. The Arkabutla soils are intermingled with areas of the Falaya soil on the larger flood plains. The Rosebloom, Waverly, Collins, and Arkabutla soils make up about 10 percent of the unit.

Also included, in a few narrow bands along channelized rivers and the major streams, are a few small areas of a soil that is similar to the Falaya soil but has one or more layers of loamy or sandy material.

Important soil properties—

Permeability: Moderate
Available water capacity: High
Soil reaction: Strongly acid or very strongly acid throughout the profile unless lime has been added
Flooding: Frequent, generally lasting from several days to more than a week in winter and early in spring
Seasonal high water table: At a depth of 1 to 2 feet

In most areas this soil is used for row crops, mainly soybeans, grain sorghum, and corn. In some areas it is used for hay or pasture. A few areas are used as woodland.

This soil is suited to row crops. Short-season annual crops, such as soybeans and grain sorghum, produce moderately high yields in most years. The seasonal wetness, ponding in some areas, and the flooding in early spring limit the suitability for corn. Planting, cultivation, and harvesting are often delayed following periods of heavy rainfall. Lime and fertilizer, which should be applied according to the results of soil tests, are needed for sustained yields of suitable crops.

This soil is suited to hay and pasture, but plant selection and good management are important. Such plants as tall fescue and white clover do not require a deep root zone and can tolerate short periods of wetness. The soil is poorly suited to deep-rooted plants that are sensitive to wetness, such as alfalfa, because germination is often inhibited and stands thin out prematurely. Because of the seasonal high water table, the soil is soggy and is too soft for grazing for several days at a time in winter and early in spring. If properly managed, the soil can produce moderately high yields of suitable forage crops in most years. The seasonal wetness and the flooding in early spring are the main limitations.

This soil is well suited to water-tolerant hardwoods, including cherrybark oak, water oak, yellow-poplar, green ash, sweetgum, and American sycamore. The main concerns in managing timber are seeding mortality and plant competition. Adequate site preparation and maintenance are needed to keep undesirable plants from interfering with natural or artificial reforestation. The seasonal wetness and the flooding increase the seedling mortality rate. The susceptibility to compaction and rutting and the hazard of windthrow also are management concerns. Rutting and compaction are caused by the use of heavy equipment during wet periods. Puddling also can occur when the soil is wet. Logging during dry periods in summer and fall and using low-pressure ground equipment result in less damage to the soil and help to maintain productivity.

This soil is not suited to most urban uses because of the flooding and the seasonal high water table. The flooding is a severe hazard on sites for buildings and for local roads and streets. The soil is not suitable as a site for septic tank absorption fields because of the flooding, the seasonal wetness, and the moderate permeability. The risk of corrosion in structures and underground utilities is severe on uncoated steel and moderate on concrete.

The capability subclass is IVw.

GrB2—Grenada silt loam 2 to 5 percent slopes, eroded. This soil is very deep, undulating, and moderately well drained. It is on ridges and foot slopes in the uplands and on stream terraces. It has a dense, slowly permeable fragipan in the subsoil. Individual areas are about 10 to 100 acres in size.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:
- 0 to 6 inches—dark brown silt loam

Subsoil:
- 6 to 18 inches—yellowish brown silt loam that has brown mottles
- 18 to 24 inches—light gray silt loam that has brown mottles
- 24 to 46 inches—a fragipan of dark yellowish brown silt loam that has gray and brown mottles
- 46 to 60 inches—a fragipan of yellowish brown silt loam that has brown and gray mottles

Included with this soil in mapping are a few small areas of the somewhat poorly drained Calloway soils in slightly concave depressions and on foot slopes and a few small areas of Loring and Providence soils in the somewhat higher positions on the landscape. The Calloway, Loring, and Providence soils make up about 10 percent of the unit.

Also included are numerous small areas where erosion has removed all of the original surface layer; a few small areas where the soil is less eroded than is typical; in the eastern part of the county, small areas of soils that are similar to the Grenada soil but are loam or sandy loam below a depth of 48 inches; and some areas that have a few shallow gullies.

Important soil properties—

Permeability: Moderate above the fragipan; slow in the fragipan
Available water capacity: Moderate above the fragipan; low in the fragipan
Soil reaction: Very strongly acid to medium acid throughout the profile unless lime has been added
Flooding: None
Hazard of erosion: Moderate
Seasonal high water table: Perched above the fragipan at a depth of about 1.5 to 2.0 feet

In most areas this soil is used for cotton or soybeans. In some areas it is used for corn, wheat, grain sorghum, hay, or pasture.

This soil is well suited to row crops and small grain if it is managed properly. The rooting depth, the available water capacity, and the hazard of erosion are the main management concerns. Root penetration is restricted to the part of the profile above the fragipan and to grayish tongues within the fragipan. Crops respond well to applications of fertilizer and lime, but the available water capacity limits yields in most years. A suitable crop rotation and conservation tillage help to prevent excessive erosion.

This soil is well suited to hay and pasture, but plant selection and good management are important. Such plants as tall fescue and white clover do not require a deep root zone and can tolerate short periods of wetness. The soil is poorly suited to deep-rooted plants that are sensitive to wetness, such as alfalfa. Stands of these plants start to thin out after the first or second year. Because of the perched water table, the soil is soggy and is too soft for grazing for several days at a time in winter and early in spring. Yields are moderate or low in dry years because of a limited amount of available water.

This soil is well suited to trees, including cherrybark oak, white oak, water oak, shortleaf pine, loblolly pine, and sweetgum. The main concerns in managing timber are the hazard of windthrow and plant competition. Adequate site preparation and maintenance are needed to keep undesirable plants from interfering with natural or artificial reforestation.

This soil is suited to most urban uses. The slow permeability in the fragipan and the perched seasonal high water table are severe limitations on sites for septic tank absorption fields. Low strength is a severe limitation on sites for local roads and streets. The risk of corrosion on uncoated steel and concrete in structures and underground utilities is moderate.

The capability subclass is IIe.

GrB3—Grenada silt loam, 2 to 5 percent slopes, severely eroded. This soil is very deep, undulating, and moderately well drained. It is on ridgetops and foot slopes in the uplands and on stream terraces. It has a dense, slowly permeable fragipan in the subsoil. Individual areas are about 5 to 100 acres in size.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:
0 to 4 inches—yellowish brown silt loam

Subsoil:
4 to 17 inches—brown silt loam
17 to 35 inches—a fragipan of yellowish brown silt loam that has gray and brown mottles
35 to 60 inches—a fragipan of mottled gray and brown silt loam

Included with this soil in mapping are small areas of the somewhat poorly drained Calloway soils in slightly concave depressions and on foot slopes and a few small areas of Loring and Providence soils in the somewhat higher positions on the landscape. The Calloway, Loring, and Providence soils make up about 10 percent of the unit.

Also included are a few small areas, in the eastern part of the county, of a soil that is similar to the Grenada soil but is loam or sandy loam below a depth of 48 inches; numerous small areas where erosion has removed all of the subsoil material above the fragipan; small areas where the soil is less eroded than is typical; and some areas that have a few shallow gullies.

Important soil properties—

Permeability: Moderate above the fragipan; slow in the fragipan
Available water capacity: Low
Soil reaction: Very strongly acid to medium acid throughout the profile unless lime has been added
Flooding: None
Hazard of erosion: Severe
Seasonal high water table: Perched above the fragipan at a depth of about 1.5 to 2.0 feet

In most areas this soil is used for cotton or soybeans. In some areas it is used for corn, wheat, grain sorghum, hay, or pasture.

This soil is suited to row crops and small grain. The rooting depth, the available water capacity, and the hazard of erosion are the main management concerns. Root penetration is restricted to the part of the profile above the fragipan and to grayish tongues within the fragipan. Crops respond well to applications of fertilizer and lime, but the available water capacity restricts yields in most years. A suitable crop rotation and conservation tillage help to prevent excessive erosion. A tillage system that includes contour farming, no-till planting, and stubble mulching helps to control runoff and increases the water supply.

This soil is well suited to hay and pasture, but plant selection and good management are important. Such plants as tall fescue and white clover do not require a deep root zone and can tolerate short periods of wetness. The soil is poorly suited to deep-rooted plants that are sensitive to wetness, such as alfalfa. Stands of these plants start to thin out after the first or second year. Because of the perched water table, the soil is soggy and is too soft for grazing for several days at a time in winter and early in spring. Yields are moderate or low in dry years because of a limited amount of available water.

This soil is well suited to trees, including cherrybark oak, white oak, water oak, shortleaf pine, loblolly pine, and sweetgum. The main concerns in managing timber are the hazard of windthrow and plant competition. Adequate site preparation and maintenance are needed to keep undesirable plants from interfering with natural or artificial reforestation.

This soil is suited to most urban uses. The slow permeability in the fragipan and the perched seasonal high water table are severe limitations on sites for septic tank absorption fields. Low strength is a severe limitation on sites for local roads and streets. The risk of corrosion on uncoated steel and concrete in structures and underground utilities is moderate.

The capability subclass is IIIe.

LeB2—Lexington silt loam, 2 to 5 percent slopes, eroded. This soil is very deep, undulating, and well drained. It is on high, slightly convex ridgetops in the hilly uplands in the central and eastern parts of the county. Individual areas are about 15 to 75 acres in size.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:
0 to 5 inches—dark yellowish brown silt loam

Subsoil:
5 to 18 inches—yellowish red silty clay loam
18 to 26 inches—strong brown silt loam that has red and brown mottles
26 to 36 inches—strong brown silt loam
36 to 61 inches—reddish brown loam that has brown mottles

Included with this soil in mapping are a few small areas of the moderately well drained Loring and Providence soils on the slightly concave parts of hilltops. These soils make up about 10 percent of the unit.

Also included are small areas of Memphis soils, which have loamy layers at a depth of more than 4 feet; some areas where the plow layer consists of subsoil material; a few small areas where the soil is somewhat less eroded; and some areas that have a few shallow gullies.

Important soil properties—

Permeability: Moderate in the upper part of the profile; moderately rapid below a depth of 36 inches
Available water capacity: High
Soil reaction: Medium acid to very strongly acid throughout the profile unless lime has been added
Flooding: None
Hazard of erosion: Moderate
Seasonal high water table: None within 6 feet of the surface

In most areas this soil is used for cotton, corn, or soybeans. In some areas it is used for wheat, grain sorghum, hay, or pasture.

This soil is well suited to all of the row crops commonly grown in the county. A suitable conservation tillage system is needed to prevent further erosion. No-till planting, contour farming, and stripcropping can help to prevent excessive erosion and maintain productivity.

This soil is well suited to hay and pasture. All of the high-quality forage species commonly grown in the county respond well to management. Alfalfa grows well and produces good yields if the proper kinds and amounts of lime and fertilizer are applied and other management needs are met. No significant limitations affect forage production.

This soil is well suited to trees, including cherrybark oak, southern red oak, yellow-poplar, shortleaf pine, and loblolly pine. The main concerns in managing timber are the susceptibility to compaction and rutting and plant competition. Rutting and compaction are caused by the use of heavy equipment during wet periods. Puddling also can occur when the soil is wet. Logging during dry periods in summer and fall and using low-pressure ground equipment result in less damage to the soil and help to maintain productivity. Adequate site preparation and maintenance are needed to keep undesirable plants from interfering with natural or artificial reforestation.

This soil is suited to most urban uses. The moderate permeability is a moderate limitation on sites for septic tank absorption fields. Low strength is a severe limitation on sites for local roads and streets. The risk of corrosion on uncoated steel and concrete in structures and underground utilities is moderate.

The capability subclass is IIe.

LeC3—Lexington silt loam, 5 to 8 percent slopes, severely eroded. This soil is very deep, rolling, and well drained. It is on narrow ridgetops and side slopes in the hilly uplands in the central and eastern parts of the county. Individual areas are about 10 to 50 acres in size.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:
0 to 3 inches—dark brown silt loam

Subsoil:
3 to 30 inches—strong brown silty clay loam
30 to 42 inches—strong brown silty clay loam that has brown and red mottles
42 to 62 inches—yellowish red sandy loam that has brown mottles

Included with this soil in mapping are a few small areas of the moderately well drained Loring and Providence soils in saddles and a few small areas of the loamy, well drained Smithdale soils on the steeper slopes. The Loring, Providence, and Smithdale soils make up about 10 percent of the unit.

Also included are areas that are less eroded, some areas that have a few deep gullies, and cultivated areas where shallow gullies form during and after each cropping season. The small gullies are generally filled in with soil material from the adjacent areas before seedbed preparation each spring. Removing a layer of soil to fill in the gullies reduces the productivity of the soils in the adjacent areas.

Important soil properties—

Permeability: Moderate in the upper part of the profile; moderately rapid below a depth of 42 inches
Available water capacity: High
Soil reaction: Medium acid to very strongly acid throughout the profile unless lime has been added
Flooding: None
Hazard of erosion: Severe
Seasonal high water table: None within 6 feet of the surface

In most areas this soil is used for cotton or soybeans. In some areas it is used for corn, grain sorghum, hay, or pasture.

This soil is suited to row crops if a conservation tillage system is used to control erosion. The crops respond well to applications of fertilizer and lime. If properly managed, the soil can produce moderately high yields of all the crops commonly grown in the county. Erosion is a hazard in areas that are row cropped. A protective plant cover, contour farming, no-till planting, and other conservation measures are needed to prevent further erosion.

This soil is well suited to pasture and hay. If properly managed, it can produce moderately high yields of tall fescue, white clover, bermudagrass, alfalfa, and sericea lespedeza. Applications of the proper kinds and amounts of lime and fertilizer are necessary for maximum yields.

This soil is well suited to trees, including cherrybark oak, southern red oak, yellow-poplar, shortleaf pine, and loblolly pine. The main concerns in managing timber are the hazard of erosion, the susceptibility to compaction and rutting, and plant competition. Erosion can be controlled by maintaining the plant cover, building logging roads and skid trails on the contour, and avoiding the use of heavy equipment during wet periods. Rutting and compaction are caused by the use of heavy equipment during wet periods. Puddling also can occur when the soil is wet. Logging during dry periods in summer and fall and using low-pressure ground equipment result in less damage to the soil and help to maintain productivity. Adequate site preparation and maintenance are needed to keep undesirable plants from interfering with natural or artificial reforestation.

This soil is suited to most urban uses. The moderate permeability is a moderate limitation on sites for septic tank absorption fields. Low strength is a severe limitation on sites for local roads and streets. The risk of corrosion on uncoated steel and concrete in structures and underground utilities is moderate.

The capability subclass is IVe.

LeD3—Lexington silt loam, 8 to 12 percent slopes, severely eroded. This soil is rolling, very deep, and well drained. It is on hillsides on uplands in the central and eastern parts of the county. Individual areas are about 10 to 50 acres in size.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:
0 to 3 inches—brown silt loam

Subsoil:
3 to 30 inches—strong brown silty clay loam
30 to 42 inches—strong brown silty clay loam that has brown and red mottles
42 to 62 inches—yellowish red sandy loam that has brown mottles

Included with this soil in mapping are a few small areas of the loamy, well drained Smithdale soils and a few small areas of the moderately well drained Providence soils. The Smithdale and Providence soils make up about 10 percent of the unit.

Also included are a few small areas that are less eroded, some areas where large gullies have formed at intervals of 200 to 300 feet, and some areas where smaller gullies have formed at closer intervals.

Important soil properties—

Permeability: Moderate in the upper part of the profile; moderately rapid below a depth of about 42 inches
Available water capacity: Moderate or high
Soil reaction: Medium acid to very strongly acid throughout the profile unless lime has been added
Flooding: None
Hazard of erosion: Severe
Seasonal high water table: None within 6 feet of the surface

In most areas this soil is used for hay or pasture. In a few small areas, it is used as cropland. In a few areas it is idle and is gradually reverting to hardwoods.

This soil is not suited to cropland because of the slope and the susceptibility to further erosion. A permanent plant cover is needed to control erosion.

This soil is suited to pasture and hay. If properly managed, it can produce moderate yields of tall fescue, white clover, improved bermudagrass, and sericea lespedeza. Applications of the proper kinds and amounts of lime and fertilizer are necessary for moderate yields.

This soil is well suited to trees, including cherrybark oak, southern red oak, yellow-poplar, shortleaf pine, and loblolly pine. The main concerns in managing timber are the hazard of erosion, the susceptibility to compaction and rutting, and plant competition. Erosion can be controlled by maintaining the plant cover, building logging roads and skid trails on the contour, and avoiding the use of heavy equipment during wet periods. Rutting and compaction are caused by the use of heavy equipment during wet periods. Puddling also can occur when the soil is wet. Logging during dry periods in summer and fall and using low-pressure ground equipment result in less damage to the soil and help to maintain productivity. Adequate site preparation and maintenance are needed to keep undesirable plants from interfering with natural or artificial reforestation.

This soil is suited to most urban uses. The slope and the moderate permeability are moderate limitations on sites for septic tank absorption fields. Low strength is a severe limitation on sites for local roads and streets. The risk of corrosion on uncoated steel and concrete in structures and underground utilities is moderate.

The capability subclass is VIe.

LME3—Lexington, Smithdale, and Providence soils, 12 to 30 percent slopes, severely eroded. These very deep soils are on hilly, highly dissected side slopes, mainly in the eastern half of the county. The Lexington and Smithdale soils are well drained. The Providence soil is moderately well drained. It has a fragipan in the subsoil. Individual areas of the unit are about 10 to 300 acres in size. They are approximately 40 percent Lexington soil, 30 percent Smithdale soil, and 25 percent Providence soil. Individual areas of each soil are large enough to be mapped separately. Because of present and predicted land uses, however, they were mapped as one unit.

The typical sequence, depth, and composition of the layers in the Lexington soil are as follows—

Surface layer:

0 to 4 inches—brown silt loam

Subsoil:

4 to 21 inches—strong brown silty clay loam that has brown mottles

21 to 35 inches—brown silt loam that has brown mottles

35 to 41 inches—strong brown fine sandy loam that has brown and yellow mottles

41 to 58 inches—yellowish red sandy loam that has brown mottles

58 to 80 inches—yellowish red sandy loam that has brown mottles

The typical sequence, depth, and composition of the layers in the Smithdale soil are as follows—

Surface layer:

0 to 3 inches—dark yellowish brown sandy loam that has red mottles

Subsoil:

3 to 22 inches—red sandy clay loam that has red mottles

22 to 43 inches—red sandy loam

43 to 66 inches—red sandy loam that has red mottles

The typical sequence, depth, and composition of the layers in the Providence soil are as follows—

Surface layer:

0 to 3 inches—dark yellowish brown silt loam

Subsoil:

3 to 18 inches—yellowish brown silty clay loam that has gray mottles

18 to 35 inches—a fragipan of strong brown silt loam that has gray and brown mottles

35 to 64 inches—a fragipan of dark brown sandy loam that has gray mottles

64 to 80 inches—red sandy clay loam that has red and gray mottles

Included with these soils in mapping are a few small areas of the moderately well drained Loring soils on the somewhat gentler slopes. These included soils make up about 10 percent of the unit.

Also included are areas of Smithdale soils in which the surface layer has been influenced by loess and is more silty; some very severely eroded areas where thin strata of indurated ironstone and clay in the subsoil are exposed; a few small areas that are somewhat less eroded; and many areas where large gullies have truncated the soil at widely spaced intervals.

Important soil properties—

Permeability: Lexington—moderate in the upper part of the profile and moderately rapid below a depth of about 35 inches; Smithdale—moderate in the upper part of the profile and moderately rapid below a depth of about 22 inches; Providence—moderate in the upper part of the profile and moderately slow below a depth of about 18 inches, restricted by the fragipan

Available water capacity: Moderate

Soil reaction: Medium acid to very strongly acid throughout the Lexington and Providence soils and strongly acid or very strongly acid throughout the Smithdale soil unless lime has been added

Flooding: None

Hazard of erosion: Severe or very severe
Seasonal high water table: None within a depth of 6 feet in the Lexington and Smithdale soils; perched at a depth of 1.5 to 3.0 feet in the Providence soil

Most areas are used as woodland. A few areas are used as pasture.

These soils are not suited to cropland. Areas that were once cleared for cropland or pasture have been abandoned and have reverted to woodland. Row cropping is impractical because of the slope, the severe or very severe hazard of erosion, the runoff rate, and the available water capacity.

These soils generally are poorly suited to pasture and hay. In a few of the somewhat less steep areas, however, they are suited to pasture. Because of the slope, the use of farm machinery is difficult. A permanent plant cover is needed to prevent excessive erosion. Hardy forage species, such as tall fescue, sericea lespedeza, and improved bermudagrass, grow best. A high rate of runoff causes a soil moisture deficit in late summer during most years, and stands of the less hardy plants are weakened or killed. Measures that prevent overgrazing are necessary to maintain the life of the stand. Lime and fertilizer, which should be applied according to the results of soil tests, are necessary for sustained yields.

These soils are well suited to drought-resistant trees, including eastern redcedar, shortleaf pine, and loblolly pine. Cherrybark oak and yellow-poplar also grow on the Lexington soil. The main concern in managing timber is the hazard of erosion. The equipment limitation and plant competition also are management concerns. The hazard of windthrow is a management concern on the Providence soil. Erosion can be controlled by maintaining the plant cover, building logging roads and skid trails on the contour, and avoiding the use of heavy equipment during wet periods. Adequate site preparation and maintenance are needed to keep undesirable plants from interfering with natural or artificial reforestation. Applications of fertilizer and lime can increase the growth rate and improve the stand of seedlings. Rutting and compaction are caused by the use of heavy equipment during wet periods. Puddling also can occur when the soils are wet. Logging during dry periods in summer and fall and using low-pressure ground equipment result in less damage to the soils and help to maintain productivity.

These soils are poorly suited to most urban uses because of the slope. The slope is a severe limitation on sites for septic tank absorption fields, buildings, and local roads and streets.

The capability subclass is VIIe.

LoB2—Loring silt loam, 2 to 5 percent slopes, eroded. This soil is very deep, undulating, and moderately well drained. It is on ridgetops on uplands in the western and central parts of the county. It has a dense fragipan in the subsoil. Individual areas are about 10 to 100 acres in size.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:
0 to 8 inches—brown silt loam

Subsoil:
8 to 24 inches—dark yellowish brown silt loam that has brown and yellow mottles
24 to 35 inches—a fragipan of dark yellowish brown silt loam that has brown and gray mottles
35 to 55 inches—a fragipan of yellowish brown silt loam that has brown and gray mottles
55 to 60 inches—yellowish brown silt loam that has gray and brown mottles

Included with this soil in mapping are a few small areas of the well drained Memphis soils on the higher knolls and the moderately well drained Grenada soils in saddles. Included soils make up about 10 percent of the unit.

Important soil properties—

Permeability: Moderate above the fragipan; slow in the fragipan
Available water capacity: Moderate above the fragipan; low in the fragipan
Soil reaction: Very strongly acid to medium acid throughout the profile unless lime has been added
Flooding: None
Hazard of erosion: Moderate
Seasonal high water table: Perched at a depth of 2 to 3 feet

In most areas this soil is used for cotton or soybeans. In a few areas it is used for corn, wheat, grain sorghum, or pasture.

This soil is well suited to most of the crops commonly grown in the county if a conservation tillage system is used to prevent excessive erosion. If properly managed, the soil can produce moderately high yields.

This soil is well suited to hay and pasture, but plant selection and good management are important. Such plants as tall fescue and white clover do not require a deep root zone and can tolerate short periods of wetness. The soil is poorly suited to deep-rooted plants that are sensitive to wetness, such as alfalfa. Stands of these plants start to thin out after the first or second year. Because of the perched water table, the soil is soggy and is too soft for grazing for several days at a time in winter and early in spring.

This soil is well suited to trees, including cherrybark oak, southern red oak, yellow-poplar, shortleaf pine, loblolly pine, and sweetgum. The main concerns in managing timber are the susceptibility to compaction and rutting and plant competition. Rutting and compaction are caused by the use of heavy equipment during wet periods. Puddling also can occur when the soil is wet. Logging during dry periods in summer and fall and using low-pressure ground equipment result in less damage to the soil and help to maintain productivity. Adequate site preparation and maintenance are needed to keep undesirable plants from interfering with natural or artificial reforestation.

This soil is suited to most urban uses. The slow permeability in the fragipan and the perched seasonal high water table are severe limitations on sites for septic tank absorption fields. Low strength is a severe limitation on sites for local roads and streets. The risk of corrosion on uncoated steel and concrete in structures and underground utilities is moderate.

The capability subclass is IIe.

LoB3—Loring silt loam, 2 to 5 percent slopes, severely eroded. This soil is very deep, undulating, and moderately well drained. It is on ridgetops and side slopes on uplands in the western and central parts of the county. It has a dense fragipan in the subsoil. Individual areas are about 5 to 50 acres in size.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:
0 to 5 inches—dark yellowish brown silt loam

Subsoil:
5 to 17 inches—dark yellowish brown silt loam that has brown mottles
17 to 25 inches—a fragipan of strong brown silt loam that has gray and brown mottles
25 to 60 inches—a fragipan of dark brown silt loam that has gray and brown mottles

Included with this soil in mapping are the moderately well drained Grenada soils in a few small concave areas around the head of drainageways and a few small areas of the well drained Memphis soils on high knolls. The Grenada and Memphis soils make up about 10 percent of the unit.

Also included are numerous small areas where the fragipan has become the plow layer, a few small areas where the soil is somewhat less eroded, and small areas where small gullies form during and after each cropping season. The gullies are generally filled in with soil material from the adjacent areas before seedbed preparation each spring. Removing a layer of soil to fill in the gullies reduces the productivity of the soils in the adjacent areas.

Important soil properties—

Permeability: Moderate above the fragipan; slow in the fragipan
Available water capacity: Medium in the fragipan; low in the fragipan
Soil reaction: Very strongly acid to medium acid throughout the profile unless lime has been added
Flooding: None
Hazard of erosion: Severe
Seasonal high water table: Perched at a depth of 1 to 3 feet

In most areas this soil is used for cotton or soybeans. In a few areas it is used for corn, wheat, grain sorghum, or pasture.

This soil is suited to most of the crops commonly grown in the county if a conservation tillage system is used to control runoff and minimize further erosion. Corn is damaged by a moisture deficit in some years. A conservation tillage system, such as no-till planting, can minimize the moisture deficit by increasing the rate of water infiltration and by providing a protective cover of mulch.

This soil is well suited to hay and pasture, but plant selection and good management are important. Such plants as tall fescue and white clover do not require a deep root zone and can tolerate short periods of wetness. The soil is poorly suited to deep-rooted plants that are sensitive to wetness, such as alfalfa. Stands of these plants start to thin out after the first or second year. Because of the perched water table, the soil is soggy and is too soft for grazing for several days at a time in winter and early in spring. Yields are moderate or low in dry years because of a limited amount of available water.

This soil is well suited to trees, including cherrybark oak, southern red oak, yellow-poplar, shortleaf pine, loblolly pine, and sweetgum. The main concerns in managing timber are the susceptibility to compaction and rutting and plant competition. Rutting and compaction are caused by the use of heavy equipment during wet periods. Puddling also can occur when the soil is wet. Logging during dry periods in summer and fall and using low-pressure ground equipment result in less damage to the soil and help to maintain productivity. Adequate site preparation and maintenance are needed to keep undesirable plants from interfering with natural or artificial reforestation.

This soil is suited to most urban uses. The slow permeability in the fragipan and the perched seasonal high water table are severe limitations on sites for septic tank absorption fields. Low strength is a severe limitation on sites for local roads and streets. The risk of corrosion on uncoated steel and concrete in structures and underground utilities is moderate.

The capability subclass is IIIe.

LoC3—Loring silt loam, 5 to 8 percent slopes, severely eroded. This soil is very deep, rolling, and moderately well drained. It is on hillsides in the western and central parts of the county. It has a dense fragipan in the subsoil. Individual areas are about 10 to 150 acres in size.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:

0 to 5 inches—dark yellowish brown silt loam

Subsoil:

5 to 17 inches—dark yellowish brown silt loam that has brown mottles

17 to 25 inches—a fragipan of strong brown silt loam that has gray and brown mottles

25 to 60 inches—a fragipan of dark brown silt loam that has gray and brown mottles

Included with this soil in mapping are a few small areas of the moderately well drained Grenada soils near drainageways and a few intermingled areas of the moderately well drained Providence soils. The Grenada and Providence soils make up about 10 percent of the unit.

Also included are numerous small areas where the fragipan has become the plow layer, a few small areas where the soil is less eroded, some areas that have a few large gullies, and cultivated areas where small gullies form during and after the cropping season. The small gullies are generally filled in with soil material from the adjacent areas before seedbed preparation each spring. Removing a layer of soil to fill in the gullies reduces the productivity of the soils in the adjacent areas.

Important soil properties—

Permeability: Moderate above the fragipan; slow in the fragipan

Available water capacity: Moderate in the fragipan; low in the fragipan

Soil reaction: Very strongly acid to medium acid throughout the profile unless lime has been added

Flooding: None

Hazard of erosion: Severe

Seasonal high water table: Perched at a depth of 1 to 3 feet

In many areas this soil is used for soybeans or cotton. In some areas it is used for wheat (fig. 8), grain sorghum, hay, or pasture.

This soil is poorly suited to row crops because of the hazard of further erosion, a limited rooting depth, and the low available water capacity. If a conservation tillage system, such as no-till planting, is used to prevent excessive erosion and increase the rate of water infiltration, the soil can produce moderate yields of soybeans, grain sorghum, and other hardy summer annuals. Late-summer drought can reduce the yields of corn and other crops that require large amounts of water.

This soil is well suited to hay and pasture. A permanent plant cover is needed to prevent further erosion. Such plants as tall fescue and white clover do not require a deep root zone and can tolerate short periods of wetness. The soil is poorly suited to deep-rooted plants that are sensitive to wetness, such as alfalfa. Stands of these plants start to thin out after the first or second year. Because of the perched water table, the soil is soggy and is too soft for grazing for several days at a time in winter and early in spring. Yields are moderate or low in dry years because of a limited amount of available water.

This soil is well suited to trees, including cherrybark oak, southern red oak, yellow-poplar, shortleaf pine, loblolly pine, and sweetgum. The main concerns in managing timber are the hazard of erosion, the susceptibility to compaction and rutting, and plant competition. Erosion can be controlled by maintaining the plant cover, building logging roads and skid trails on the contour, and avoiding the use of heavy equipment during wet periods. Rutting and compaction are caused by the use of heavy equipment during wet periods. Puddling also can occur when the soil is wet. Logging during dry periods in summer and fall and using low-pressure ground equipment result in less damage to the soil and help to maintain productivity. Adequate site preparation and maintenance are needed to keep undesirable plants from interfering with natural or artificial reforestation.

This soil is suited to most urban uses. The slow permeability and the perched seasonal high water table are severe limitations on sites for septic tank absorption fields. Low strength is a severe limitation on sites for local roads and streets. The risk of corrosion on uncoated steel and concrete in structures and underground utilities is moderate.

The capability subclass is IVe.

LoD3—Loring silt loam, 8 to 12 percent slopes, severely eroded. This soil is very deep, rolling, and moderately well drained. It is on hillsides in the western and central parts of the county. It has a dense fragipan

Figure 8.—Wheat planted on the contour between parallel terraces in an area of Loring silt loam, 5 to 8 percent slopes, severely eroded.

in the subsoil. Individual areas are about 10 to 75 acres in size.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:
0 to 5 inches—dark yellowish brown silt loam

Subsoil:
5 to 17 inches—dark yellowish brown silt loam that has brown mottles
17 to 25 inches—a fragipan of strong brown silt loam that has gray and brown mottles
25 to 60 inches—a fragipan of dark brown silt loam that has gray and brown mottles

Included with this soil in mapping are a few small areas of the well drained Memphis soils on high knolls and a few intermingled areas of the moderately well drained Providence soils. The Memphis and Providence soils make up about 10 percent of the unit.

Also included are numerous small areas where the fragipan has become the plow layer, a few small areas where the soil is less eroded, some areas that have a few large gullies, and cultivated areas where some small gullies form during and after the cropping season.

Important soil properties—

Permeability: Moderate above the fragipan; slow in the fragipan
Available water capacity: Moderate above the fragipan; low in the fragipan
Soil reaction: Very strongly acid to medium acid throughout the profile unless lime has been added
Flooding: None
Hazard of erosion: Severe
Seasonal high water table: Perched at a depth of 1 to 3 feet

In most areas this soil is used for hay or pasture. In some of the less sloping areas, it is used for soybeans.

This soil is not suited to cropland because of the slope, the severe hazard of erosion, and the low available water capacity. The soil is subject to erosion if it is cultivated or if the surface is not protected by vegetation. If row crops are grown, such measures as diversions, grassed waterways, and contour farming can reduce the hazard of erosion but cannot adequately control erosion or maintain productivity.

This soil is well suited to hay and pasture. A permanent plant cover is needed to minimize further erosion. Careful selection of sod crops and good management are important. The soil is well suited to hardy plants, such as tall fescue, white clover, sericea lespedeza, and improved bermudagrass. The less hardy plants, such as orchardgrass and alfalfa, are likely to be short lived. Because of the perched water table, the soil is soggy and is too soft for grazing for several days at a time in winter and early in spring. Yields are moderate or low in dry years because of a limited amount of available water. Fertilizer and lime, which should be applied according to the results of soil tests, are needed to sustain yields.

This soil is well suited to trees, including cherrybark oak, southern red oak, yellow-poplar, shortleaf pine, loblolly pine, and sweetgum. The main concerns in managing timber are the hazard of erosion, the susceptibility to compaction and rutting, and plant competition. Erosion can be controlled by maintaining the plant cover, building logging roads and skid trails on the contour, and avoiding the use of heavy equipment during wet periods. Rutting and compaction are caused by the use of heavy equipment during wet periods. Puddling also can occur when the soil is wet. Logging during dry periods in summer and fall and using low-pressure ground equipment result in less damage to the soil and help to maintain productivity. Adequate site preparation and maintenance are needed to keep undesirable plants from interfering with natural or artificial reforestation.

Because of the slope and the slow permeability, this soil is poorly suited to most urban uses. It is subject to severe erosion and a high rate of runoff. The seasonal wetness, the slow permeability in the fragipan, and the slope are severe limitations on sites for septic tank absorption fields. Low strength is a severe limitation on sites for local roads and streets. The risk of corrosion on uncoated steel and concrete in structures and underground utilities is moderate.

The capability subclass is VIe.

LoE3—Loring silt loam, 12 to 20 percent slopes, severely eroded. This soil is very deep, hilly, and moderately well drained. It is on hillsides, mainly in the western part of the county. It has a dense fragipan in the subsoil. Individual areas are about 10 to 25 acres in size.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:
0 to 5 inches—dark yellowish brown silt loam

Subsoil:
5 to 17 inches—dark yellowish brown silt loam that has brown mottles
17 to 25 inches—a fragipan of strong brown silt loam that has gray and brown mottles
25 to 60 inches—a fragipan of dark brown silt loam that has brownish gray and brown mottles

Included with this soil in mapping are a few small areas of the well drained Memphis soils on high knolls and a few intermingled areas of Providence soils. The Memphis and Providence soils make up about 10 percent of the unit.

Also included are numerous small areas where the fragipan has become the surface layer, a few areas where the soil is somewhat less eroded, and some areas where large gullies have truncated the soil at widely spaced intervals.

Important soil properties—

Permeability: Moderate above the fragipan; slow in the fragipan
Available water capacity: Moderate above the fragipan; low in the fragipan
Soil reaction: Very strongly acid to medium acid throughout the profile unless lime has been added
Flooding: None
Hazard of erosion: Very severe
Seasonal high water table: Perched at a depth of 1 to 3 feet

In most areas this soil is used as pasture. In a few areas it is used as woodland.

This soil is not suited to cropland. Areas that were once cleared for cropland or pasture have been abandoned and have reverted to woodland. Row cropping is impractical because of the slope, the very severe hazard of erosion, the runoff rate, and the low available water capacity.

This soil is poorly suited to hay and pasture. A permanent plant cover is needed to minimize further erosion. Careful selection of sod crops and good management are important. Hardy plants, such as tall fescue, white clover, sericea lespedeza, and improved bermudagrass, grow best. The less hardy plants, such as orchardgrass and alfalfa, are likely to be short lived.

This soil is suited to trees, including cherrybark oak, southern red oak, yellow-poplar, shortleaf pine, loblolly pine, and sweetgum. The main concern in managing timber is the hazard of erosion. The susceptibility to compaction and rutting, seedling mortality, and plant competition also are management concerns. Erosion can be controlled by maintaining the plant cover, building logging roads and skid trails on the contour, and avoiding the use of heavy equipment during wet periods. Rutting and compaction are caused by the use of heavy equipment during wet periods. Puddling also can occur when the soil is wet. Logging during dry periods in summer and fall and using low-pressure ground equipment result in less damage to the soil and help to maintain productivity. Adequate site preparation and maintenance are needed to keep undesirable plants from interfering with natural or artificial reforestation.

Because of the slope and the slow permeability in the fragipan, this soil is poorly suited to most urban uses. It is subject to severe erosion and a high rate of runoff. The seasonal wetness, the slow permeability, and the slope are severe limitations on sites for septic tank absorption fields. Low strength and the slope are severe limitations on sites for local roads and streets. The risk of corrosion on uncoated steel and concrete in structures and underground utilities is moderate.

The capability subclass is VIIe.

LuC—Loring-Urban land complex, 2 to 8 percent slopes. This unit is in and around the towns of Trenton, Milan, and Humboldt. The Loring soil is very deep, undulating and rolling, and moderately well drained. It has a dense fragipan in the subsoil. The Urban land is covered by streets, buildings, parking lots, and railroad yards. The original soil has been altered by cutting, filling, grading, and shaping during the process of urbanization. Individual areas of the unit are rectangular and are about 100 to 500 acres in size.

The Urban land makes up approximately 45 percent of the unit and the Loring soil about 35 percent. The Loring soil and Urban land occur as areas so intricately mixed or so small that separating them in mapping is not practical at the scale used in mapping.

The typical sequence, depth, and composition of the layers in the Loring soil are as follows—

Surface layer:
0 to 8 inches—dark yellowish brown silt loam

Subsoil:
8 to 24 inches—dark yellowish brown silt loam that has brown and yellow mottles
24 to 35 inches—a fragipan of dark yellowish brown silt loam that has brown and gray mottles
35 to 55 inches—a fragipan of yellowish brown silt loam that has brown and gray mottles
55 to 60 inches—yellowish brown silt loam that has gray and brown mottles

Included in this unit in mapping are a few areas of the well drained Lexington soils on the higher knolls, a few intermingled areas of Providence soils, and a few small areas of the poorly drained Routon soils in slight depressions. Included soils make up about 15 percent of the unit.

Important properties of the Loring soil—

Permeability: Moderate above the fragipan; slow in the fragipan
Available water capacity: Moderate above the fragipan; low in the fragipan
Soil reaction: Very strongly acid to medium acid throughout the profile unless lime has been added
Flooding: None
Hazard of erosion: Moderate or severe
Seasonal high water table: Perched at a depth of 2 to 3 feet

Most areas are used for urban development. The Loring soil is suited to most urban uses. The seasonal wetness and the slow permeability in the fragipan are severe limitations on sites for septic tank absorption fields. Low strength is a severe limitation on sites for local roads and streets. The risk of corrosion on uncoated steel and concrete in structures and underground utilities is moderate.

No capability classification is assigned.

MeA—Memphis silt loam, 0 to 2 percent slopes. This soil is very deep, nearly level, and well drained. It is on high stream terraces along the Forked Deer River in the western part of the county. Individual areas are about 75 to 250 acres in size.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:
0 to 7 inches—dark yellowish brown silt loam

Subsoil:
7 to 25 inches—dark yellowish brown silty clay loam
25 to 51 inches—dark yellowish brown silt loam that has brown mottles
51 to 62 inches—strong brown silt loam that has brown mottles
62 to 72 inches—brown silt loam

Included with this soil in mapping are a few small areas of Loring, Grenada, and Routon soils. The moderately well drained Loring and Grenada soils are in the slightly lower sinks and swales on the stream terraces. The poorly drained Routon soils are in slightly concave depressions. The Loring, Grenada, and Routon soils make up about 10 percent of the unit.

Also included in a few small areas where the surface layer is more eroded than is typical.

Important soil properties—

Permeability: Moderate
Available water capacity: High

Soil reaction: Medium acid to very strongly acid throughout the profile unless lime has been added
Flooding: None
Hazard of erosion: Slight
Seasonal high water table: None within 6 feet of the surface

In most areas this soil is used for cotton or soybeans. In a few areas it is used for corn or wheat.

This soil is well suited to cropland. If managed properly, it is highly productive. Lime and fertilizer, which should be applied according to the results of soil tests, are needed for sustained yields.

This soil is well suited to pasture and hay. All of the forage species commonly grown in the county respond well to management. Alfalfa grows well and produces good yields if the proper kinds and amounts of lime and fertilizer are applied and other management needs are met.

This soil is well suited to trees, including cherrybark oak, southern red oak, yellow-poplar, shortleaf pine, loblolly pine, and sweetgum. No major hazards or limitations affect timber management.

This soil is well suited to most urban uses. Low strength is a severe limitation on sites for local roads and streets. The risk of corrosion on uncoated steel and concrete in structures and underground utilities is moderate.

The capability class is I.

MeB2—Memphis silt loam, 2 to 5 percent slopes, eroded. This soil is very deep, undulating, and well drained. It is on high, convex ridgetops on uplands in the western part of the county. Individual areas are about 5 to 100 acres in size.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:
0 to 5 inches—dark yellowish brown silt loam

Subsoil:
5 to 24 inches—dark yellowish brown silt loam
24 to 38 inches—strong brown silt loam
38 to 78 inches—yellowish brown silt loam

Included with this soil in mapping are a few small areas of the moderately well drained Loring soils on flats and the slightly concave parts of ridgetops and a few areas of Lexington soils on narrow ridgetops. The Loring and Lexington soils make up about 10 percent of the unit.

Also included are a few small areas where the soil is somewhat less eroded and some areas where the plow layer consists of subsoil material.

Important soil properties—

Permeability: Moderate
Available water capacity: High
Soil reaction: Medium acid to very strongly acid throughout the profile unless lime has been added
Flooding: None
Hazard of erosion: Moderate
Seasonal high water table: None within 6 feet of the surface

In most areas this soil is used for cotton or soybeans. In a few areas it is used for corn, grain sorghum, wheat, hay, or pasture.

This soil is well suited to cropland. It is highly erodible if is it cultivated. A conservation tillage system is needed to minimize further erosion. Contour farming, minimum tillage, and no-till planting are effective in increasing the rate of water infiltration and in preventing excessive erosion. The soil is highly productive if it is properly managed. Lime and fertilizer, which should be applied according to the results of soil tests, are needed for sustained yields.

This soil is well suited to pasture and hay. All of the forage species commonly grown in the county produce good yields if the proper kinds and amounts of lime and fertilizer are applied and other management needs are met.

This soil is well suited to trees, including cherrybark oak, yellow-poplar, southern red oak, shortleaf pine, loblolly pine, and sweetgum. No major hazards or limitations affect timber management.

This soil is well suited to most urban uses. Low strength is a severe limitation on sites for local roads and streets. The risk of corrosion on uncoated steel and concrete in structures and underground utilities is moderate.

The capability subclass is IIe.

MeC3—Memphis silt loam, 5 to 8 percent slopes, severely eroded. This soil is very deep, rolling, and well drained. It is on high, convex ridgetops and hillsides in the western part of the county. Individual areas are about 5 to 40 acres in size.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:
0 to 4 inches—dark brown silt loam

Subsoil:
4 to 11 inches—dark yellowish brown silty clay loam that has brown mottles
11 to 27 inches—brown silty clay loam

27 to 35 inches—dark yellowish brown silt loam that has brown mottles
35 to 60 inches—dark yellowish brown silt loam

Included with this soil in mapping are a few small areas of the moderately well drained Loring soils on the slightly concave parts of the ridgetops and the well drained Lexington soils on narrow ridgetops and on hillsides. The Loring and Lexington soils make up about 10 percent of the unit.

Also included are some areas that have a few shallow gullies and a few small areas where the soil is somewhat less eroded.

Important soil properties—

Permeability: Moderate
Available water capacity: High
Soil reaction: Medium acid to very strongly acid throughout the profile unless lime has been added
Flooding: None
Hazard of erosion: Severe
Seasonal high water table: None within 6 feet of the surface

In most areas this soil is used for cotton or soybeans. In a few areas it is used for corn, grain sorghum, wheat, hay, or pasture.

This soil is suited to cropland. It is highly erodible. A conservation tillage system is needed to minimize further erosion. Contour farming, minimum tillage, and no-till planting are effective in increasing the rate of water infiltration and in preventing excessive erosion. The soil is productive if it is properly managed. Lime and fertilizer, which should be applied according to the results of soil tests, are needed for sustained yields.

This soil is well suited to pasture and hay. A permanent plant cover helps to keep erosion to a minimum. All of the forage species commonly grown in the county respond well to management. Alfalfa grows well and, if seeded with grass, can help to control erosion. Lime and fertilizer, which should be applied according to the results of soil tests, are needed for optimum yields.

This soil is well suited to trees, including cherrybark oak, yellow-poplar, southern red oak, shortleaf pine, loblolly pine, and sweetgum. No major hazards or limitations affect timber management.

This soil is well suited to most urban uses. Low strength is a severe limitation on sites for local roads and streets. The risk of corrosion on uncoated steel and concrete in structures and underground utilities is moderate.

The capability subclass is IVe.

PrB2—Providence silt loam, 2 to 5 percent slopes, eroded. This soil is very deep, undulating, and moderately well drained. It is on ridgetops on uplands and stream terraces in the central and eastern parts of the county. It has a dense fragipan in the subsoil. Individual areas are about 5 to 100 acres in size.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:
0 to 4 inches—dark yellowish brown silt loam

Subsoil:
4 to 19 inches—dark yellowish brown silty clay loam
19 to 35 inches—a fragipan of dark yellowish brown silt loam that has brown and gray mottles
35 to 59 inches—a fragipan of dark yellowish brown loam that has gray and brown mottles
59 to 70 inches—dark brown sandy loam that has gray and brown mottles
70 to 75 inches—dark brown sandy loam that has brown and red mottles

Included with this soil in mapping are a few small areas of the well drained Lexington soils on the higher knolls, a few intermingled small areas of Loring soils, and a few small areas of the loamy, well drained Smithdale soils on the shoulders of narrow ridges, adjoining steep side slopes. The Lexington, Loring, and Smithdale soils make up about 10 percent of the unit.

Also included are a few small areas where the soil is less eroded.

Important soil properties—

Permeability: Moderate in the upper part of the profile; moderately slow in the fragipan
Available water capacity: Moderate above the fragipan; low in the fragipan
Soil reaction: Very strongly acid to medium acid throughout the profile unless lime has been added
Flooding: None
Hazard of erosion: Moderate
Seasonal high water table: Perched at a depth of 1.5 to 3.0 feet

In most areas this soil is used for cotton or soybeans. In a few areas it is used for corn, grain sorghum, wheat, hay, or pasture.

This soil is well suited to most of the crops commonly grown in the county if a conservation tillage system is used to prevent excessive erosion. If properly managed, the soil can produce moderately high yields.

This soil is well suited to hay and pasture, but plant selection and good management are important. Such plants as tall fescue and white clover do not require a deep root zone and can tolerate short periods of wetness. The soil is poorly suited to deep-rooted plants that are sensitive to wetness, such as alfalfa. Stands of these plants start to thin out after the first or second year. Because of the perched water table, the soil is soggy and is too soft for grazing for several days at a time in winter and early in spring. Lime and fertilizer, which should be applied according to the results of soil tests, are needed for optimum yields.

This soil is well suited to trees, including cherrybark oak, southern red oak, yellow-poplar, shortleaf pine, loblolly pine, and sweetgum. The main concerns in managing timber are the hazard of windthrow and plant competition. Adequate site preparation and maintenance are needed to keep undesirable plants from interfering with natural or artificial reforestation.

This soil is suited to most urban uses. The slow permeability and the perched seasonal high water table are severe limitations on sites for septic tank absorption fields. Low strength is a severe limitation on sites for local roads and streets. The risk of corrosion on uncoated steel and concrete in structures and underground utilities is moderate.

The capability subclass is IIe.

PrB3—Providence silt loam, 2 to 5 percent slopes, severely eroded. This soil is very deep, undulating, and moderately well drained. It is on ridgetops and side slopes on uplands and stream terraces in the central and eastern parts of the county. It has a dense fragipan in the subsoil. Individual areas are about 5 to 150 acres in size.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:
0 to 3 inches—dark yellowish brown silt loam

Subsoil:
3 to 9 inches—strong brown silty clay loam
9 to 18 inches—strong brown silty clay loam that has brown mottles
18 to 25 inches—a fragipan of dark brown silty clay loam that has brown mottles
25 to 36 inches—a fragipan of strong brown silt loam that has brown mottles
36 to 52 inches—a fragipan of strong brown fine sandy loam that has brown mottles
52 to 62 inches—a fragipan of strong brown sandy loam that has brown mottles
62 to 75 inches—red sandy clay loam that has brown, yellow, and red mottles

Included with this soil in mapping are a few small areas of the well drained Lexington soils on the higher knolls, a few intermingled small areas of Loring soils, and a few small areas of the loamy, well drained Smithdale soils on the shoulders of narrow ridges, adjoining steep side slopes. The Lexington, Loring, and Smithdale soils make up about 10 percent of the unit.

Also included are numerous small areas where the fragipan has become the plow layer, a few small areas where the soil is somewhat less eroded, and some areas where small gullies form during and after each cropping season. The gullies are generally filled in with soil material from the adjacent areas before seedbed preparation each spring. Removing a layer of soil to fill in the gullies reduces the productivity of the soils in the adjacent areas.

Important soil properties—

Permeability: Moderate in the upper part of the profile; moderately slow in the fragipan
Available water capacity: Moderate above the fragipan; low in the fragipan
Soil reaction: Very strongly acid to medium acid throughout the profile unless lime has been added
Flooding: None
Hazard of erosion: Severe
Seasonal high water table: Perched at a depth of 1.5 to 3.0 feet

In most areas this soil is used for cotton or soybeans. In a few areas it is used for corn, grain sorghum, wheat, hay, or pasture.

This soil is suited to most of the crops commonly grown in the county if a conservation tillage system is used to minimize further erosion. Corn is damaged by a moisture deficit in some years. Contour farming, minimum tillage, and no-till planting minimize the moisture deficit by increasing the rate of water infiltration and help to control erosion.

This soil is well suited to hay and pasture, but plant selection and good management are important. Such plants as tall fescue and white clover do not require a deep root zone and can tolerate short periods of wetness. The soil is poorly suited to deep-rooted plants that are sensitive to wetness, such as alfalfa. Stands of these plants start to thin out after the first or second year. Because of the perched water table, the soil is soggy and is too soft for grazing for several days at a time in winter and early in spring. Lime and fertilizer, which should be applied according to the results of soil tests, are needed for optimum yields.

This soil is well suited to trees, including cherrybark oak, southern red oak, yellow-poplar, shortleaf pine, loblolly pine, and sweetgum. The main concerns in managing timber are the hazard of windthrow and plant competition. Adequate site preparation and maintenance are needed to keep undesirable plants from interfering with natural or artificial reforestation.

This soil is suited to most urban uses. The slow permeability and the perched seasonal high water table are severe limitations on sites for septic tank absorption fields. Low strength is a severe limitation on sites for local roads and streets. The risk of corrosion on uncoated steel and concrete in structures and underground utilities is moderate.

The capability subclass is IIIe.

PrC3—Providence silt loam, 5 to 8 percent slopes, severely eroded. This soil is very deep, rolling, and moderately well drained. It is on hillsides on uplands in the central and eastern parts of the county. It has a dense fragipan in the subsoil. Individual areas are about 10 to 150 acres in size.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:

0 to 3 inches—dark yellowish brown silt loam that has brown mottles

Subsoil:

3 to 9 inches—strong brown silty clay loam

9 to 18 inches—strong brown silty clay loam that has brown mottles

18 to 25 inches—a fragipan of dark brown silty clay loam that has brown mottles

25 to 36 inches—a fragipan of strong brown silt loam that has brown mottles

36 to 52 inches—a fragipan of strong brown fine sandy loam that has brown mottles

52 to 62 inches—a fragipan of strong brown sandy loam that has brown mottles

62 to 75 inches—red sandy clay loam that has brown, yellow, and red mottles

Included with this soil in mapping are a few small areas of Grenada soils on foot slopes near drainageways and a few intermingled areas of Loring soils. The Grenada and Loring soils make up about 10 percent of the unit.

Also included are numerous small areas where the fragipan has become the plow layer, a few small areas where the soil is somewhat less eroded, and some areas where small gullies form during and after each cropping season. The gullies are generally filled in with soil material from the adjacent areas before seedbed preparation each spring. Removing a layer of soil to fill in the gullies reduces the productivity of the soils in the adjacent areas.

Important soil properties—

Permeability: Moderate in the upper part of the profile; moderately slow in the fragipan

Available water capacity: Low

Soil reaction: Very strongly acid to medium acid throughout the profile unless lime has been added

Flooding: None

Hazard of erosion: Severe

Seasonal high water table: Perched at a depth of 1.5 to 3.0 feet

In many areas this soil is used for cotton or soybeans. In some areas it is used for wheat, grain sorghum, or pasture. A few small areas are used as woodland.

This soil is poorly suited to row crops because of the hazard of further erosion, a limited rooting depth, and the available water capacity. If a conservation tillage system is used to prevent excessive erosion and increase the rate of water infiltration, the soil can produce acceptable yields of soybeans, grain sorghum, and other hardy summer annuals. Late-summer drought can reduce the yields of corn and other crops that require large amounts of water.

This soil is well suited to hay and pasture, but plant selection and good management are important. A permanent plant cover is needed to minimize further erosion. Such plants as tall fescue and white clover do not require a deep root zone and can tolerate short periods of wetness. The soil is poorly suited to deep-rooted plants that are sensitive to wetness, such as alfalfa. Stands of these plants start to thin out after the first or second year. Because of the perched water table, the soil is soggy and is too soft for grazing for several days at a time in winter and early in spring. Lime and fertilizer, which should be applied according to the results of soil tests, are needed for optimum yields.

This soil is well suited to trees, including cherrybark oak, southern red oak, yellow-poplar, shortleaf pine, loblolly pine, and sweetgum. The main concerns in managing timber are the hazard of erosion, the hazard of windthrow, and plant competition. Erosion can be controlled by maintaining the plant cover, building logging roads and skid trails on the contour, and avoiding the use of heavy equipment during wet periods. Adequate site preparation and maintenance are needed to keep undesirable plants from interfering with natural or artificial reforestation.

This soil is suited to most urban uses. The slow permeability and the perched seasonal high water table are severe limitations on sites for septic tank absorption fields. Low strength is a severe limitation on sites for local roads and streets. The risk of corrosion on uncoated steel and concrete in structures and underground utilities is moderate.

The capability subclass is IVe.

PrD3—Providence silt loam, 8 to 15 percent slopes, severely eroded. This soil is very deep, rolling, and moderately well drained. It is on highly dissected hillsides in the eastern part of the county. It has a dense fragipan in the subsoil. Individual areas are about 10 to 150 acres in size.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:
0 to 3 inches—dark yellowish brown silt loam

Subsoil:
3 to 9 inches—strong brown silty clay loam
9 to 18 inches—strong brown silty clay loam that has brown mottles
18 to 25 inches—a fragipan of dark brown silt loam that has brown mottles
25 to 36 inches—a fragipan of strong brown silt loam that has brown mottles
36 to 52 inches—a fragipan of strong brown fine sandy loam
52 to 62 inches—a fragipan of strong brown sandy loam that has brown mottles
62 to 75 inches—red sandy clay loam that has brown, yellow, and red mottles

Included with this soil in mapping are a few small areas of Loring soils on the somewhat gentler slopes and intermingled small areas of the well drained Lexington and Smithdale soils. The Loring, Lexington, and Smithdale soils make up about 10 percent of the unit.

Also included are numerous small areas where the fragipan has become the plow layer, a few small areas where the soil is somewhat less eroded, and many areas where large gullies have truncated the soil at widely spaced intervals.

Important soil properties—

Permeability: Moderate in the upper part of the profile; moderately slow in the fragipan
Available water capacity: Low
Soil reaction: Very strongly acid to medium acid throughout the profile unless lime has been added
Flooding: None
Hazard of erosion: Severe
Seasonal high water table: Perched at a depth of 1.5 to 3.0 feet

In most areas this soil is used as woodland or pasture (fig. 9). In a few of the less sloping areas, it is used for soybeans or grain sorghum.

Because of the slope and the severe hazard of erosion, this soil is not suited to cropland. It is subject to erosion if it is cultivated or if the surface is not protected by vegetation.

This soil is suited to hay and pasture. A permanent plant cover is needed to minimize further erosion. Careful selection of plants and good management are important. The soil is well suited to hardy plants, such as tall fescue, white clover, sericea lespedeza, and improved bermudagrass. The less hardy plants, such as orchardgrass and alfalfa, are likely to be short lived. Because of the perched water table, the soil is soggy and is too soft for grazing for several days at a time in winter and early in spring. Lime and fertilizer, which should be applied according to the results of soil tests, are needed for sustained yields.

This soil is well suited to trees, including cherrybark oak, southern red oak, yellow-poplar, shortleaf pine, loblolly pine, and sweetgum. The main concerns in managing timber are the hazard of erosion, the hazard of windthrow, and plant competition. Erosion can be controlled by maintaining the plant cover, building logging roads and skid trails on the contour, and avoiding the use of heavy equipment during wet periods. Adequate site preparation and maintenance are needed to keep undesirable plants from interfering with natural or artificial reforestation.

This soil is poorly suited to most urban uses because of the slope, the severe hazard of erosion, and the slow permeability. The slow permeability and the perched seasonal high water table are severe limitations on sites for septic tank absorption fields. Low strength is a severe limitation on sites for local roads and streets. The risk of corrosion on uncoated steel and concrete in structures and underground utilities is moderate.

The capability subclass is VIe.

Ro—Rosebloom silt loam, ponded. This soil is very deep and poorly drained. It is in the lowest areas on the larger flood plains in the county. It is subject to ponding because the stream channels are blocked by sediments and debris or by beaver dams. Individual areas are about 50 to 500 acres in size. Slopes are 0 to 1 percent.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:
0 to 3 inches—grayish brown silt loam

Subsoil:
3 to 12 inches—grayish brown silty clay loam that has brown and red mottles

Substratum:
12 to 30 inches—gray silty clay loam that has brown mottles

Figure 9.—Fescue pasture in an area of Providence silt loam, 8 to 15 percent slopes, severely eroded.

30 to 60 inches—grayish brown silt loam that has gray mottles

Included with this soil in mapping are a few small areas of the somewhat poorly drained Arkabutla soils in the slightly higher positions on the landscape. These soils make up about 5 percent of the unit.

Also included are a few small areas of soils that are similar to the Rosebloom soil but are slightly higher in elevation and are ponded for only short periods.

Important soil properties—

Permeability: Moderate
Available water capacity: High
Soil reaction: Strongly acid or very strongly acid
Flooding: Frequent, very long, in winter and spring
Hazard of erosion: Slight
Seasonal high water table: 2 feet above to 1 foot below the surface

In most areas this soil is used as woodland. It provides habitat for wetland wildlife (fig. 10).

This soil is not suited to cropland, pasture, or hay because of the wetness, the ponding, and the frequent flooding.

This soil is suited to water-tolerant trees, such as baldcypress, water tupelo, and black willow. Timber management is limited by the ponding. Bottom-land hardwoods grew in some areas during the last 10 to 15 years, but they have been killed by the ponded water.

This soil is not suited to urban uses because of the wetness, the ponding, low strength, and the hazard of flooding.

The capability subclass is Vlw.

RS—Rosebloom and Waverly silt loams, frequently flooded. These soils are very deep and poorly drained. They are on flood plains along the Forked Deer and Obion Rivers and their larger tributaries. Individual areas of the unit are about 50 to 500 acres in size. Slopes are 0 to 1 percent. Individual areas of each soil are large enough to be mapped separately. Because of present and predicted land uses, however, they were mapped as one unit.

The typical sequence, depth, and composition of the layers in the Rosebloom soil are as follows—

Surface layer:
0 to 4 inches—brown silt loam

Figure 10.—An area of Rosebloom silt loam, ponded, which provides excellent habitat for wetland wildlife.

Subsoil:
4 to 14 inches—light brownish gray silty clay loam that has red and brown mottles

Substratum:
14 to 43 inches—gray silty clay loam that has brown and red mottles
43 to 60 inches—gray silt loam that has yellow mottles

The typical sequence, depth, and composition of the layers in the Waverly soil are as follows—

Surface layer:
0 to 4 inches—dark grayish brown silt loam

Subsoil:
4 to 29 inches—light brownish gray silt loam that has brown mottles

Substratum:
29 to 45 inches—gray silt loam that has brown mottles
45 to 60 inches—gray silt loam

Included with these soils in mapping are a few small areas of the poorly drained Routon soils at the slightly higher elevations. Also included are a few intermingled areas of the somewhat poorly drained Arkabutla and Falaya soils. Included soils make up about 10 percent of the unit.

Important soil properties—

Permeability: Moderate
Available water capacity: High
Soil reaction: Strongly acid or very strongly acid throughout the profile unless lime has been added
Flooding: Frequent, generally lasting from several days

to more than a week in winter and spring
Hazard of erosion: Slight
Seasonal high water table: Within a depth of 1.0 foot in the Rosebloom soil and at a depth of 0.5 to 1.0 foot in the Waverly soil

In most areas these soils are used as woodland. In a few small areas, they have been cleared and are used mainly for soybeans, grain sorghum, or pasture. The cleared areas are protected from flooding by levees.

These soils are not suited to cropland, pasture, or hay. The excessive wetness and the frequent flooding are severe limitations affecting row crops and pasture grasses, even in areas where an extensive system of drainage ditches and levees has been installed.

These soils are well suited to water-tolerant trees, including green ash, cherrybark oak, water oak, willow oak, American sycamore, eastern cottonwood, and sweetgum. The main concerns in managing timber are the susceptibility to compaction and rutting, seedling mortality, and plant competition. Rutting and compaction are caused by the use of heavy equipment during wet periods. Puddling also can occur when the soils are wet. Logging during dry periods in summer and fall and using low-pressure ground equipment result in less damage to the soils and help to maintain productivity. Adequate site preparation and maintenance are needed to keep undesirable plants from interfering with natural or artificial reforestation.

These soils are not suited to most urban uses because of the flooding and the seasonal high water table. The frequent flooding and the seasonal high water table are severe limitations on sites for septic tank absorption fields. Low strength and flooding are severe limitations on sites for local roads and streets. The risk of corrosion in structures and underground utilities is severe on uncoated steel and moderate on concrete.

The capability subclass is Vw.

Rt—Routon silt loam. This soil is very deep, nearly level, and poorly drained. It is on broad, flat, loess-covered stream terraces and in small upland depressions throughout the county. Individual areas are about 5 to 300 acres in size. Slopes range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers in this soil are as follows—

Surface layer:
0 to 7 inches—brown silt loam

Subsurface layer:
7 to 18 inches—gray silt

Subsoil:
18 to 33 inches—gray silt loam that has brown mottles
33 to 50 inches—grayish brown silty clay loam that has gray and brown mottles
50 to 64 inches—grayish brown silt loam that has brown mottles

Substratum:
64 to 80 inches—grayish brown silt loam that has brown mottles

Included with this soil in mapping are a few small areas of the somewhat poorly drained Arkabutla and Center and poorly drained Rosebloom and Waverly soils, which make up about 10 percent of the unit. Also included are some areas that are ponded for several days in spring.

Also included are a few slick spots, which are high in content of sodium.

Important soil properties—

Permeability: Slow
Available water capacity: High
Soil reaction: Very strongly acid to slightly acid in the upper part of the profile and strongly acid to neutral in the lower part
Flooding: None, except for rare flooding in some areas of included soils along drainageways
Hazard of erosion: Slight
Seasonal high water table: Within a depth of 1 foot

In most areas this soil is used for row crops, mainly soybeans and grain sorghum. In several areas it is used for hay or pasture.

If drained, this soil is well suited to short-season annual crops, such as soybeans and grain sorghum. It is suited to corn and cotton. The seasonal wetness is the main limitation. Planting, cultivation, and harvesting are often delayed following periods of heavy rainfall. Surface drainage can be improved in some areas by open ditches or by land smoothing.

This soil is well suited to hay and pasture, but plant selection and good management are important. Such plants as tall fescue and white clover do not require a deep root zone and can tolerate short periods of wetness. The soil is poorly suited to deep-rooted plants that are sensitive to wetness, such as alfalfa. Stands of these plants start to thin out after the first or second year. Because of the seasonal high water table, the soil is soggy and is too soft for grazing for several days at a time in winter and early in spring.

This soil is well suited to water-tolerant hardwoods, including white ash, water oak, cherrybark oak, American sycamore, and sweetgum. The main concerns in managing timber are the susceptibility to compaction and rutting, seedling mortality, and plant competition. Rutting and compaction are caused by the use of heavy equipment during wet periods. Puddling also can occur when the soil is wet. Logging during dry periods in summer and fall and using low-pressure ground equipment result in less damage to the soil and help to maintain productivity. Adequate site preparation and maintenance are needed to keep undesirable plants from interfering with natural or artificial reforestation.

This soil is poorly suited to most urban uses because of the slow permeability and the seasonal high water table. The slow permeability and the seasonal high water table are severe limitations on sites for septic tank absorption fields. Low strength and wetness are severe limitations on sites for local roads and streets. The risk of corrosion in structures and underground utilities is severe on uncoated steel and moderate on concrete.

The capability subclass is IIIw.

Ud—Udorthents, loamy, steep. These soils are in borrow areas and in landfill areas. In the borrow areas the soil material has been removed and used in the construction of roadbeds or as fill material on construction sites. Slopes range from 2 to 35 percent.

Borrow pits commonly are excavated to a depth of 10 to 25 feet. Some areas are continually being excavated and are more than 100 feet deep. The soil material on side slopes is comparable to that of the adjacent soils. The bottom of the pits consists of loamy material mixed with gray, brown, yellow, and red strata. The pits on the lower parts of the landscape have small areas of ponded water. In the higher, more sloping areas, shallow to deep gullies have formed because erosion continues to remove soil material.

In the landfill areas the original soil material has been removed and solid waste had been filled in alternating layers. Landfills that are no longer receiving waste material have a smooth surface and are revegetated with trees or a permanent cover of grasses.

The exposed loamy material can support plants. Most areas of the unit have a cover of native grasses, shrubs, and trees. Some reclaimed areas have stands of eastern redcedar and loblolly pine. Acidity, the rooting depth in some areas, and a low available water capacity are limiting features of the soil material. Because areas of the unit are diverse, onsite investigation is needed before use and management are planned.

No capability classification is assigned.

Ur—Urban land. This unit is in areas where more than 85 percent of the surface is covered by streets, buildings, parking lots, railroad yards, and airports. Most of the acreage is in the business districts of Trenton, Milan, and Humboldt and in industrial areas around the perimeter of these cities. The natural soils, dominantly those of the Loring, Memphis, and Lexington series, have been greatly altered by cutting, filling, grading, and shaping during the process of urbanization. The original landscape, topography, and drainage patterns commonly have been changed.

Recommendations for use and treatment require onsite investigation.

No capability classification is assigned.

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, State, and Federal levels, as well as individuals, must encourage and facilitate the wise use of our Nation's prime farmland. The loss of prime farmland to other uses results in costly and environmentally undesirable utilization of marginal land.

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

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

Prime farmland soils usually receive an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The acidity or alkalinity level of the soils is acceptable. The soils have few or no rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are not frequently flooded during the growing season. The slope ranges mainly from 0 to 5 percent.

About 115,830 acres in Gibson County, or 30 percent of the total acreage, meets the soil requirements for prime farmland. Scattered areas of this land are throughout the county. They are used mainly as cropland.

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

Use and Management of the Soils

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

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

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

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

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

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs *(4)*.

Crops and Pasture

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils are identified, the system of land capability classification used by the Soil Conservation Service is explained, and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

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

In 1978, a total of 308,488 acres in Gibson County was used for crops or pasture. Of this total, 254,379 acres was cropland and 54,109 acres was pasture. Soybeans were grown on 144,252 acres; corn on 38,800 acres; cotton on 13,069 acres; and wheat, grain sorghum, or truck crops on 9,923 acres. In recent years the acreage planted to these crops has been increasing and the acreage used as pasture has been decreasing.

Pasture and hay crops make up a significant acreage of the farmland in the county. Most of the pasture and hayland supports tall fescue and white clover for spring and fall forage and improved bermudagrass for summer forage. Alfalfa and lespedeza are becoming increasingly important as hay crops.

Erosion is a serious problem in most of the county. Loss of soil through erosion can reduce the productivity of the soils and can result in the sedimentation of streams. Productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on Loring, Grenada, Providence, and other soils that have a layer in the subsoil that limits the rooting depth. Controlling erosion minimizes the pollution of streams by sediments and improves the quality of water for municipal use, for recreation, and for fish and wildlife.

Erosion-control practices provide a protective cover, reduce the runoff rate, and increase the rate of water infiltration. A cropping system that keeps a plant cover on the soil for extended periods reduces the hazard of erosion and preserves the productive capacity of the soils. On livestock farms, which require pasture and hay, including grasses and legumes in the cropping system helps to control erosion on sloping land, provides nitrogen, and improves tilth.

Contour farming, terraces, diversions, grassed waterways, and conservation tillage reduce the runoff rate and the hazard of erosion. Conservation tillage, which includes no-till planting, strip tillage, stubble mulching, and chiseling, is becoming more common in the county. It is effective in controlling erosion, retaining organic matter, and conserving soil moisture.

Soil drainage is a major management need on much of the cropland and pasture in the county. A drainage system is needed on flood plains, in upland depressions, and on broad, flat stream terraces that receive large quantities of water, either from runoff or stream overflow. The design of surface and subsurface drainage systems varies with the kind of soil. A combination of surface and subsurface drains is needed in areas of poorly drained soils. Adequate outlets for drainage systems are not readily available in some areas.

Most of the soils on uplands are strongly acid or very strongly acid. In unlimed areas ground limestone is needed to raise the pH level for the optimum growth of most field crops. On all soils, additions of lime and fertilizer should be based on the results of soil tests, on the needs of the crop, and on the expected level of yields. The Cooperative Extension Service can help in determining the kinds and amounts of fertilizer and lime to be applied.

In general, most of the soils in the county that are well suited to crops also are well suited or moderately suited to urban development, except for those in flood-prone areas. The data about specific soils in this survey can be used in planning future land uses. The potential of a soil for urban uses should be weighed against the potential for use as farmland.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification also is shown in the table.

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

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

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

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

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for use as cropland *(6)*. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, and for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

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 they have other limitations, impractical to remove, that limit their use.

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

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production. There are no class VIII soils in Gibson County.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main hazard is the risk of erosion unless a close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

There are no subclasses in class I because the soils of this class have few limitations. The soils in class V are subject to little or no erosion, but they have other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation. Class V contains only the subclasses indicated by *w, s,* or *c.*

The capability classification of each map unit is given in the section "Detailed Soil Map Units" and in table 6.

Woodland Management and Productivity

Joseph H. Paugh, forester, Soil Conservation Service, helped prepare this section.

Prior to settlement, nearly all of Gibson County was forested. As the county was settled, much of the land was cleared for agricultural uses. A total of 17,969 acres, or about 5 percent of the acreage in the county, remains forested. Most of the forest land is in small, privately owned tracts.

The soils in Gibson County can produce good or excellent stands of commercial hardwoods. At present, the forests produce only about 50 percent of their potential. In most areas additional management is needed to achieve optimum productivity. In some areas species conversion and increased stocking also are needed to improve production.

The commercial species commonly grown in the county include yellow-poplar, upland and bottom-land oaks, black walnut, black cherry, white ash, persimmon, blackgum, sweetgum, maple, hickory, and pecan. The wetter bottom land generally supports bottom-land oaks, sweetgum, sycamore, water tupelo, and baldcypress.

Loblolly pine has been planted in several small tracts on severely eroded soils and in gullied areas. In many of these tracts, the trees have now reached pulpwood size, and in some they can be harvested for poles or pilings. Eastern redcedar or thickets of black locust dominate a few old fields.

The forests in Gibson County provide not only commercial wood products but also wildlife habitat, opportunities for recreation, and natural beauty. They help to conserve soil and water.

Soils vary in their ability to produce trees. Available water capacity and depth of the root zone have major effects on tree growth. Fertility and texture also influence tree growth. Elevation, aspect, and climate determine the kinds of trees that can grow on a site. Elevation and aspect are of particular importance in mountainous areas.

This soil survey can be used by woodland managers planning ways to increase the productivity of forest land. Some soils respond better to applications of fertilizer than others, some are more susceptible to landslides and erosion after roads are built and timber is harvested, and some require special reforestation efforts. In the section "Detailed Soil Map Units," the description of each map unit in the survey area suitable for timber includes information about productivity, limitations in harvesting timber, and management concerns in producing timber. Table 7 summarizes this forestry information and rates the soils for a number of factors to be considered in management. *Slight, moderate*, and *severe* are used to indicate the degree of the major soil limitations to be considered in forest management.

Ratings of the *erosion hazard* indicate the probability that damage may occur if site preparation or harvesting activities expose the soil. The risk is *slight* if no particular preventive measures are needed under ordinary conditions; *moderate* if erosion-control measures are needed for particular silvicultural activities; and *severe* if special precautions are needed to control erosion for most silvicultural activities. Ratings of moderate or severe indicate the need for construction of higher standard roads, additional maintenance of roads, additional care in planning harvesting and reforestation activities, or the use of special equipment.

Ratings of *equipment limitation* indicate limits on the use of forest management equipment, year-round or seasonal, because of such soil characteristics as slope, wetness, and susceptibility of the surface layer to compaction. As slope gradient and length increase, it becomes more difficult to use wheeled equipment. On the steeper slopes, tracked equipment is needed. On the steepest slopes, even tracked equipment cannot be operated and more sophisticated systems are needed. The rating is *slight* if equipment use is restricted by wetness for less than 2 months and if special equipment is not needed. The rating is *moderate* if slopes are so steep that wheeled equipment cannot be operated safely across the slope, if wetness restricts equipment use from 2 to 6 months per year, or if special equipment is needed to prevent or minimize compaction. The rating is *severe* if slopes are so steep that tracked equipment cannot be operated safely across the slope, if wetness restricts equipment use for more than 6 months per year, or if special equipment is needed to prevent or minimize compaction. Ratings of moderate or severe indicate a need to choose the best suited equipment and to carefully plan the timing of harvesting and other management activities.

Ratings of *seedling mortality* refer to the probability of the death of naturally occurring or properly planted seedlings of good stock in periods of normal rainfall, as influenced by kinds of soil or topographic features. Seedling mortality is caused primarily by too much water or too little water. The factors used in rating a soil for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the period when the water table is high, rooting depth, and the aspect of the slope. The mortality rate generally is highest on soils that have a sandy or clayey surface layer. The risk is *slight* if, after site preparation, expected mortality is less than 25 percent; *moderate* if expected mortality is between 25 and 50 percent; and *severe* if expected mortality exceeds 50 percent. Ratings of moderate or severe indicate that it may be necessary to use containerized or larger than usual planting stock, to treat the roots of seedlings with a moisture absorbent, or to make special site preparations, such as bedding, furrowing, installing a surface drainage system, and providing artificial shade for seedlings.

Ratings of *windthrow hazard* indicate the likelihood that trees will be uprooted by the wind. A restricted rooting depth is the main reason for windthrow. The rooting depth can be restricted by a high water table, a fragipan, or bedrock or by a combination of such factors as wetness, texture, structure, and depth. The risk is *slight* if strong winds cause trees to break but do not uproot them; *moderate* if strong winds cause an occasional tree to be blown over and many trees to break; and *severe* if moderate or strong winds commonly blow trees over. Ratings of moderate or severe indicate that care is needed in thinning or that the stand should not be thinned at all. Special equipment may be needed to prevent damage to shallow root systems in partial cutting operations. A plan for the periodic removal of windthrown trees and the maintenance of a road and trail system may be needed.

Ratings of *plant competition* indicate the likelihood of the growth or invasion of undesirable plants. Plant competition is more severe on the more productive soils, on poorly drained soils, and on soils having a restricted root zone that holds moisture. The risk is *slight* if competition from undesirable plants hinders adequate natural or artificial reforestation but does not necessitate intensive site preparation and maintenance. The risk is *moderate* if competition from undesirable plants hinders natural or artificial reforestation to the extent that intensive site preparation and maintenance are needed. The risk is *severe* if competition from undesirable plants prevents adequate natural or artificial reforestation unless the site is intensively prepared and maintained. A moderate or severe rating indicates the need for site preparation to ensure the development of an adequately stocked stand. Managers must plan site preparation measures to ensure reforestation without delays.

The *potential productivity* of *common trees* on a soil is expressed as a *site index* and a *volume* number. Common trees are listed in the order of their observed general occurrence. Generally, only two or three tree species dominate.

The *site index* is determined by taking height measurements and determining the age of selected trees within stands of a given species. This index is the average height, in feet, that the trees attain in a specified number of years. This index applies to fully stocked, even-aged, unmanaged stands.

The *volume* is the yield likely to be produced by the most important trees, expressed in cubic feet per acre per year calculated at the age of culmination of mean annual increment.

Trees to plant are those that are used for reforestation or, under suitable conditions, natural regeneration. They are suited to the soils and can produce a commercial wood crop. The desired product, topographic position (such as a low, wet area), and personal preference are three factors among many that can influence the choice of trees for use in reforestation.

Recreation

In table 8, the soils of the survey area are rated according to the limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered.

Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 8 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have gentle slopes and are not wet or subject to flooding during the period of use. The surface absorbs rainfall readily but remains firm and is not dusty when dry. Strong slopes can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is firm after rains and is not dusty when dry. If grading is needed, the depth of the soil over a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

Gerald Montgomery, biologist, Soil Conservation Service, helped prepare this section.

Gibson County has a large and varied population of wildlife and fish. The abundance and distribution of any particular species depend on the land use, the amount of available water, and the kind of vegetation. The species that prefer the more open areas consisting of cropland, pasture, brushy fence rows, thickets, and scattered woodlots include cottontail rabbit, bobwhite quail, mourning dove, meadowlark, eastern bluebird, groundhog, and coyote. These species are most abundant where the vegetation is diverse. The species that prefer the forests in areas of upland woodlots and bottom-land hardwoods include white-tailed deer, gray squirrel, wild turkey, raccoon, and a variety of nongame birds.

Shallow lakes and other wetlands on the bottom land along the Obion and Forked Deer Rivers provide breeding habitat for wood ducks and resting and feeding areas for other migratory waterfowl. These wetlands also are important to aquatic nongame birds and to furbearers, such as beaver, mink, and muskrat.

The streams, lakes, and ponds in Gibson County are inhabited by crappie, bream, largemouth bass, and catfish. Nongame species, such as gar, carp, buffalo, bowfin, and drum, are abundant, especially in lakes and in oxbows and sloughs on the bottom land along the Obion and Forked Deer Rivers. Siltation, contamination by pesticides, and drainage are some of the major problems that have reduced the quality and quantity of fish habitat.

In most areas of the county, the wildlife habitat can be improved by increasing the amount of food, water, and cover that wildlife need. General soil map units 1 and 2 are well suited to the improvement of habitat for upland wildlife. Areas in map units 3 and 5, which are on bottom land, can be developed as habitat for a variety of wildlife species, including waterfowl.

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

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

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

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

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, and flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, soybeans, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are switchgrass, fescue, orchardgrass, annual lespedeza, clover, and alfalfa.

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

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, dogwood, hickory, and blackberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are shrub lespedeza, shrub honeysuckle, autumn-olive, and crabapple.

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

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, and slope. Examples of wetland plants are smartweed, wild millet, cattails, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are wetness, slope, and permeability. Submerged or floating aquatic plants are common in these areas. Examples are coontail, spatterdock, lotus, waterlily, and pondweed.

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

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants.

Habitat for wetland wildlife consists mainly of open, marshy or swampy shallow water areas. Some of these areas are wooded.

Engineering

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

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

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

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

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

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

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

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

Building Site Development

Table 10 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by a very firm, dense layer; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, and shrinking and swelling can cause the movement of footings. A high water table and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, and the available water capacity in the upper 40 inches affect plant growth. Flooding, wetness, slope, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 11 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 11 also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and that good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

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

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel are less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 11 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, depth to a high water table, and flooding.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. Slope can cause construction problems.

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

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

The ratings in table 11 are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, slope, and flooding affect both types of landfill. Texture and soil reaction affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 12 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

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

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing estimated engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by a high water table and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential or slopes of 15 to 25 percent. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 12, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick. All other soils are rated as an improbable source.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope and a water table.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and releases a variety of plant nutrients as it decomposes.

Water Management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives the restrictive features that affect each soil for drainage, irrigation, terraces and diversions, and grassed waterways.

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

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on permeability, depth to a high water table or depth of standing water if the soil is subject to ponding, slope, and susceptibility to flooding. Excavating and grading and the stability of ditchbanks are affected by slope and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts or sodium. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, and depth to a fragipan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Wetness and slope affect the construction of grassed waterways. Low available water capacity, restricted rooting depth, low fertility, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

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

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 14 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the "Glossary."

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

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SC-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

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

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

The estimates of grain-size distribution are rounded to the nearest 5 percent. Thus, if the ranges of gradation extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 15 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate, or component, consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of movement of water through the soil when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage in each major soil layer is stated in inches of water per inch of soil. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion. Losses are expressed in tons per acre per year. These estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

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

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 15, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

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

Soil and Water Features

Table 16 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils are assigned to one of four groups. They are grouped according to the infiltration of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

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

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

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist of soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to two hydrologic groups in table 16, the first letter is for drained areas and the second is for undrained areas.

Flooding, the temporary covering of the soil surface by flowing water, is caused by overflowing streams, by runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in swamps and marshes or in a closed depression is considered ponding.

Table 16 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency generally is expressed as *none, rare, occasional,* or *frequent. None* means that flooding is not probable. *Rare* means that flooding is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year). *Occasional* means that flooding occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year). *Frequent* means that flooding occurs often under normal weather conditions (the chance of flooding is more than 50 percent in any year). Duration is expressed as *very brief* (less than 2 days), *brief* (2 to 7 days), *long* (7 days to 1 month), and *very long* (more than 1 month). The time of year that floods are most likely to occur is expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

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

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

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 16 are the depth to the seasonal high water table; the kind of water table, that is, *perched* or *apparent;* and the months of the year that the water table commonly is highest. A water table that is seasonally high for less than 1 month is not indicated in table 16.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. "More than 6.0" indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

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

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

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

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(7)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or on laboratory measurements. Table 17 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Alfisol.

SUBORDER. Each order is divided into suborders, primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalf (*Ud*, meaning humid, plus *alf*, from Alfisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludalfs (*Hapl*, meaning minimal horizonation, plus *udalf*, the suborder of the Alfisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other 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 typifies the great group. An example is Typic Hapludalfs.

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

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. There can be some variation in the texture of the surface layer or of the substratum within a series.

Soil Series and Their Morphology

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

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" *(5)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(7)*. Unless otherwise stated, matrix colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Arkabutla Series

The Arkabutla series consists of somewhat poorly drained soils that formed in moderately fine textured alluvium on flood plains. Slopes range from 0 to 2 percent.

Arkabutla soils are geographically associated with Rosebloom, Falaya, and Collins soils. Rosebloom soils are in positions on flood plains similar to those of the Arkabutla soils or are in the slightly lower areas. They are poorly drained. Falaya and Collins soils have less clay in the control section than the Arkabutla soils. Falaya soils are in the slightly higher positions on flood plains near stream channels and are somewhat poorly drained. Collins soils are near tributary streams and border steep upland side slopes. They are moderately well drained.

Typical pedon of Arkabutla silt loam, frequently flooded, 2.8 miles west of Brazil, 2.0 miles southwest of the intersection of Eaton-Brazil Road and Charlie Butler Road, 1.5 miles west of the intersection of Charlie Butler Road and Charlie Sutton Loop, 0.8 mile west of the intersection of Charlie Sutton Loop and a field road, in a wooded area:

A—0 to 5 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium granular structure; very friable; common fine roots; medium acid; clear smooth boundary.

Bw—5 to 18 inches; mottled dark yellowish brown (10YR 4/4), light brownish gray (10YR 6/2), and strong brown (7.5YR 5/6) silty clay loam; weak medium subangular blocky structure; friable; few fine and medium roots; strongly acid; gradual wavy boundary.

Bg—18 to 40 inches; light gray (N 7/0) silty clay loam; common fine distinct yellowish red (5YR 5/6) and common fine distinct dark brown (10YR 4/3) mottles; weak medium subangular blocky structure; friable; few fine and medium roots; many manganese and iron stains and nodules; very strongly acid; gradual wavy boundary.

C1—40 to 50 inches; bluish gray (5BG 6/1) silty clay loam; common coarse distinct dark brown (10YR 4/3) mottles; massive; firm; strongly acid; gradual wavy boundary.

C2—50 to 60 inches; gray (10YR 6/1) silty clay loam; few fine distinct yellowish red (5YR 5/6) and few medium distinct bluish gray (5BG 6/1) mottles; massive; friable; strongly acid.

Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed.

The A horizon has hue of 10YR, value of 4, and chroma of 3 or 4. It is silt loam or silty clay loam.

The Bw horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. It has few to many mottles with chroma of 2 or less. It is silt loam or silty clay loam.

The Bg horizon has hue of 10YR or 2.5Y or is neutral in hue. It has value of 6 or 7 and chroma of 2 or less. In many pedons it is bluish or greenish gray below a depth of 40 inches. It has few to many mottles in shades of brown, red, or yellow. The texture is silt loam or silty clay loam.

The C horizon is gray or bluish gray silt loam or silty clay loam. It has mottles in shades of brown or red.

Calloway Series

The Calloway series consists of somewhat poorly drained soils that formed in thick deposits of loess on uplands and on nearly level stream terraces. These soils have a fragipan. Slopes range from 1 to 3 percent.

Calloway soils are geographically associated with Grenada, Loring, Center, and Routon soils. Grenada and Loring soils are in the slightly higher positions on the landscape and are moderately well drained. Center and Routon soils do not have fragipan. Center soils are in scattered small areas near drainageways and are somewhat poorly drained. Routon soils are in lower, flatter areas and are poorly drained.

Typical pedon of Calloway silt loam, 1 to 3 percent slopes, eroded, 1.8 miles northwest of Rutherford, 0.9 mile southwest of the intersection of Northern Church Road and U.S. Highway 45W, 0.2 mile southeast of the intersection of Northern Church Road and Joe Lumpkin Road, 500 feet south of Northern Chapel, in a field:

Ap—0 to 4 inches; dark brown (10YR 4/3) silt loam; weak medium granular structure; very friable; few fine roots; common iron and manganese concretions; medium acid; clear smooth boundary.

Bw—4 to 10 inches; brownish yellow (10YR 6/6) silt loam; common fine distinct strong brown (7.5YR 5/6) and common medium distinct light gray (10YR 7/2) mottles; weak medium subangular blocky structure; friable; few fine roots; common iron and manganese stains, nodules, and concretions; friable; strongly acid; clear smooth boundary.

E—10 to 18 inches; light gray (10YR 7/2) silt loam; few fine distinct brownish yellow (10YR 6/6), common medium faint light yellowish brown (10YR 6/4), and many fine prominent strong brown (7.5YR 5/6) mottles; weak medium granular and subangular blocky structure; friable; few fine roots; common manganese stains and concretions; very strongly acid; clear irregular boundary.

Btx1—18 to 38 inches; grayish brown (10YR 5/2) silt loam; common medium distinct strong brown (7.5YR 5/6) and brownish yellow (10YR 6/6) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm; brittle; few fine roots along faces of prisms; many prominent light gray (10YR 7/2) silt coatings and clay films on faces of prisms following vertical seams; common manganese stains and concretions; vertical seams 4 to 5 inches apart; strongly acid; clear wavy boundary.

Btx2—38 to 44 inches; yellowish brown (10YR 5/4) silt loam; common medium distinct light gray (10YR 7/1), yellowish brown (10YR 5/8), and brownish yellow (10YR 6/8) and common coarse distinct strong brown (7.5YR 4/6) mottles; moderate very coarse prismatic structure parting to weak medium subangular blocky; firm; brittle; few fine roots along faces of prisms; many prominent light gray (10YR 7/2) silt coatings and clay films on faces of prisms following vertical seams; few manganese stains, nodules, and concretions; vertical seams 4 to 6 inches apart; strongly acid; clear wavy boundary.

Btx3—44 to 60 inches; strong brown (10YR 5/6) silt loam; common medium distinct light gray (10YR 7/1), brownish yellow (10YR 6/6), and yellowish brown (10YR 5/4) and few medium distinct yellowish brown (10YR 5/8) mottles; moderate very coarse prismatic structure parting to weak medium subangular blocky; firm; brittle; few fine roots along faces of prisms; few faint clay films on faces of prisms; few manganese stains and nodules; vertical seams 4 to 8 inches apart; medium acid.

The solum is more than 60 inches thick. Reaction ranges from very strongly acid to medium acid in the upper part of the solum in unlimed areas and from strongly acid to mildly alkaline in the lower part of the solum. Depth to the fragipan ranges from 15 to 27 inches.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4.

The Bw horizon has hue of 10YR and value and chroma of 4 to 6. It has few to many mottles in shades of gray. It is silt loam or silty clay loam.

The E horizon has hue of 10YR, value of 6 or 7, and chroma of 2 to 4. It is silt loam or silt.

The Btx horizon has hue of 10YR or 2.5Y, value of 5, and chroma of 2 to 6. It has few to many mottles in shades of brown, yellow, or gray. It has tongues of the E horizon along the faces of prisms and in root channels. The texture is silt loam or silty clay loam.

Center Series

The Center series consists of somewhat poorly drained soils that formed in loess on stream terraces. Slopes range from 0 to 3 percent.

Center soils are geographically associated with Routon and Calloway soils. Routon soils are in the slightly lower positions on the landscape and are poorly drained. Calloway soils are in the slightly higher positions on the landscape. They have a fragipan.

Typical pedon of Center silt loam, 1.7 miles north of Trenton, 0.1 mile southwest of the intersection of U.S. Highway 45 Business and U.S. Highway 45 Bypass, 1,000 feet west of Trenton Motel, in a field:

Ap—0 to 9 inches; brown (10YR 5/3) silt loam; weak fine granular structure; very friable; common fine roots; slightly acid; abrupt smooth boundary.

Bt—9 to 21 inches; yellowish brown (10YR 5/4) silty clay loam; common medium distinct strong brown (7.5YR 5/8) and light gray (10YR 7/2) mottles; moderate medium subangular blocky structure; friable, slightly sticky and slightly plastic; few faint clay films on faces of peds; strongly acid; clear smooth boundary.

Btg1—21 to 35 inches; light brownish gray (10YR 6/2) silty clay loam; many coarse faint pale brown (10YR 6/3) and common medium distinct strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable, slightly sticky and slightly plastic; few faint clay films on faces of peds; strongly acid; gradual smooth boundary.

Btg2—35 to 47 inches; light brownish gray (10YR 6/2) silt loam; common medium distinct dark yellowish brown (10YR 4/6) and few fine distinct strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable; few faint clay films on faces of peds; common dark manganese stains and nodules; medium acid; gradual smooth boundary.

C1—47 to 63 inches; light olive brown (2.5Y 5/4) silt loam; common fine distinct strong brown (7.5YR 5/8) and few medium distinct light brownish gray (10YR 6/2) mottles; massive; friable; medium acid; gradual smooth boundary.

C2—63 to 80 inches; yellowish brown (10YR 5/6) silt loam; few fine distinct brownish yellow (10YR 6/8) and common fine distinct light brownish gray (10YR 6/2) mottles; massive; friable; slightly acid.

The thickness of the solum ranges from 34 to 60 inches. Reaction ranges from strongly acid to slightly acid in the upper part of the solum and from medium acid to neutral in the lower part of the Bt horizon and in the C horizon.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. The E horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 3. It is silt or silt loam.

The Bt horizon has hue of 10YR and value and chroma of 4 to 6. It has few to many mottles with chroma of 2 or less. It is silt loam or silty clay loam.

The Btg horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 or less. It has mottles in shades of brown or yellow. It is silt loam or silty clay loam.

The C horizon and the BC horizon, if it occurs, have hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 to 6. They have mottles in shades of brown or yellow. In some pedons these horizons are mottled and do not have a dominant matrix color. They are silt loam.

Collins Series

The Collins series consists of moderately well drained soils that formed in alluvium in flood plains. Slopes range from 0 to 2 percent.

Collins soils are geographically associated with Falaya, Waverly, and Arkabutla soils. Falaya soils are in the broader, slightly lower areas on flood plains and are somewhat poorly drained. Waverly soils are on the lowest parts of flood plains and are poorly drained. Arkabutla soils are in the slightly lower positions on flood plains and are somewhat poorly drained. They have more clay in the control section than the Collins soils.

Typical pedon of Collins silt loam, occasionally flooded, 2.0 miles southwest of Trenton, 1.3 miles southwest of the intersection of Tennessee Highway 54 and U.S. Highway 45W, 0.6 mile south of the intersection of Tennessee Highway 54 and County Road 1584, and 428 feet east of County Road 1584, in a field:

Ap—0 to 8 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium granular structure; very friable; common fine roots; slightly acid; clear smooth boundary.

C1—8 to 25 inches; yellowish brown (10YR 5/4) silt loam; few fine distinct light brownish gray (10YR 6/2) mottles; massive with bedding planes and thin horizontal strata; friable; few fine roots; few dark manganese stains; strongly acid; clear smooth boundary.

C2—25 to 37 inches; yellowish brown (10YR 5/4) silt loam; common medium distinct light brownish gray (10YR 6/2) mottles; massive with bedding planes and thin horizontal strata; friable; common manganese stains, nodules, and concretions; very strongly acid; clear smooth boundary.

Cg—37 to 62 inches; light gray (10YR 7/2) silt loam; common medium distinct yellowish brown (10YR 5/4) and few fine distinct strong brown (7.5YR 5/6) mottles; massive; friable; common manganese stains, nodules, and concretions; very strongly acid.

Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. It is dominantly silt loam, but in a few pedons it is loam or fine sandy loam.

The C horizon has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 3 or 4. It has few or common mottles in shades of gray. The Cg horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 2 or less. It has few or common mottles in shades of brown.

Falaya Series

The Falaya series consists of somewhat poorly drained soils that formed in alluvium on flood plains. Slopes range from 0 to 2 percent.

Falaya soils are geographically associated with Collins, Arkabutla, Rosebloom, and Waverly soils. Collins soils are in the slightly higher positions on flood plains and are moderately well drained. Arkabutla soils are in positions on flood plains similar to those of the Falaya soils and are somewhat poorly drained. Arkabutla and Rosebloom soils have more clay in the control section than the Falaya soils. Rosebloom and Waverly soils are in the slightly lower positions on flood plains and are poorly drained.

Typical pedon of Falaya silt loam, frequently flooded, 5.5 miles west of Kenton, 3.8 miles north of the intersection of Baseline Road and Tennessee Highway 105, about 0.5 mile southwest of the intersection of Baseline Road and Tom Rowden Road, 150 feet north of Tom Rowden Road, in a field:

Ap—0 to 5 inches; dark brown (10YR 4/3) silt loam; weak fine granular structure; very friable; neutral; clear smooth boundary.

Bw—5 to 15 inches; brown (10YR 5/3) silt loam; common fine faint light brownish gray (10YR 6/2), common fine distinct dark yellowish brown (10YR 4/4), and few fine prominent strong brown (7.5YR 4/6) mottles; weak fine subangular blocky structure; very friable; common manganese stains; strongly acid; clear smooth boundary.

Cg1—15 to 32 inches; light brownish gray (10YR 6/2) silt loam; common medium distinct dark yellowish brown (10YR 4/4) and common fine faint brown (10YR 5/3) mottles; massive; very friable; many manganese stains; strongly acid; gradual wavy boundary.

Cg2—32 to 42 inches; light brownish gray (10YR 6/2) silt loam; few fine distinct dark grayish brown (10YR 4/2), few fine distinct brownish yellow (10YR 6/8), and few medium distinct light yellowish brown (10YR 6/4) mottles; massive; friable; few fine manganese stains; strongly acid; gradual wavy boundary.

Cg3—42 to 55 inches; gray (10YR 6/1) silt loam; common medium distinct greenish gray (5GY 6/1), common fine prominent brownish yellow (10YR 6/6), and few fine faint grayish brown (10YR 5/2) mottles;

massive; friable; few manganese stains; strongly acid; gradual wavy boundary.

Cg4—55 to 60 inches; gray (10YR 6/1) silt loam; common medium prominent dark yellowish brown (10YR 4/6) and common fine prominent brownish yellow (10YR 6/8) mottles; massive; friable; few fine manganese stains and concretions; very strongly acid.

Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed.

The Ap horizon has hue of 10YR, value of 4 or 5 and chroma of 2 or 3.

The Bw horizon has hue of 10YR, value of 4 or 5, and chroma of 3. It has mottles in shades of gray or brown.

The Cg horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. It has few to many mottles in shades of brown, yellow, or gray.

Grenada Series

The Grenada series consists of moderately well drained soils that formed in deposits of loess on uplands and stream terraces. These soils have a fragipan. Slopes range from 2 to 5 percent.

Grenada soils are geographically associated with Loring, Calloway, and Providence soils. Loring and Providence soils do not have a leached, gray layer above the fragipan. Loring soils are in positions on the landscape similar to those of the Grenada soils or are on the slightly higher ridgetops and side slopes. Providence soils are on the steeper side slopes in the eastern part of the county. Calloway soils are in depressions and are somewhat poorly drained.

Typical pedon of Grenada silt loam, 2 to 5 percent slopes, eroded, 4.8 miles southwest of Trenton, 3.0 miles southwest of the intersection of Tennessee Highway 104 and Old Eaton Road, 0.2 mile south of the intersection of Old Eaton Road and King Loop Road, 100 feet west of King Loop Road, in a field:

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

Bw—6 to 18 inches; yellowish brown (10YR 5/6) silt loam; common medium distinct light yellowish brown (10YR 6/4) and common fine distinct strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable; few faint silt coatings on faces of peds; common manganese stains and nodules; medium acid; clear wavy boundary.

E—18 to 24 inches; light gray (10YR 7/2) silt loam; common medium distinct pale brown (10YR 6/3) and common fine distinct strong brown (7.5YR 5/8) mottles; weak fine granular structure; very friable; common manganese stains and nodules; strongly acid; clear irregular boundary.

Btx1—24 to 46 inches; dark yellowish brown (10YR 4/6) silt loam; many coarse distinct light gray (10YR 7/2) and common medium distinct yellowish brown (10YR 5/8) mottles; moderate very coarse prismatic structure parting to weak medium subangular blocky; firm; compact and brittle; many prominent clay films along faces of prisms; tongues of light gray silt between prisms and along vertical seams; common manganese stains and nodules; vertical seams 4 to 5 inches apart; strongly acid; gradual wavy boundary.

Btx2—46 to 60 inches; yellowish brown (10YR 5/6) silt loam; common medium distinct strong brown (7.5YR 5/8) and common medium distinct light gray (10YR 7/2) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm; compact and brittle; tongues of light gray silt and clay films between faces of prisms and along vertical seams; vertical seams 6 to 12 inches apart; strongly acid.

The solum is more than 60 inches thick. Reaction ranges from very strongly acid to medium acid throughout the profile unless the surface layer has been limed. Depth to the fragipan ranges from 17 to 35 inches.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4.

The Bw horizon has hue of 10YR and value and chroma of 4 to 6. It is silt loam or silty clay loam.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 2. It has mottles in shades of brown. It is silt or silt loam.

The Btx horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 6. It has mottles in shades of brown or gray, or it is mottled with these colors and has no dominant matrix color. It has tongues of the E horizon along the faces of prisms and in root channels. The texture is silt loam or silty clay loam.

Lexington Series

The Lexington series consists of well drained soils on uplands. These soils formed in loess and in the underlying loamy coastal plain sediments. Slopes range from 2 to 30 percent.

Lexington soils are geographically associated with Memphis, Loring, Providence, and Smithdale soils. Memphis soils are in landscape positions similar to those of the Lexington soils. They have less than 5 percent fine sand. Loring and Providence soils are on the slightly lower ridges and the steeper side slopes and are moderately well drained. They have a fragipan. Smithdale soils are on steep and very steep side slopes. They have a loamy subsoil.

Typical pedon of Lexington silt loam, 2 to 5 percent slopes, eroded, 3.6 miles east of Medina, 1.7 miles east of the intersection of Tennessee Highway 152 and Cemetery Road, 0.7 mile northeast of the intersection of Tennessee Highway 152 and Latham Chapel Road, 50 feet east of Latham Chapel Road, under a power line in a field:

Ap—0 to 5 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; very friable; few fine roots; neutral; clear smooth boundary.

Bt1—5 to 18 inches; yellowish red (5YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable, slightly sticky and slightly plastic; few fine roots; many prominent clay films on faces of peds; medium acid; clear smooth boundary.

Bt2—18 to 26 inches; strong brown (7.5YR 5/6) silt loam; common medium distinct yellowish red (5YR 5/6) and few medium distinct light yellowish brown (10YR 6/4) mottles; moderate medium subangular blocky structure; friable, slightly sticky and slightly plastic; few fine roots; many faint clay films on faces of peds; few manganese stains on faces of peds; few fine roots; strongly acid; gradual wavy boundary.

Bt3—26 to 36 inches; strong brown (7.5YR 5/6) silt loam; many fine faint silt coatings; moderate coarse subangular blocky structure parting to moderate medium subangular blocky; friable; few faint clay films on faces of peds; an increasing content of sand with increasing depth; strongly acid; gradual wavy boundary.

2Bt4—36 to 61 inches; reddish brown (5YR 4/4) loam; common medium distinct strong brown (7.5YR 4/6) and few fine distinct light yellowish brown (10YR 6/4) mottles; moderate coarse subangular blocky structure; friable; few faint clay films on faces of peds; strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid to medium acid throughout the profile unless the surface layer has been limed.

The Ap horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. It is dominantly silt loam. In some severely eroded areas, however, it is silty clay loam.

The Bt horizon has hue of 10YR to 5YR, value of 4 or 5, and chroma of 4 to 6. It has mottles in shades of red, yellow, or brown. It is silt loam or silty clay loam.

The 2Bt horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. It has mottles in shades of red or brown. It is sandy loam, fine sandy loam, sandy clay loam, or loam.

Loring Series

The Loring series consists of moderately well drained soils that formed in deposits of loess on uplands. These soils have a fragipan. Slopes range from 2 to 20 percent.

Loring soils are geographically associated with Memphis, Lexington, Providence, Grenada, and Calloway soils. Memphis and Lexington soils are on the slightly higher ridgetops and are well drained. They do not have a fragipan. Providence soils are in positions on the landscape similar to those of the Loring soils. They are characterized by a constant increase in content of sand within 48 inches of the surface. Grenada and Calloway soils are on gently sloping ridges and in depressions in the slightly lower areas. They have a leached, gray layer above the fragipan. Also, Calloway soils are somewhat poorly drained.

Typical pedon of Loring silt loam, 2 to 5 percent slopes, eroded, 2.3 miles northeast of Yorkville, 0.9 mile east of the intersection of Baseline Road and Jack Ladd Road, 0.4 mile west of the intersection of Kay Road and Jack Ladd Road, and 50 feet north of Jack Ladd Road, in a field:

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

Bt1—8 to 16 inches; dark yellowish brown (10YR 4/4) silt loam; common medium distinct light yellowish brown (10YR 6/4) mottles; moderate medium subangular blocky structure; friable; few fine roots; few manganese concretions; many prominent clay films on faces of peds; strongly acid; clear smooth boundary.

Bt2—16 to 24 inches; dark yellowish brown (10YR 4/4) silt loam; many medium distinct light yellowish brown (10YR 6/4), few fine distinct very pale brown (10YR 7/3), and common fine distinct brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; friable; many faint clay films on faces of peds; few manganese concretions; strongly acid; abrupt smooth boundary.

Btx1—24 to 35 inches; dark yellowish brown (10YR 4/4) silt loam; common medium distinct light gray (10YR 7/2) and few fine distinct strong brown (7.5YR 5/8) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm; compact and brittle; vertical seams 4 to 9 inches apart; light gray (10YR 7/1) silt coatings and clay films following vertical seams and on faces of prisms; strongly acid; gradual wavy boundary.

Btx2—35 to 55 inches; yellowish brown (10YR 5/4) silt loam; few medium faint dark yellowish brown (10YR 4/4), common medium distinct light gray (10YR 7/2), and few fine distinct strong brown (7.5YR 5/8) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; friable; compact and brittle; vertical seams 4 to 9 inches apart; light gray (10YR 7/1) silt coatings and clay films following vertical seams and on faces of prisms; common manganese stains, nodules, and concretions; strongly acid; gradual wavy boundary.

BC—55 to 60 inches; yellowish brown (10YR 5/6) silt loam; many medium distinct light gray (10YR 7/2) and common medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; strongly acid.

The thickness of the solum ranges from 45 to more than 60 inches. Reaction ranges from medium acid to very strongly acid throughout the profile unless the surface layer has been limed. Depth to the fragipan ranges from 14 to 30 inches.

The Ap horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It has mottles in shades of yellow or brown. It is silt loam or silty clay loam.

The Btx horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It has mottles in shades of yellow, brown, or gray. In some pedons this horizon is mottled yellow, brown, and gray and has no dominant matrix color. It is silt loam or silty clay loam.

The BC horizon and the C horizon, if it occurs, have colors similar to those in the lower part of the Btx horizon. They are silt loam.

Memphis Series

The Memphis series consists of well drained soils that formed in thick deposits of loess on uplands and terraces. Slopes range from 0 to 8 percent.

Memphis soils are geographically associated with Loring, Grenada, and Lexington soils. Grenada and Loring soils are in the lower positions on the landscape and are moderately well drained. They have a fragipan. Lexington soils are in positions on the landscape similar to those of the Memphis soils. They have more than 5 percent sand.

Typical pedon of Memphis silt loam, 2 to 5 percent slopes, eroded, in Yorkville, 200 feet east of the intersection of Tennessee Highway 77 and Baseline Road, 300 feet southeast of a water tower, and 20 feet northeast of a red building:

Ap—0 to 5 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium granular structure; very friable; medium acid; clear smooth boundary.

Bt1—5 to 24 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium subangular blocky structure; friable; common pores and voids; many prominent clay films on faces of peds; few manganese stains; strongly acid; clear smooth boundary.

Bt2—24 to 38 inches; strong brown (7.5YR 4/6) silt loam; moderate medium subangular blocky structure; friable; many pores and voids; few faint clay films on faces of peds; common manganese stains; very strongly acid; clear smooth boundary.

Bt3—38 to 78 inches; yellowish brown (10YR 5/6) silt loam; weak medium subangular blocky structure; friable; few pores and voids; few faint clay films on faces of peds; few manganese stains; strongly acid.

The thickness of the solum ranges from 35 to more than 60 inches. Reaction ranges from medium acid to very strongly acid throughout the profile unless the surface layer has been limed.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. The Bt horizon is hue 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. In some pedons it has gray or pale brown silt coatings on faces of peds. It is silt loam or silty clay loam.

Providence Series

The Providence series consists of moderately well drained soils on uplands and stream terraces. These soils formed in moderately thick deposits of loess and in the underlying loamy coastal plain sediments. They have a fragipan. Slopes range from 2 to 15 percent.

Providence soils are geographically associated with Lexington, Loring, Grenada, and Smithdale soils. Lexington and Smithdale soils do not have a fragipan. Lexington soils are on in the higher positions on the landscape and are well drained. Smithdale soils are on steep slopes. Loring and Grenada soils are in positions on the landscape similar to those of the Providence soils. They do not have more than 15 percent sand within a depth of 48 inches. Also, Grenada soils have a leached, gray layer above the fragipan.

Typical pedon of Providence silt loam, 2 to 5 percent slopes, severely eroded, 1.6 miles north of the intersection of Cades-Atwood Road and Poplar Springs Road, 0.1 mile northeast of the intersection of Poplar Springs Road and Horace Burress Road, 25 feet east of Poplar Springs Road, in a field:

Ap—0 to 3 inches; dark yellowish brown (10YR 4/4) silt loam; common coarse distinct specks of strong brown (7.5YR 4/6) subsoil material; moderate medium granular structure; very friable; few fine and medium roots; medium acid; abrupt smooth boundary.

Bt1—3 to 9 inches; strong brown (7.5YR 4/6) silty clay loam; moderate medium subangular blocky structure; friable, slightly sticky and slightly plastic; few fine roots; many prominent clay films on faces of peds; common manganese nodules and dark stains; strongly acid; clear smooth boundary.

Bt2—9 to 18 inches; strong brown (7.5YR 4/6) silty clay loam; common medium faint strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable, slightly sticky and slightly plastic; few thick faint clay films on faces of peds; few fine roots; strongly acid; clear smooth boundary.

Btx1—18 to 25 inches; dark brown (7.5YR 4/4) silty clay loam; common medium distinct dark yellowish brown (10YR 4/6) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm; compact and brittle; pinkish gray (7.5YR 6/2) and pale brown (10YR 6/3) silt coatings and clay films on the faces of prisms and following vertical seams; vertical seams 4 to 5 inches apart; few fine roots following vertical seams; strongly acid; clear smooth boundary.

2Btx2—25 to 36 inches; strong brown (7.5YR 4/6) silt loam; few fine distinct yellowish brown (10YR 5/6), strong brown (7.5YR 5/8), and reddish brown (5YR 5/4) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm; compact and brittle; pinkish gray (7.5YR 7/2) silt coatings and few faint clay films on faces of prisms and in vertical seams; vertical seams 4 to 6 inches apart; few fine roots following vertical seams; noticeable increase in content of sand compared to the horizon directly above; strongly acid; gradual wavy boundary.

2Btx3—36 to 52 inches; strong brown (7.5YR 4/6) fine sandy loam; few medium distinct strong brown (7.5YR 5/8) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm; compact and brittle; pinkish gray (7.5YR 7/2) silt coatings and few faint clay films on faces of prisms and in vertical seams; vertical seams ½ inch to 2 inches wide and 6 to 12 inches apart; strongly acid; gradual wavy boundary.

2Btx4—52 to 62 inches; strong brown (7.5YR 5/6) sandy loam; common medium distinct strong brown (7.5YR 5/8) and few fine distinct reddish brown (5YR 4/4) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm; compact and brittle; pinkish gray (7.5YR 6/2) silt coatings and few faint clay films on faces of prisms and in vertical seams; vertical seams ½ inch to 2 inches wide and 6 to 12 inches apart; strongly acid; gradual wavy boundary.

2Bt—62 to 75 inches; red (2.5YR 4/6) sandy clay loam; few fine distinct red (2.5YR 5/8), light brown (7.5YR 6/4), and reddish yellow (7.5YR 6/6) mottles; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; medium acid.

The solum is more than 60 inches thick. Reaction ranges from medium acid to very strongly acid throughout the profile unless the surface layer has been limed. Depth to the fragipan ranges from 18 to 30 inches.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 6.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8. It is silt loam or silty clay loam.

The Btx and 2Btx horizons have hue of 10YR to 5YR, value of 4 or 5, and chroma of 6 to 8. They have mottles in shades of gray, brown, or red. Tongues of gray silt are common along vertical seams. The Btx horizon is silt loam or silty clay loam. The 2Btx horizon is dominantly loam, sandy clay loam, fine sandy loam, or sandy loam, but the upper part is silt loam or silty clay loam that has 5 to 15 percent sand.

The 2Bt horizon, if it occurs, has colors in shades of red, brown, and yellow. It is sandy loam or sandy clay loam.

Rosebloom Series

The Rosebloom series consists of poorly drained soils that formed in silty alluvium on flood plains and in depressions. Slopes range from 0 to 2 percent.

Rosebloom soils are geographically associated with Arkabutla, Falaya, and Collins soils. Arkabutla soils are in the slightly higher areas on the flood plains along the Forked Deer and Obion Rivers and are somewhat poorly drained. Falaya and Collins soils are in the higher positions on flood plains near stream channels and tributaries. They have less clay in the control section than the Rosebloom soils.

Typical pedon of Rosebloom silt loam, in an area of Rosebloom and Waverly silt loams, frequently flooded, 1.5 miles southeast of Eaton, 1.0 mile south of the intersection of County Road 1592 and County Road 854, and 800 feet west of the intersection of Eaton-Brazil Road and Buck Creek:

Ap—0 to 4 inches; brown (10YR 4/3) silt loam; common fine prominent yellowish brown (10YR 5/8) and few fine distinct grayish brown (10YR 5/2) mottles; weak fine granular structure; very friable; many fine roots; common iron and manganese stains; medium acid; abrupt smooth boundary.

Bg—4 to 14 inches; light brownish gray (10YR 6/2) silty clay loam; common medium prominent yellowish red (5YR 5/8), common fine distinct strong brown (7.5YR 4/6), and common fine faint pale brown (10YR 6/3) mottles; moderate medium subangular blocky structure; friable; many fine roots; few iron and manganese stains; strongly acid; gradual wavy boundary.

Cg1—14 to 36 inches; gray (5Y 6/1) silty clay loam; common medium distinct yellowish brown (10YR 5/4) and common fine prominent yellowish red (5YR 5/8) mottles; massive; friable; few fine roots; strongly acid; gradual wavy boundary.

Cg2—36 to 43 inches; gray (5Y 5/1) silty clay loam; few fine faint greenish gray (5BG 6/1) and common fine distinct yellowish brown (10YR 5/8) and light gray (10YR 7/1) mottles; massive; friable; few fine roots; common manganese stains; strongly acid; gradual wavy boundary.

Cg3—43 to 60 inches; gray (5Y 5/1) silt loam; common fine distinct greenish gray (BG 5/1) and few fine distinct reddish yellow (7.5YR 6/8) mottles; massive; friable; strongly acid.

Reaction generally is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed. In some pedons it is medium acid to neutral below a depth of 40 inches.

The Ap horizon has hue 10YR or 2.5Y, value 4 to 6, and chroma of 1 to 3. It is silt loam or silty clay loam.

The Bg horizon has hue of 10YR to 5Y. It has value of 6 or 7 and chroma of 1 or 2 or value of 4 or 5 and chroma of 1. The Cg horizon has hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 or 2. The Bg and Cg horizons have mottles in shades of brown, yellow, or red. In some pedons they have gleyed mottles. They are silty clay loam or silt loam.

Routon Series

The Routon series consists of poorly drained soils that formed in loess in upland depressions and on stream terraces. Slopes range from 0 to 3 percent.

Routon soils are geographically associated with Calloway, Center, and Grenada soils. Calloway and Grenada soils have a fragipan. Calloway soils are on the slightly higher benches of stream terraces near the uplands and are somewhat poorly drained. Grenada soils are on gently sloping ridges on stream terraces and are moderately well drained. Center soils are on the slightly higher benches of stream terraces near stream channels and are somewhat poorly drained.

Typical pedon of Routon silt loam, 4.0 miles southwest of Dyer, 3.0 miles east of the intersection of County Road 1594 and County Road 243, about 1.0 mile west of the intersection of County Road 1549 and County Road 1596, and 300 feet southwest of the intersection of County Road 1594 and Horseshoe Loop Road, in a field:

Ap—0 to 7 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many manganese concretions; medium acid; clear smooth boundary.

Eg—7 to 18 inches; gray (10YR 6/1) silt; moderate fine granular structure; very friable; very strongly acid; clear smooth boundary.

Btg1—18 to 33 inches; gray (10YR 6/1) silt loam; common fine distinct yellowish brown (10YR 5/8) and common medium faint pale brown (10YR 6/3) mottles; weak coarse subangular blocky structure parting to weak medium subangular blocky; friable; few faint clay films on faces of peds; strongly acid; gradual smooth boundary.

Btg2—33 to 50 inches; grayish brown (10YR 5/2) silty clay loam; common medium faint gray (10YR 5/1) and few fine distinct dark yellowish brown (10YR 4/6) mottles; moderate medium subangular blocky structure; friable, slightly sticky and slightly plastic; few faint clay films on faces of peds; many manganese stains; slightly acid; gradual wavy boundary.

Btg3—50 to 64 inches; grayish brown (2.5Y 5/2) silt loam; few medium prominent strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable; few faint clay films on faces of peds; many manganese stains; slightly acid; gradual wavy boundary.

Cg—64 to 80 inches; grayish brown (2.5Y 5/2) silt loam; common coarse prominent strong brown (7.5YR 5/8) mottles; massive; friable; common fine manganese nodules and concretions; slightly acid.

The thickness of the solum ranges from 45 to more than 60 inches. Reaction ranges from very strongly acid to slightly acid in the solum and from strongly acid to neutral in the C horizon.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. The Eg horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. It is silt loam or silt.

The Btg horizon has hue of 10YR or 2.5Y, value of 5 or 6, chroma of 1 or 2. It has mottles in shades of brown or yellow. It is silty clay loam or silt loam.

The BCg and Cg horizons, if they occur, have colors in shades of gray and brown. They are silt loam.

Smithdale Series

The Smithdale series consists of well drained soils on uplands. These soils formed in coastal plain sediments. Slopes range from 12 to 30 percent.

Smithdale soils are geographically associated with Lexington, Loring, and Providence soils. Lexington soils are on smooth ridgetops and in scattered small areas on side slopes. They are fine-silty in the upper part of the solum. Loring and Providence soils have a fragipan. They are moderately well drained. Loring soils are on smooth ridgetops, and Providence soils are on narrow ridges.

Typical pedon of Smithdale sandy loam, in an area of Lexington, Smithdale, and Providence soils, 12 to 30 percent slopes, severely eroded, 2.5 miles east of Gibson, 2.0 miles southwest of the intersection of Tennessee Highway 76 and Wilbur Nelson Road, 1.5 miles east of White Rose Cemetery, and 75 feet southeast of White Rose Church, in an idle pasture:

Ap—0 to 3 inches; dark yellowish brown (10YR 4/4) sandy loam; common medium distinct specks of yellowish red (5YR 4/6) subsoil material; weak medium granular structure; very friable; strongly acid; abrupt smooth boundary.

Bt1—3 to 22 inches; red (2.5YR 4/6) sandy clay loam; common medium distinct yellowish red (5YR 5/8) mottles; weak medium subangular blocky structure; friable; few faint clay films on faces of peds; strongly acid; abrupt smooth boundary.

Bt2—22 to 43 inches; red (2.5YR 4/8) sandy loam; weak medium subangular blocky structure; friable; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt3—43 to 66 inches; red (2.5YR 4/8) sandy loam; common medium distinct yellowish red (5YR 4/6) mottles; weak medium subangular blocky structure; friable; few faint clay films on faces of peds; strongly acid.

The solum is more than 60 inches thick. Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed.

The Ap horizon is hue of 10YR, value of 4 or 5, and chroma of 2 to 6. Some pedons have a thin A horizon, which has hue of 10YR or 7.5YR, value of 3 or 4, and chroma of 1 or 2. In some severely eroded areas, colors are in shades of brown or yellowish red. The texture is sandy loam or fine sandy loam.

The E horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 2 to 4. It is fine sandy loam, sandy loam, or loamy sand. Some pedons have a BA or BE horizon, which has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. The range in texture is the same as that of the E horizon.

The Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 to 8. In some pedons it has few to many mottles in shades of red or brown. It is sandy clay loam, sandy loam, or loam.

Waverly Series

The Waverly series consists of poorly drained soils that formed in alluvium on flood plains. Slopes range from 0 to 2 percent.

Waverly soils are geographically associated with and are commonly adjacent to Rosebloom, Falaya, and Collins soils. Rosebloom soils are in positions on flood plains similar to those of the Waverly soils. They have more clay in the control section than the Waverly soils. Falaya soils are on the slightly higher flood plains and are somewhat poorly drained. Collins soils are on the highest parts of the flood plains and are moderately well drained.

Typical pedon of Waverly silt loam, in an area of Rosebloom and Waverly silt loams, frequently flooded, 0.5 mile east of Trenton, 500 feet south of the intersection of U.S. Highway 45 Bypass and Tennessee Highway 104, and 300 feet west of U.S. Highway 45 Bypass, in a pasture:

Ap—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; very friable; common fine and medium roots; few iron concretions; medium acid; clear wavy boundary.

Bg—4 to 29 inches; light brownish gray (10YR 6/2) silt loam; few medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; common fine and medium roots; common wormcasts; common iron and manganese stains; strongly acid; clear smooth boundary.

Cg1—29 to 45 inches; gray (10YR 6/1) silt loam; common fine distinct yellowish brown (10YR 5/6) mottles; massive; friable; few fine roots; common iron and manganese nodules and concretions; strongly acid; clear smooth boundary.

Cg2—45 to 60 inches; gray (10YR 6/1) silt loam; massive; friable; few fine roots; strongly acid.

The thickness of the solum ranges from 28 to 50 inches. Reaction is strongly acid or very strongly acid throughout the profile unless the surface layer has been limed. The number of black and brown concretions ranges from few to many.

The Ap horizon has hue of 10YR, value of 4 to 6, and chroma of 1 to 3. It is silt loam or silt.

The Bg horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2. It has few or common mottles in shades of yellow or brown. It is silt loam or silt.

The Cg horizon has colors similar to those of the Bg horizon. It is silt loam or silt. Some pedons have a buried layer below a depth of 20 inches. This layer is loam, sandy loam, or loamy sand.

Formation of the Soils

The main factors of soil formation are parent material, time, climate, topography, and living organisms. The combined effects of these factors determine the characteristics and properties of soils.

Parent Material

Parent material is the unconsolidated mass in which a soil forms. The character of this mass affects the kind of profile that develops and the degree of development. The three kinds of parent material in Gibson County are loess (windblown silt), loamy coastal plain sediments, and recent alluvium.

The loess blankets most of the uplands in the county. The thickness of the loess ranges from more than 20 feet in the western part of the county to less than 4 feet along the eastern edge. This silty material is believed to be of glacial origin. The well developed Memphis, Loring, Grenada, Calloway, Center, and Routon soils formed in this material. The upper part of Lexington and Providence soils formed in loess, and the lower part formed in loamy coastal plain sediments. Smithdale soils, which are on steep side slopes in the eastern part of the county, formed in loamy coastal plain sediments. They are characterized by less profile development than the soils that formed in loess on uplands. The least developed soils in the county formed in recent alluvium deposited by streams or washed from uplands. Rosebloom, Arkabutla, Collins, and Falaya soils formed in alluvium.

Time

The age of soils varies considerably. The length of time that a soil has been forming is generally reflected in the degree of profile development. Old soils generally have better defined horizons than young soils.

The effects of time on soil formation are more apparent in the eastern part of the county than in the central and western parts. Lexington and Providence soils, which are the dominant soils on gently sloping ridges and the steeper side slopes in the eastern part of the county, exhibit significant profile development. The central and western parts of the county are characterized by the slightly younger Memphis, Loring, and Grenada soils. Soils of intermediate age, such as Routon and Center soils, formed in silty material deposited on stream terraces. The youngest soils are the Rosebloom, Arkabutla, Collins, and Falaya soils on flood plains. These soils formed in recent alluvium deposited by streams or washed from uplands. They have not been in place long enough for the development of distinct horizons and are still receiving new material annually.

Climate

Climate affects the physical, chemical, and biological relationships in the soil, primarily through the influence of precipitation and temperature. These relationships significantly influence the rates of weathering, erosion, and organic matter decomposition. The leaching of nutrients in a soil is related to the amount of rainfall and its movement through the soil. The effects of climate control the kinds of plants and animals on and in the soil. Temperature influences the kind and growth of organisms and the speed of chemical and physical reactions in the soil.

Gibson County has a warm, humid climate characteristic of the southeastern part of the United States. The climate varies so little within the county that it has not caused differences among the soils. The mild temperatures and abundant rainfall cause an intensive leaching of soluble and colloidal material and a rapid decomposition of organic matter. As it moves downward in the soil, some of the translocated material accumulates in the lower layers and some moves out of the soils. Generally, the older, well developed soils in the county are strongly weathered, highly leached, acid, and low in fertility.

Topography

Topography, including relief, slope, landform, and aspect, influences or modifies the effects of the other soil-forming factors. The gradient, shape, and length of slopes directly influence the rates of water infiltration and runoff. Areas where the runoff rate is most rapid generally are more eroded than other areas. The steeper slopes in many areas of the county have been truncated by gullies. Gullying in these areas has removed the soils that formed in deposits of loess, exposing the ancient loamy coastal plain sediments.

Water tends to concentrate on concave slopes. More of the water infiltrates the less sloping soils, and less infiltrates the steeper soils. In many areas of the county, free water moving downward through the soils is trapped or perched above a relatively impermeable fragipan, where it stands for days or weeks or in places moves away laterally.

Soils on flood plains are periodically covered with fresh sediments washed from the adjacent uplands or deposited by stream overflow. This repeated deposition results in stratified soils characterized by minimum profile development.

Living Organisms

Plants and large and small animals are active forces of soil formation. Living organisms transfer soil material in many ways. When a tree falls, the roots bring soil material to the surface. Ants and crawfish construct mounds that generally contain material from the subsoil. The moving animals and growing plants blend soil ingredients into a uniform mixture. The plant roots break up stratified sediments.

Living organisms affect the chemical environment within the soil. Air and water can move through old root holes. Decaying plants release nutrients and organic acids. Living roots absorb water and nutrients, raise carbon dioxide levels, lower oxygen levels, and increase acidity.

Living organisms also affect the color of soils. Well drained soils are yellow, red, or brown, and poorly drained soils are mottled in shades of gray. Yellow and brown iron and manganese compounds coat mineral grains. When the soil is saturated and roots and micro-organisms use oxygen faster than it can be replenished, some iron compounds dissolve and are translocated downward. Manganese compounds become indurated, and small nodules and concretions form. The mineral grains turn gray as they lose their coatings, and gray mottles form at the depth of the seasonal high water table.

References

(1) American Association of State Highway and Transportation Officials. 1986. Standard specifications for highway materials and methods of sampling and testing. Ed. 14, 2 vols.

(2) American Society for Testing and Materials. 1993. Standard classification of soils for engineering purposes. ASTM Stand. D 2487.

(3) Culp, Frederick M., and Mrs. Robert E. Ross. 1961. Gibson County—past and present. Gibson Cty. Hist. Soc.

(4) Soil Science Society of America and American Society of Agronomy. 1966. Soil surveys and land use planning.

(5) United States Department of Agriculture. 1951 (being revised). Soil survey manual. U.S. Dep. Agric. Handb. 18.

(6) United States Department of Agriculture. 1961. Land capability classification. U.S. Dep. Agric. Handb. 210.

(7) United States Department of Agriculture. 1975. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. Soil Conserv. Serv., U.S. Agric. Handb. 436.

Glossary

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

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

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

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

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

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

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

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

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 flooding.

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 that have different characteristics as a result of differences in relief and drainage.

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

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

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

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

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

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

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

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers.

Terms commonly used to describe consistence are—

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

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

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

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

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

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

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

Cemented.—Hard; little affected by moistening.

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

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

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

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

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

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

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

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

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

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

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

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 7.6 centimeters) in diameter. An individual piece is a pebble.

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.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is, in part, a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as accumulation of clay, sesquioxides, humus, or a combination of these; prismatic or blocky structure; redder or browner colors than those in the A horizon; or a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Arabic numeral 2 precedes the letter C.

R layer.—Consolidated rock (unweathered bedrock) beneath the soil. The bedrock commonly underlies a C horizon but can be directly below an A or a B horizon.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

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

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

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:

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

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

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

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

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan.*

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water to move through the profile. Permeability is measured as the number of inches per hour that water moves through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

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 semisolid to plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of the acidity or alkalinity of a soil expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Rill. A steep-sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Rooting depth (in tables). A shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Seepage (in tables). The movement of water through the soil adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the substratum. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil is generally silty or clayey, is slippery when wet, and is low in productivity.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the substratum. The living roots and plant and animal activities are largely confined to the solum.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to soil blowing and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from soil blowing and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in organic matter content than the overlying surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Terrace. An embankment, or ridge, constructed on the contour or at a slight angle to the contour across sloping soils. The terrace intercepts surface runoff, so that water soaks into the soil or flows slowly to a prepared outlet.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Weathering. All physical and chemical changes produced by atmospheric agents in rocks or other deposits at or near the earth's surface. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1951-84 at Milan, Tennessee)

Month	Temperature						Precipitation				
	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*	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-----	45.0	25.7	35.4	72	-2	27	4.46	1.70	5.92	8	3.6
February----	49.8	29.0	39.4	76	3	43	4.34	2.26	5.54	7	3.2
March-------	59.1	37.7	48.4	81	18	117	5.52	2.84	7.61	9	1.7
April-------	70.4	47.7	59.1	87	28	286	5.18	2.81	6.73	9	.1
May---------	79.0	56.2	67.6	91	37	546	5.47	2.29	7.94	8	.0
June--------	86.4	64.1	75.3	97	48	759	4.26	1.91	6.08	6	.0
July--------	89.7	67.5	78.6	98	53	887	4.02	1.97	5.78	6	.0
August------	89.1	65.2	77.2	99	51	843	3.65	1.13	5.54	5	.0
September---	82.9	58.1	70.5	96	40	615	4.08	1.32	6.23	6	.0
October-----	72.8	45.5	59.2	89	26	300	2.97	1.13	4.41	5	.0
November----	59.7	36.7	48.2	82	16	69	4.60	2.29	6.52	7	.3
December----	49.6	29.8	39.7	74	5	31	5.06	2.01	7.26	8	.9
Yearly:											
Average----	69.5	46.9	58.2	---	---	---	---	---	---	---	---
Extreme----	---	---	---	100	-5	---	---	---	---	---	---
Total------	---	---	---	---	---	4,523	53.61	46.35	62.05	84	9.8

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1951-84 at Milan, Tennessee)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 7	Apr. 10	Apr. 17
2 years in 10 later than--	Mar. 28	Apr. 4	Apr. 13
5 years in 10 later than--	Mar. 10	Mar. 25	Apr. 6
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 27	Oct. 22	Oct. 14
2 years in 10 earlier than--	Nov. 1	Oct. 26	Oct. 18
5 years in 10 earlier than--	Nov. 10	Nov. 3	Oct. 25

TABLE 3.--GROWING SEASON

(Recorded in the period 1951-84) at Milan, Tennessee)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	216	206	187
8 years in 10	225	211	192
5 years in 10	244	222	202
2 years in 10	263	233	212
1 year in 10	272	239	217

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
Ar	Arkabutla silt loam, frequently flooded	11,882	3.1
CaB2	Calloway silt loam, 1 to 3 percent slopes, eroded	8,786	2.3
Ce	Center silt loam	4,251	1.1
Co	Collins silt loam, occasionally flooded	36,313	9.4
Fa	Falaya silt loam, frequently flooded	30,540	7.9
GrB2	Grenada silt loam, 2 to 5 percent slopes, eroded	12,390	3.2
GrB3	Grenada silt loam, 2 to 5 percent slopes, severely eroded	18,864	4.9
LeB2	Lexington silt loam, 2 to 5 percent slopes, eroded	12,975	3.4
LeC3	Lexington silt loam, 5 to 8 percent slopes, severely eroded	4,945	1.3
LeD3	Lexington silt loam, 8 to 12 percent slopes, severely eroded	1,287	0.3
LME3	Lexington, Smithdale, and Providence soils, 12 to 30 percent slopes, severely eroded	32,764	8.5
LoB2	Loring silt loam, 2 to 5 percent slopes, eroded	17,284	4.5
LoB3	Loring silt loam, 2 to 5 percent slopes, severely eroded	7,831	2.0
LoC3	Loring silt loam, 5 to 8 percent slopes, severely eroded	35,511	9.2
LoD3	Loring silt loam, 8 to 12 percent slopes, severely eroded	10,773	2.8
LoE3	Loring silt loam, 12 to 20 percent slopes, severely eroded	339	*
LuC	Loring-Urban land complex, 2 to 8 percent slopes	3,023	0.8
MeA	Memphis silt loam, 0 to 2 percent slopes	321	*
MeB2	Memphis silt loam, 2 to 5 percent slopes, eroded	13,736	3.6
MeC3	Memphis silt loam, 5 to 8 percent slopes, severely eroded	1,050	0.3
PrB2	Providence silt loam, 2 to 5 percent slopes, eroded	10,527	2.7
PrB3	Providence silt loam, 2 to 5 percent slopes, severely eroded	16,227	4.2
PrC3	Providence silt loam, 5 to 8 percent slopes, severely eroded	20,650	5.3
PrD3	Providence silt loam, 8 to 15 percent slopes, severely eroded	23,132	6.0
Ro	Rosebloom silt loam, ponded	6,925	1.8
RS	Rosebloom and Waverly silt loams, frequently flooded	16,054	4.2
Rt	Routon silt loam	26,457	6.9
Ud	Udorthents, loamy, steep	340	0.1
Ur	Urban land	923	0.2
	Total	386,100	100.0

* Less than 0.1 percent.

TABLE 5.--PRIME FARMLAND

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland)

Map symbol	Soil name
CaB2	Calloway silt loam, 1 to 3 percent slopes, eroded
Ce	Center silt loam
Co	Collins silt loam, occasionally flooded
GrB2	Grenada silt loam, 2 to 5 percent slopes, eroded
LeB2	Lexington silt loam, 2 to 5 percent slopes, eroded
LoB2	Loring silt loam, 2 to 5 percent slopes, eroded
MeA	Memphis silt loam, 0 to 2 percent slopes
MeB2	Memphis silt loam, 2 to 5 percent slopes, eroded
PrB2	Providence silt loam, 2 to 5 percent slopes, eroded

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability	Corn	Soybeans	Cotton lint	Grain sorghum	Alfalfa hay	Tall fescue-ladino	Improved bermuda-grass	Wheat
		Bu	Bu	Lbs	Bu	Tons	AUM*	AUM*	Bu
Ar: Arkabutla	IVw	70	20	---	75	---	---	---	---
CaB2: Calloway	IIe	75	28	600	65	---	7.5	8.0	35
Ce: Center	IIw	90	40	700	75	---	8.0	9.0	40
Co: Collins	IIw	115	40	800	100	3.7	10.0	12.0	45
Fa: Falaya	IVw	90	35	---	85	---	6.5	---	40
GrB2: Grenada	IIe	75	30	600	70	---	7.5	8.0	40
GrB3: Grenada	IIIe	60	20	500	70	---	6.0	7.0	30
LeB2: Lexington	IIe	95	35	750	90	4.5	8.5	10.0	45
LeC3: Lexington	IVe	70	25	550	70	3.7	7.0	8.0	35
LeD3: Lexington	VIe	---	---	---	---	3.2	5.0	6.0	---
LME3**: Lexington, Smithdale, and Providence	VIIe	---	---	---	---	---	4.5	5.5	---
LoB2: Loring	IIe	90	35	700	85	---	7.5	8.5	45
LoB3: Loring	IIIe	75	25	600	75	---	6.5	7.5	35
LoC3: Loring	IVe	60	20	500	70	---	6.0	7.0	30

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Cotton lint	Grain sorghum	Alfalfa hay	Tall fescue-ladino	Improved bermuda-grass	Wheat
		Bu	Bu	Lbs	Bu	Tons	AUM*	AUM*	Bu
LoD3---------------- Loring	VIe	---	---	---	---	---	5.5	6.5	---
LoE3---------------- Loring	VIIe	---	---	---	---	---	5.0	6.0	---
LuC**. Loring-Urban land									
MeA----------------- Memphis	I	110	45	850	100	4.5	8.5	10.5	50
MeB2---------------- Memphis	IIe	100	40	800	95	4.2	8.5	10.0	45
MeC3---------------- Memphis	IVe	75	25	600	80	3.7	7.0	8.0	35
PrB2---------------- Providence	IIe	80	35	700	85	---	7.5	8.5	45
PrB3---------------- Providence	IIIe	65	25	550	75	---	6.5	7.5	40
PrC3---------------- Providence	IVe	55	20	450	70	---	6.0	7.5	25
PrD3---------------- Providence	VIe	---	---	---	---	---	5.0	6.0	---
Ro------------------ Rosebloom	VIw	---	---	---	---	---	---	---	---
RS**---------------- Rosebloom and Waverly	Vw	---	---	---	---	---	5.0	---	---
Rt------------------ Routon	IIIw	65	30	450	75	---	7.0	---	---
Ud. Udorthents									
Ur**. Urban land									

* Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Volume*	Trees to plant
Ar------------- Arkabutla	Slight	Severe	Moderate	Slight	Moderate	Cherrybark oak------	105	57	Cherrybark oak, eastern cottonwood, green ash, water oak, sweetgum, American sycamore.
						Eastern cottonwood--	110	57	
						Green ash-----------	95	57	
						Loblolly pine-------	100	129	
						Sweetgum------------	100	143	
						Water oak-----------	100	100	
CaB2------------ Calloway	Slight	Moderate	Slight	Slight	Moderate	Loblolly pine-------	80	129	Sweetgum, loblolly pine, cherrybark oak, water oak.
						Cherrybark oak------	80	114	
						Shortleaf pine------	70	114	
						Sweetgum------------	80	86	
						Water oak-----------	80	72	
Ce-------------- Center	Slight	Moderate	Slight	Slight	Moderate	Eastern cottonwood--	95	114	Eastern cottonwood, water oak, sweetgum, American sycamore, cherrybark oak.
						Water oak-----------	85	86	
						Sweetgum------------	90	100	
						Yellow-poplar-------	90	86	
						American sycamore---	90	100	
Co-------------- Collins	Slight	Slight	Slight	Slight	Severe	Green ash-----------	95	57	Green ash, eastern cottonwood, cherrybark oak, American sycamore, sweetgum.
						Eastern cottonwood--	115	129	
						Cherrybark oak------	110	57	
Fa-------------- Falaya	Slight	Moderate	Severe	Moderate	Severe	Eastern cottonwood--	100	129	Eastern cottonwood, green ash, cherrybark oak, water oak, sweetgum, yellow-poplar, American sycamore.
						Cherrybark oak------	100	157	
						Nuttall oak---------	110	100	
						Water oak-----------	100	100	
						Loblolly pine-------	90	129	
						Green ash-----------	90	129	
GrB2, GrB3------ Grenada	Slight	Slight	Slight	Moderate	Moderate	Loblolly pine-------	85	114	Water oak, Shumard oak, cherrybark oak, sweetgum, shortleaf pine, loblolly pine, white oak.
						Southern red oak----	80	57	
						Cherrybark oak------	85	100	
						Shortleaf pine------	75	114	
						Sweetgum------------	80	86	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume*	Tree to plant
LeB2------------ Lexington	Slight	Moderate	Slight	Slight	Moderate	Southern red oak----	70	57	Cherrybark oak, yellow-poplar, sweetgum, loblolly pine, shortleaf pine, southern red oak.
						Cherrybark oak------	80	86	
						Loblolly pine-------	80	114	
						Shortleaf pine------	70	114	
						Sweetgum------------	89	100	
						Yellow-poplar-------	90	86	
LeC3, LeD3------ Lexington	Moderate	Moderate	Slight	Slight	Moderate	Southern red oak----	70	57	Cherrybark oak, yellow-poplar, sweetgum, loblolly pine, shortleaf pine, southern red oak.
						Cherrybark oak------	80	100	
						Loblolly pine-------	80	114	
						Shortleaf pine------	70	114	
						Sweetgum------------	89	100	
						Yellow-poplar-------	90	86	
LME3**:									
Lexington------	Severe	Moderate	Moderate	Slight	Moderate	Cherrybark oak------	80	100	Cherrybark oak, yellow-poplar, loblolly pine, shortleaf pine, eastern redcedar.
						Loblolly pine-------	80	114	
						Shortleaf pine------	70	114	
						Yellow-poplar-------	90	86	
Smithdale------	Moderate	Moderate	Slight	Slight	Slight	Loblolly pine-------	80	114	Loblolly pine, eastern redcedar, shortleaf pine.
						Shortleaf pine------	69	114	
Providence-----	Moderate	Slight	Slight	Moderate	Moderate	Loblolly pine-------	84	114	Loblolly pine, sweetgum, yellow-poplar.
						Shortleaf pine------	64	100	
						Sweetgum------------	90	100	
LoB2, LoB3------ Loring	Slight	Moderate	Slight	Slight	Moderate	Southern red oak----	74	57	Yellow-poplar, cherrybark oak, southern red oak, loblolly pine, shortleaf pine.
						Cherrybark oak------	86	100	
						Sweetgum------------	90	100	
						Loblolly pine-------	85	114	
						Water oak-----------	82	72	
LoC3, LoD3------ Loring	Moderate	Moderate	Slight	Slight	Moderate	Southern red oak----	74	57	Yellow-poplar, cherrybark oak, southern red oak, loblolly pine, shortleaf pine.
						Cherrybark oak------	86	100	
						Sweetgum------------	90	100	
						Loblolly pine-------	85	114	
						Water oak-----------	82	72	
LoE3------------ Loring	Severe	Moderate	Moderate	Slight	Moderate	Southern red oak----	74	57	Yellow-poplar, cherrybark oak, southern red oak, loblolly pine, shortleaf pine.
						Cherrybark oak------	86	100	
						Sweetgum------------	90	100	
						Loblolly pine-------	85	114	
						Water oak-----------	82	72	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Management concerns					Potential productivity			Trees to plant
	Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Volume*	
LuC**:									
Loring	Moderate	Moderate	Slight	Slight	Moderate	Southern red oak	74	57	Yellow-poplar, cherrybark oak, southern red oak, loblolly pine, shortleaf pine.
						Cherrybark oak	86	100	
						Sweetgum	90	100	
						Loblolly pine	85	114	
						Water oak	82	72	
Urban land.									
MeA, MeB2, MeC3 Memphis	Slight	Slight	Slight	Slight	Slight	Loblolly pine	90	129	Cherrybark oak, loblolly pine, yellow-poplar, southern red oak, sweetgum, shortleaf pine.
						Cherrybark oak	90	114	
						Sweetgum	90	100	
PrB2, PrB3 Providence	Slight	Slight	Slight	Moderate	Moderate	Loblolly pine	84	114	Loblolly pine, cherrybark oak, shortleaf pine, southern red oak, sweetgum, yellow-poplar.
						Shortleaf pine	64	100	
						Sweetgum	90	100	
PrC3, PrD3 Providence	Moderate	Slight	Slight	Moderate	Moderate	Loblolly pine	84	114	Loblolly pine, cherrybark oak, shortleaf pine, southern red oak, sweetgum, yellow-poplar.
						Shortleaf pine	64	100	
						Sweetgum	90	100	
Ro Rosebloom	Slight	Severe	Severe	Slight	Slight	Baldcypress	80	57	Baldcypress, water tupelo, black willow.
						Water tupelo	---	57	
						Black willow	---	57	
RS**:									
Rosebloom	Slight	Severe	Moderate	Moderate	Severe	Cherrybark oak	95	129	Cherrybark oak, green ash, eastern cottonwood, water oak, willow oak, loblolly pine, sweetgum.
						Green ash	95	57	
						Eastern cottonwood	100	129	
						Water oak	95	86	
						Willow oak	90	86	
						Sweetgum	95	114	
						American sycamore	80	100	

See footnotes at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Management concerns					Potential productivity			Trees to plant
	Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Volume*	
RS**:									
Waverly	Slight	Moderate	Severe	Moderate	Severe	Cherrybark oak	100	143	Cherrybark oak, eastern cottonwood, water oak, willow oak, sweetgum, American sycamore, water tupelo, loblolly pine.
						Eastern cottonwood	105	143	
						Water oak	95	86	
						Willow oak	95	86	
						Sweetgum	100	143	
Rt Routon	Slight	Moderate	Moderate	Slight	Moderate	Cherrybark oak	110	186	Cherrybark oak, eastern cottonwood, American sycamore, white ash, sweetgum.
						Water oak	90	86	
						White oak	80	57	
						Willow oak	90	86	
						Sweetgum	105	157	

* Volume is the yield in cubic feet per acre per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--RECREATIONAL DEVELOPMENT

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

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Ar: Arkabutla	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: wetness, flooding.	Moderate: wetness, flooding.	Severe: flooding.
CaB2: Calloway	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Ce: Center	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Co: Collins	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Slight	Moderate: flooding.
Fa: Falaya	Severe: flooding, wetness.	Moderate: flooding, wetness.	Severe: wetness, flooding.	Moderate: wetness, flooding.	Severe: flooding.
GrB2, GrB3: Grenada	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
LeB2: Lexington	Slight	Slight	Moderate: slope.	Severe: erodes easily.	Slight.
LeC3: Lexington	Slight	Slight	Severe: slope.	Severe: erodes easily.	Slight.
LeD3: Lexington	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
LME3*:					
Lexington	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Providence	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness, slope.
LoB2, LoB3: Loring	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Slight	Slight.
LoC3: Loring	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Slight	Slight.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
LoD3------------------ Loring	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
LoE3------------------ Loring	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
LuC*:					
Loring---------------	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Slight----------	Slight.
Urban land.					
MeA------------------- Memphis	Slight----------	Slight----------	Slight----------	Severe: erodes easily.	Slight.
MeB2------------------ Memphis	Slight----------	Slight----------	Moderate: slope.	Severe: erodes easily.	Slight.
MeC3------------------ Memphis	Slight----------	Slight----------	Severe: slope.	Severe: erodes easily.	Slight.
PrB2, PrB3------------ Providence	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: erodes easily.	Moderate: wetness.
PrC3------------------ Providence	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness.
PrD3------------------ Providence	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness, slope.
Ro-------------------- Rosebloom	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
RS*:					
Rosebloom------------	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Waverly--------------	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Rt-------------------- Routon	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Ud. Udorthents					
Ur*. Urban land					

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Ar----------------- Arkabutla	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
CaB2--------------- Calloway	Fair	Good	Good	Good	Poor	Poor	Poor	Good	Good	Poor.
Ce----------------- Center	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Co----------------- Collins	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Fa----------------- Falaya	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
GrB2, GrB3--------- Grenada	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LeB2--------------- Lexington	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LeC3, LeD3--------- Lexington	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
LME3*:										
Lexington---------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Smithdale---------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Providence--------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LoB2, LoB3--------- Loring	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LoC3, LoD3--------- Loring	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
LoE3--------------- Loring	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
LuC*:										
Loring------------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Urban land.										
MeA, MeB2---------- Memphis	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MeC3--------------- Memphis	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
PrB2, PrB3--------- Providence	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
PrC3, PrD3--------- Providence	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ro----------------- Rosebloom	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
RS*:										
Rosebloom---------	Poor	Fair	Fair	Fair	Poor	Good	Good	Fair	Fair	Good.
Waverly-----------	Poor	Fair	Fair	Fair	Poor	Good	Fair	Fair	Fair	Fair.
Rt----------------- Routon	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
Ud. Udorthents										
Ur*. Urban land										

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--BUILDING SITE DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Ar: Arkabutla	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, flooding.	Severe: flooding.
CaB2: Calloway	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Moderate: wetness.
Ce: Center	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Moderate: wetness.
Co: Collins	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
Fa: Falaya	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding.
GrB2, GrB3: Grenada	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: low strength.	Moderate: wetness.
LeB2: Lexington	Severe: cutbanks cave.	Slight	Slight	Slight	Severe: low strength.	Slight.
LeC3: Lexington	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Severe: low strength.	Slight.
LeD3: Lexington	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength.	Moderate: slope.
LME3*:						
Lexington	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Providence	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Severe: low strength.	Moderate: wetness, slope.
LoB2, LoB3: Loring	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: low strength.	Slight.
LoC3: Loring	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: low strength.	Slight.
LoD3: Loring	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Severe: low strength.	Moderate: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
LoE3 Loring	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
LuC*:						
Loring	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: low strength.	Slight.
Urban land.						
MeA, MeB2 Memphis	Slight	Slight	Slight	Slight	Severe: low strength.	Slight.
MeC3 Memphis	Slight	Slight	Slight	Moderate: slope.	Severe: low strength.	Slight.
PrB2, PrB3 Providence	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: low strength.	Moderate: wetness.
PrC3 Providence	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: low strength.	Moderate: wetness.
PrD3 Providence	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Severe: low strength.	Moderate: wetness, slope.
Ro Rosebloom	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding, flooding.
RS*:						
Rosebloom	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
Waverly	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
Rt Routon	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
Ud. Udorthents						
Ur*. Urban land						

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Ar------------------ Arkabutla	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
CaB2---------------- Calloway	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Ce------------------ Center	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Co------------------ Collins	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
Fa------------------ Falaya	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
GrB2, GrB3---------- Grenada	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
LeB2, LeC3---------- Lexington	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too clayey.
LeD3---------------- Lexington	Moderate: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too clayey, slope.
LME3*:					
Lexington----------	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
Smithdale----------	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
Providence---------	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Moderate: wetness, slope.	Fair: too clayey, slope, wetness.
LoB2, LoB3, LoC3---- Loring	Severe: wetness, percs slowly.	Moderate: slope.	Moderate: wetness.	Moderate: wetness.	Fair: wetness.
LoD3---------------- Loring	Severe: wetness, percs slowly, slope.	Severe: slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Moderate: wetness, slope.

See footnote at end of table.

TABLE 11.--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
LoE3: Loring	Severe: wetness, percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
LuC*:					
Loring	Severe: wetness, percs slowly.	Moderate: slope.	Moderate: wetness.	Moderate: wetness.	Fair: wetness.
Urban land.					
MeA: Memphis	Slight	Moderate: seepage.	Slight	Slight	Good.
MeB2, MeC3: Memphis	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
PrB2, PrB3, PrC3: Providence	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
PrD3: Providence	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Moderate: wetness, slope.	Fair: too clayey, slope, wetness.
Ro: Rosebloom	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Poor: ponding.
RS*:					
Rosebloom	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Waverly	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Rt: Routon	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Ud. Udorthents					
Ur*. Urban land					

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Ar: Arkabutla	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
CaB2: Calloway	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Ce: Center	Fair: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Co: Collins	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
Fa: Falaya	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
GrB2, GrB3: Grenada	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
LeB2, LeC3: Lexington	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
LeD3: Lexington	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
LME3*:				
Lexington	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Smithdale	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Providence	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
LoB2, LoB3, LoC3: Loring	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
LoD3: Loring	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
LoE3: Loring	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
LuC*:				
Loring	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Urban land.				
MeA, MeB2, MeC3: Memphis	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
PrB2, PrB3, PrC3------ Providence	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
PrD3------------------ Providence	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
Ro-------------------- Rosebloom	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
RS*:				
Rosebloom------------	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Waverly--------------	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Rt-------------------- Routon	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Ud. Udorthents				
Ur*. Urban land				

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--WATER MANAGEMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for pond reservoir areas	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
Ar: Arkabutla	Moderate: seepage.	Flooding	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
CaB2: Calloway	Moderate: seepage.	Percs slowly	Wetness, percs slowly.	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, rooting depth.
Ce: Center	Slight	Favorable	Wetness, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
Co: Collins	Moderate: seepage.	Flooding	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Erodes easily.
Fa: Falaya	Moderate: seepage.	Flooding, poor outlets.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily.
GrB2, GrB3: Grenada	Moderate: seepage, slope.	Percs slowly, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, rooting depth.
LeB2, LeC3: Lexington	Severe: seepage.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
LeD3: Lexington	Severe: seepage, slope.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
LME3*:					
Lexington	Severe: seepage, slope.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Smithdale	Severe: seepage, slope.	Deep to water	Slope	Slope	Slope.
Providence	Severe: slope.	Slope	Slope, wetness, rooting depth.	Slope, erodes easily, wetness.	Slope, erodes easily, rooting depth.
LoB2, LoB3, LoC3: Loring	Moderate: seepage, slope.	Slope, percs slowly.	Percs slowly, rooting depth, slope.	Erodes easily, wetness, rooting depth.	Erodes easily, rooting depth.
LoD3, LoE3: Loring	Severe: slope.	Slope, percs slowly.	Percs slowly, rooting depth, slope.	Slope, erodes easily, wetness.	Slope, erodes easily, rooting depth.
LuC*:					
Loring	Moderate: seepage, slope.	Slope, percs slowly.	Percs slowly, rooting depth, slope.	Erodes easily, wetness, rooting depth.	Erodes easily, rooting depth.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for pond reservoir areas	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
LuC*: Urban land.					
MeA---------------Memphis	Moderate: seepage.	Deep to water	Erodes easily	Erodes easily	Erodes easily.
MeB2, MeC3--------Memphis	Moderate: seepage, slope.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
PrB2, PrB3, PrC3--Providence	Moderate: seepage, slope.	Slope----------	Slope, wetness, rooting depth.	Erodes easily, wetness.	Erodes easily, rooting depth.
PrD3--------------Providence	Severe: slope.	Slope----------	Slope, wetness, rooting depth.	Slope, erodes easily, wetness.	Slope, erodes easily, rooting depth.
Ro----------------Rosebloom	Moderate: seepage.	Ponding, flooding.	Ponding, erodes easily, flooding.	Erodes easily, ponding.	Wetness, erodes easily.
RS*:					
Rosebloom---------	Moderate: seepage.	Flooding-------	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
Waverly-----------	Moderate: seepage.	Flooding-------	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
Rt----------------Routon	Slight---------	Percs slowly---	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Ud. Udorthents					
Ur*. Urban land					

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--ENGINEERING INDEX PROPERTIES

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In								Pct	
Ar-------------- Arkabutla	0-5	Silt loam--------	CL, CL-ML	A-4, A-6	100	100	85-100	60-95	25-35	7-15
	5-60	Silty clay loam, loam, silt loam.	CL	A-6, A-7	100	100	85-100	70-90	30-45	12-25
CaB2------------ Calloway	0-18	Silt loam--------	CL-ML, CL	A-4, A-6	100	100	100	90-100	25-35	5-15
	18-44	Silt loam, silty clay loam.	CL	A-6	100	100	100	90-95	30-40	12-20
	44-60	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	100	100	100	90-100	25-35	5-15
Ce-------------- Center	0-9	Silt loam--------	ML, CL, CL-ML	A-4, A-6	100	95-100	90-100	80-100	<30	3-11
	9-35	Silty clay loam, silt loam.	CL, ML	A-6, A-4	100	95-100	95-100	90-100	28-40	8-16
	35-80	Silt loam--------	ML, CL, CL-ML	A-4, A-6	100	95-100	90-100	80-100	<30	3-11
Co-------------- Collins	0-8	Silt loam--------	ML, CL, CL-ML	A-4	100	100	85-100	70-90	<30	NP-8
	8-62	Silt loam, silt	ML, CL-ML	A-4	100	100	100	90-100	<35	NP-10
Fa-------------- Falaya	0-60	Silt loam--------	ML, CL-ML, CL	A-4	100	100	100	95-100	<30	NP-10
GrB2------------ Grenada	0-6	Silt loam--------	ML, CL-ML	A-4	100	100	95-100	90-100	25-31	4-7
	6-18	Silt loam, silty clay loam.	CL	A-6, A-4	100	100	95-100	90-100	27-40	8-19
	18-24	Silt loam, silt	CL-ML, CL	A-4	100	100	95-100	90-100	10-30	3-10
	24-60	Silt loam, silty clay loam.	CL, CL-ML	A-6, A-7, A-4	100	100	95-100	90-100	25-45	5-24
GrB3------------ Grenada	0-4	Silt loam--------	ML, CL-ML	A-4	100	100	95-100	90-100	25-31	4-7
	4-17	Silt loam, silty clay loam.	CL	A-6, A-4	100	100	95-100	90-100	27-40	8-19
	17-35	Silt loam, silt	CL-ML, CL	A-4	100	100	95-100	90-100	10-30	3-10
	35-60	Silt loam, silty clay loam.	CL, CL-ML	A-6, A-7, A-4	100	100	95-100	90-100	25-45	5-24
LeB2------------ Lexington	0-5	Silt loam--------	ML, CL, CL-ML	A-4, A-6, A-7	100	95-100	90-100	70-100	25-42	5-16
	5-36	Silty clay loam, silt loam.	CL	A-6, A-7	100	95-100	90-100	75-100	27-45	11-25
	36-61	Loamy sand, sandy loam, clay loam.	SC, SC-SM	A-2, A-4, A-6	100	95-100	50-70	20-40	22-35	5-15
LeC3, LeD3------- Lexington	0-3	Silt loam--------	ML, CL, CL-ML	A-4, A-6, A-7	100	95-100	90-100	70-100	25-42	5-16
	3-42	Silty clay loam, silt loam.	CL	A-6, A-7	100	95-100	90-100	75-100	27-45	11-25
	42-62	Loamy sand, sandy loam, clay loam.	SC, SC-SM	A-2, A-4, A-6	100	95-100	50-70	20-40	22-35	5-15

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In								Pct	
LME3*:										
Lexington-------	0-4	Silt loam--------	ML, CL, CL-ML	A-4, A-6, A-7	100	95-100	90-100	70-100	25-42	5-16
	4-35	Silty clay loam, silt loam.	CL	A-6, A-7	100	95-100	90-100	75-100	27-45	11-25
	35-58	Sandy loam, loam, fine sandy loam.	SC, SC-SM, CL, CL-ML	A-2, A-4, A-6	100	95-100	50-85	20-65	22-35	5-15
	58-80	Loamy sand, sandy loam, sandy clay loam.	SC, SC-SM	A-2, A-4, A-6	100	95-100	50-70	20-40	22-35	5-15
Smithdale-------	0-3	Sandy loam-------	SM, SC-SM	A-4, A-2	100	85-100	60-95	28-49	<20	NP-5
	3-22	Clay loam, sandy clay loam, loam.	SC-SM, SC, CL, CL-ML	A-6, A-4	100	85-100	80-96	45-75	23-38	7-16
	22-66	Loam, sandy loam	SM, ML, CL, SC	A-4	100	85-100	65-95	36-70	<30	NP-10
Providence------	0-3	Silt loam--------	ML, CL, CL-ML	A-4	100	100	100	85-100	<30	NP-10
	3-18	Silty clay loam, silt loam.	CL	A-7, A-6	100	100	95-100	85-100	30-45	11-20
	18-35	Silt loam, silty clay loam.	CL	A-6	100	100	90-100	70-90	25-40	11-20
	35-64	Loam, clay loam, sandy clay loam.	CL, SC	A-6, A-4	100	95-100	70-95	40-80	20-35	8-18
	64-80	Sandy loam, sandy clay loam, loam.	SM, SC, CL, ML	A-2, A-4	100	95-100	60-85	30-80	<30	NP-10
LoB2------------- Loring	0-8	Silt loam--------	ML, CL-ML, CL	A-4, A-6	100	100	95-100	90-100	<35	NP-15
	8-24	Silt loam, silty clay loam.	CL, ML	A-6, A-7, A-4	100	100	95-100	90-100	32-48	10-20
	24-55	Silt loam, silty clay loam.	CL, ML	A-4, A-6, A-7	100	100	95-100	90-100	30-45	10-22
	55-60	Silt loam--------	CL, ML	A-4, A-6	100	100	95-100	70-100	28-40	7-16
LoB3, LoC3, LoD3, LoE3------------ Loring	0-5	Silt loam--------	ML, CL-ML, CL	A-4, A-6	100	100	95-100	90-100	<35	NP-15
	5-17	Silt loam, silty clay loam.	CL, ML	A-6, A-7, A-4	100	100	95-100	90-100	32-48	10-20
	17-60	Silt loam, silty clay loam.	CL, ML	A-4, A-6, A-7	100	100	95-100	90-100	30-45	10-22
LuC*:										
Loring----------	0-8	Silt loam--------	ML, CL-ML, CL	A-4, A-6	100	100	95-100	90-100	<35	NP-15
	8-24	Silt loam, silty clay loam.	CL, ML	A-6, A-7, A-4	100	100	95-100	90-100	32-48	10-20
	24-55	Silt loam, silty clay loam.	CL, ML	A-4, A-6, A-7	100	100	95-100	90-100	30-45	10-22
	55-60	Silt loam--------	CL, ML	A-4, A-6	100	100	95-100	70-100	28-40	7-16
Urban land.										
MeA------------- Memphis	0-7	Silt loam--------	ML, CL-ML, CL	A-4	100	100	100	90-100	<30	NP-10
	7-51	Silt loam, silty clay loam.	CL	A-6, A-7	100	100	100	90-100	35-48	15-25
	51-72	Silt loam--------	ML, CL	A-4, A-6	100	100	100	90-100	30-40	6-15

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
MeB2------------- Memphis	0-5	Silt loam--------	ML, CL-ML, CL	A-4	100	100	100	90-100	<30	NP-10
	5-38	Silt loam, silty clay loam.	CL	A-6, A-7	100	100	100	90-100	35-48	15-25
	38-78	Silt loam--------	ML, CL	A-4, A-6	100	100	100	90-100	30-40	6-15
MeC3------------- Memphis	0-4	Silt loam--------	ML, CL-ML, CL	A-4	100	100	100	90-100	<30	NP-10
	4-35	Silt loam, silty clay loam.	CL	A-6, A-7	100	100	100	90-100	35-48	15-25
	35-60	Silt loam--------	ML, CL	A-4, A-6	100	100	100	90-100	30-40	6-15
PrB2------------- Providence	0-4	Silt loam--------	ML, CL, CL-ML	A-4	100	100	100	85-100	<30	NP-10
	4-19	Silty clay loam, silt loam.	CL	A-7, A-6	100	100	95-100	85-100	30-45	11-20
	19-35	Silt loam, silty clay loam.	CL	A-6	100	100	90-100	70-90	25-40	11-20
	35-59	Loam, clay loam, sandy clay loam.	CL, SC	A-6, A-4	100	95-100	70-95	40-80	20-35	8-18
	59-75	Sandy loam, sandy clay loam, loam.	SM, SC, CL, ML	A-2, A-4	100	95-100	60-85	30-80	<30	NP-10
PrB3, PrC3, PrD3- Providence	0-3	Silt loam--------	ML, CL, CL-ML	A-4	100	100	100	85-100	<30	NP-10
	3-18	Silty clay loam, silt loam.	CL	A-7, A-6	100	100	95-100	85-100	30-45	11-20
	18-36	Silt loam, silty clay loam.	CL	A-6	100	100	90-100	70-90	25-40	11-20
	36-62	Loam, clay loam, sandy clay loam.	CL, SC	A-6, A-4	100	95-100	70-95	40-80	20-35	8-18
	62-75	Sandy loam, sandy clay loam, loam.	SM, SC, CL, ML	A-2, A-4	100	95-100	60-85	30-80	<30	NP-10
Ro--------------- Rosebloom	0-3	Silt loam--------	CL, CL-ML	A-4, A-6	100	100	90-100	80-95	28-40	9-20
	3-60	Silt loam, silty clay loam.	CL	A-6, A-7	100	100	90-100	85-100	28-45	11-25
RS*:										
Rosebloom-------	0-4	Silt loam--------	CL, CL-ML	A-6, A-4	100	100	90-100	80-95	28-40	9-20
	4-60	Silt loam--------	CL	A-4, A-6	100	100	90-100	90-95	28-40	9-20
Waverly---------	0-4	Silt loam--------	ML, CL, CL-ML	A-4	100	100	90-100	65-95	<25	NP-9
	4-60	Silt, silt loam	ML, CL, CL-ML	A-4	100	100	95-100	85-100	20-30	3-10
Rt--------------- Routon	0-7	Silt loam--------	ML, CL, CL-ML	A-4, A-6	100	100	90-100	85-95	16-32	3-12
	7-64	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	100	100	90-100	90-95	20-40	5-17
	64-80	Silt loam--------	ML, CL, CL-ML	A-4, A-6	100	100	90-100	85-95	16-32	3-12
Ud. Udorthents										
Ur*. Urban land										

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
							K	T	
	In	Pct	In/hr	In/in	pH				Pct
Ar---------------- Arkabutla	0-5	5-25	0.6-2.0	0.20-0.22	4.5-5.5	Low------------	0.43	5	1-3
	5-60	20-35	0.6-2.0	0.18-0.21	4.5-5.5	Low------------	0.32		
CaB2-------------- Calloway	0-18	10-30	0.6-2.0	0.20-0.23	4.5-6.0	Low------------	0.49	3	.5-2
	18-44	10-32	0.06-0.2	0.09-0.12	4.5-6.0	Low------------	0.43		
	44-60	16-32	0.06-0.2	0.09-0.12	5.1-7.8	Low------------	0.43		
Ce---------------- Center	0-9	12-24	0.6-2.0	0.18-0.22	5.1-6.5	Low------------	0.49	5	1-3
	9-35	18-32	0.2-0.6	0.16-0.20	5.1-6.5	Low------------	0.43		
	35-80	15-25	0.2-0.6	0.16-0.20	5.6-7.8	Low------------	0.49		
Co---------------- Collins	0-8	7-16	0.6-2.0	0.16-0.24	4.5-5.5	Low------------	0.43	5	.5-2
	8-62	5-18	0.6-2.0	0.20-0.24	4.5-5.5	Low------------	0.43		
Fa---------------- Falaya	0-60	6-18	0.6-2.0	0.20-0.22	4.5-5.5	Low------------	0.49	5	.5-3
GrB2-------------- Grenada	0-6	12-16	0.6-2.0	0.20-0.23	4.5-6.0	Low------------	0.49	3	.5-2
	6-18	18-30	0.6-2.0	0.20-0.23	4.5-6.0	Low------------	0.43		
	18-24	12-16	0.6-2.0	0.20-0.23	4.5-6.0	Low------------	0.49		
	24-60	15-32	0.06-0.2	0.10-0.12	4.5-6.0	Low------------	0.37		
GrB3-------------- Grenada	0-4	12-16	0.6-2.0	0.20-0.23	4.5-6.0	Low------------	0.49	3	.5-2
	4-17	18-30	0.6-2.0	0.20-0.23	4.5-6.0	Low------------	0.43		
	17-35	12-16	0.6-2.0	0.20-0.23	4.5-6.0	Low------------	0.49		
	35-60	15-32	0.06-0.2	0.10-0.12	4.5-6.0	Low------------	0.37		
LeB2-------------- Lexington	0-5	12-30	0.6-2.0	0.17-0.22	4.5-6.0	Low------------	0.49	3	.5-2
	5-36	20-33	0.6-2.0	0.16-0.21	4.5-6.0	Low------------	0.43		
	36-61	9-30	2.0-6.0	0.05-0.10	4.5-6.0	Low------------	0.24		
LeC3, LeD3-------- Lexington	0-3	12-30	0.6-2.0	0.17-0.22	4.5-6.0	Low------------	0.49	3	.5-2
	3-42	20-33	0.6-2.0	0.16-0.21	4.5-6.0	Low------------	0.43		
	42-62	9-30	2.0-6.0	0.05-0.10	4.5-6.0	Low------------	0.24		
LME3*:									
Lexington--------	0-4	12-30	0.6-2.0	0.17-0.22	4.5-6.0	Low------------	0.49	3	.5-2
	4-35	20-33	0.6-2.0	0.16-0.21	4.5-6.0	Low------------	0.43		
	35-58	15-29	2.0-6.0	0.06-0.12	4.5-6.0	Low------------	0.24		
	58-80	9-30	2.0-6.0	0.05-0.10	4.5-6.0	Low------------	0.24		
Smithdale--------	0-3	2-15	2.0-6.0	0.14-0.16	4.5-5.5	Low------------	0.28	5	.5-2
	3-22	18-33	0.6-2.0	0.15-0.17	4.5-5.5	Low------------	0.24		
	22-66	12-27	2.0-6.0	0.14-0.16	4.5-5.5	Low------------	0.28		
Providence-------	0-3	5-12	0.6-2.0	0.20-0.22	4.5-6.0	Low------------	0.49	3	.5-3
	3-18	18-30	0.6-2.0	0.20-0.22	4.5-6.0	Low------------	0.43		
	18-35	20-30	0.2-0.6	0.08-0.10	4.5-6.0	Low------------	0.32		
	35-64	12-30	0.2-0.6	0.08-0.10	4.5-6.0	Low------------	0.32		
	64-80	10-27	0.6-2.0	0.10-0.15	4.5-6.0	Low------------	0.32		
LoB2-------------- Loring	0-8	8-18	0.6-2.0	0.20-0.23	4.5-6.0	Low------------	0.49	3	.5-2
	8-24	18-32	0.6-2.0	0.20-0.22	4.5-6.0	Low------------	0.43		
	24-55	15-30	0.06-0.2	0.06-0.13	4.5-6.0	Low------------	0.43		
	55-60	10-25	0.2-2.0	0.06-0.13	4.5-6.5	Low------------	0.43		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	In/hr	In/in	pH				Pct
LoB3, LoC3, LoD3, LoE3 ------------	0-5	8-18	0.6-2.0	0.20-0.23	4.5-6.0	Low------------	0.49	3	.5-2
Loring	5-17	18-32	0.6-2.0	0.20-0.22	4.5-6.0	Low------------	0.43		
	17-60	15-30	0.06-0.2	0.06-0.13	4.5-6.0	Low------------	0.43		
LuC*:									
Loring----------	0-8	8-18	0.6-2.0	0.20-0.23	4.5-6.0	Low------------	0.49	3	.5-2
	8-24	18-32	0.6-2.0	0.20-0.22	4.5-6.0	Low------------	0.43		
	24-55	15-30	0.06-0.2	0.06-0.13	4.5-6.0	Low------------	0.43		
	55-60	10-25	0.2-2.0	0.06-0.13	4.5-6.5	Low------------	0.43		
Urban land.									
MeA--------------	0-7	8-22	0.6-2.0	0.20-0.23	4.5-6.0	Low------------	0.49	5	1-2
Memphis	7-51	20-35	0.6-2.0	0.20-0.22	4.5-6.0	Low------------	0.49		
	51-72	12-25	0.6-2.0	0.20-0.23	4.5-6.0	Low------------	0.49		
MeB2-------------	0-5	8-22	0.6-2.0	0.20-0.23	4.5-6.0	Low------------	0.49	5	1-2
Memphis	5-38	20-35	0.6-2.0	0.20-0.22	4.5-6.0	Low------------	0.49		
	38-78	12-25	0.6-2.0	0.20-0.23	4.5-6.0	Low------------	0.49		
MeC3-------------	0-4	8-22	0.6-2.0	0.20-0.23	4.5-6.0	Low------------	0.49	5	1-2
Memphis	4-35	20-35	0.6-2.0	0.20-0.22	4.5-6.0	Low------------	0.49		
	35-60	12-25	0.6-2.0	0.20-0.23	4.5-6.0	Low------------	0.49		
PrB2-------------	0-4	5-12	0.6-2.0	0.20-0.22	4.5-6.0	Low------------	0.49	3	.5-3
Providence	4-19	18-30	0.6-2.0	0.20-0.22	4.5-6.0	Low------------	0.43		
	19-35	20-30	0.2-0.6	0.08-0.10	4.5-6.0	Low------------	0.32		
	35-59	12-30	0.2-0.6	0.08-0.10	4.5-6.0	Low------------	0.32		
	59-75	10-27	0.6-2.0	0.10-0.15	4.5-6.0	Low------------	0.32		
PrB3, PrC3, PrD3-	0-3	5-12	0.6-2.0	0.20-0.22	4.5-6.0	Low------------	0.49	3	.5-3
Providence	3-18	18-30	0.6-2.0	0.20-0.22	4.5-6.0	Low------------	0.43		
	18-36	20-30	0.2-0.6	0.08-0.10	4.5-6.0	Low------------	0.32		
	36-62	12-30	0.2-0.6	0.08-0.10	4.5-6.0	Low------------	0.32		
	62-75	10-27	0.6-2.0	0.10-0.15	4.5-6.0	Low------------	0.32		
Ro---------------	0-3	15-27	0.6-2.0	0.20-0.22	4.5-5.5	Low------------	0.43	5	1-3
Rosebloom	3-60	20-35	0.6-2.0	0.18-0.21	4.5-5.5	Low------------	0.37		
RS*:									
Rosebloom-------	0-4	28-35	0.6-2.0	0.18-0.22	4.5-5.5	Moderate------	0.37	5	1-3
	4-60	18-25	0.6-2.0	0.2-0.22	4.5-5.5	Low------------	0.43		
Waverly---------	0-4	6-18	0.6-2.0	0.20-0.22	4.5-5.5	Low------------	0.43	5	1-3
	4-60	10-18	0.6-2.0	0.20-0.22	4.5-5.5	Low------------	0.43		
Rt---------------	0-7	15-25	0.6-2.0	0.20-0.24	4.5-6.5	Low------------	0.49	5	.5-2
Routon	7-64	20-35	0.06-0.2	0.18-0.22	4.5-6.5	Low------------	0.49		
	64-80	18-27	0.06-0.2	0.20-0.24	5.1-7.3	Low------------	0.49		
Ud. Udorthents									
Ur*. Urban land									

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "frequent," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
Ar----------------- Arkabutla	C	Frequent----	Brief to very long.	Jan-Apr	1.0-1.5	Apparent	Jan-Apr	High-----	High.
CaB2--------------- Calloway	C	None--------	---	---	1.0-2.0	Perched	Jan-Apr	High-----	Moderate.
Ce----------------- Center	C	None--------	---	---	1.0-2.5	Apparent	Dec-Mar	High-----	Moderate.
Co----------------- Collins	C	Occasional	Brief-----	Jan-Apr	2.0-5.0	Apparent	Jan-Apr	Moderate	Moderate.
Fa----------------- Falaya	D	Frequent----	Brief to very long.	Dec-Apr	1.0-2.0	Apparent	Dec-Apr	High-----	Moderate.
GrB2, GrB3--------- Grenada	C	None--------	---	---	1.5-2.0	Perched	Jan-Apr	Moderate	Moderate.
LeB2, LeC3, LeD3-- Lexington	B	None--------	---	---	>6.0	---	---	Moderate	Moderate.
LME3*:									
Lexington---------	B	None--------	---	---	>6.0	---	---	Moderate	Moderate.
Smithdale---------	B	None--------	---	---	>6.0	---	---	Low------	Moderate.
Providence--------	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	Moderate	Moderate.
LoB2--------------- Loring	C	None--------	---	---	2.0-3.0	Perched	Dec-Mar	Moderate	Moderate.
LoB3, LoC3, LoD3, LoE3------------- Loring	C	None--------	---	---	2.0-3.0	Perched	Dec-Mar	Moderate	Moderate.
LuC*:									
Loring------------	C	None--------	---	---	2.0-3.0	Perched	Dec-Mar	Moderate	Moderate.
Urban land.									
MeA, MeB2, MeC3--- Memphis	B	None--------	---	---	>6.0	---	---	Moderate	Moderate.
PrB2, PrB3, PrC3, PrD3------------- Providence	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	Moderate	Moderate.
Ro----------------- Rosebloom	D	Frequent----	Brief to very long.	Jan-Apr	+2-1.0	Apparent	Dec-Jun	High-----	Moderate.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft				
RS*:									
Rosebloom----------	D	Frequent----	Brief to very long.	Jan-Mar	0-1.0	Apparent	Jan-Mar	High-----	Moderate.
Waverly------------	B/D	Frequent----	Brief to very long.	Jan-Mar	0.5-1.0	Apparent	Dec-Apr	High-----	Moderate.
Rt----------------- Routon	D	None---------	---	---	0-1.0	Apparent	Dec-Mar	High-----	Moderate.
Ud. Udorthents									
Ur*. Urban land									

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Arkabutla	Fine-silty, mixed, acid, thermic Aeric Fluvaquents
Calloway	Fine-silty, mixed, thermic Glossaquic Fragiudalfs
Center	Fine-silty, mixed, thermic Aquic Hapludalfs
Collins	Coarse-silty, mixed, acid, thermic Aquic Udifluvents
Falaya	Coarse-silty, mixed, acid, thermic Aeric Fluvaquents
Grenada	Fine-silty, mixed, thermic Glossic Fragiudalfs
Lexington	Fine-silty, mixed, thermic Typic Paleudalfs
Loring	Fine-silty, mixed, thermic Typic Fragiudalfs
Memphis	Fine-silty, mixed, thermic Typic Hapludalfs
Providence	Fine-silty, mixed, thermic Typic Fragiudalfs
Rosebloom	Fine-silty, mixed, acid, thermic Typic Fluvaquents
Routon	Fine-silty, mixed, thermic Typic Ochraqualfs
Smithdale	Fine-loamy, siliceous, thermic Typic Hapludults
Udorthents	Udorthents
Waverly	Coarse-silty, mixed, acid, thermic Typic Fluvaquents

☆ U.S. GOVERNMENT PRINTING OFFICE: 1994—300–438/00008

NRCS Accessibility Statement